South Valley
WATER RECLAMATION FACILITY

SOUTH VALLEY WATER RECLAMATION FACILITY
WEST JORDAN, UTAH

MCC REPLACEMENT PROJECT

CLIENT PROJECT NO. 202633

ADDENDUM NO. 1
TO THE
CONTRACT DOCUMENTS

MAY 4, 2026

Digitally signed by Christopher Alan Carvalho
Contact Info: Carollo Engineers Inc.
Date: 2026.05.04 14:36:45 -06'00'

carollo®

Bidders on the above-named project are hereby notified that the Bidding Documents are modified as indicated below. Bidders are required to acknowledge receipt of this Addendum in the space provided on Document 00300 - Bid Forms.

This Addendum shall become part of the Contract and provisions of the Contract apply.

PROCURED EQUIPMENT

All procured equipment is on site.

SPECIFICATIONS

The following sections are modified as indicated below.

1. SECTION 01782 - OPERATION AND MAINTENANCE MANUALS:
   a. ADD attached section in its entirety.
2. SECTION 16422 - MOTOR STARTERS:
   a. ADD attached section in its entirety.
3. SECTION 16491 - TRANSFER SWITCHES:
   a. ADD attached section in its entirety.

DRAWINGS

The following drawings are modified as indicated below.

1. DRAWING 6E-01:
   a. REPLACE drawing in its entirety with the attached drawing.
2. DRAWING 14E-02:
   a. REPLACE drawing in its entirety with the attached drawing.
3. DRAWING 17E-01:
   a. REPLACE drawing in its entirety with the attached drawing.
4. Drawing GE-SC-1:
   a. Add 3/4-inch conduit E4014 with 2#12 and 1#12 G, routed from LP-LC to CC-MCC-A for the motor winding heaters for the Dampers at the Utility Water Pump Station.
5. Drawing GE-SC-1:
   a. Add 3/4-inch conduit N4203 with 2#12 and 1#12 G routed from LRW to RW-MCC-E for the motor winding heaters for Clarifiers 1 and 2, and Scum Pit 1 and RAS 1.
   b. Add 3/4-inch conduit N4204 with 2#12 and 1#12 G routed from LRW to RW-MCC-E for the motor winding heaters for Clarifiers 3 and 4, and Scum Pit 2 at RAS.

6. Drawing GE-SC-1:
    a. Add conduit 3/4-inch P4119 with 2#12 and 1#12 G routed from LRW-A to RW-MCC-C for the motor winding heaters for Clarifiers 5 and 6, and Scum Pit 3 and RAS 2.

NEW SECTION AD1

SECTION 01782

OPERATION AND MAINTENANCE MANUALS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Preparation and submittal of manual with requirements to operate and maintain the equipment.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Submit draft operation and maintenance manuals prior to shipment of the equipment to the Site.
   2. Submit approved operation and maintenance manuals at least 30 days prior to Functional Testing and at least 60 days prior to Owner Training.
   3. Make final operation and maintenance manuals available at the Site for use by construction personnel.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and the Technical Sections.

B. Draft operation and maintenance manuals:
   1. Quantity:
      a. Electronic copy in portable document format (PDF) format.

C. Final operation and maintenance manuals:
   1. Revised in accordance with the Owner's and Engineer's comments on the draft operation and maintenance manuals, and to include Functional Testing results and certificates.
   2. Quantity:
      a. Hard copy: 2.
      b. Electronic copy in PDF format plus 1 USB flash drive.

D. Spare parts list:
   1. Provide a consolidated spare part list required in accordance with the Technical Specifications.
      a. Sources and pricing: Spare parts list shall include a current list price of each spare part. Each manufacturer or supplier shall indicate the name, address, and telephone number of its nearest outlet of spare parts to assist the Owner in ordering.

1.04 PREPARATION

A. General requirements:
   1. Provide dimensions in English units.
   2. Assemble material, where possible, in the same order within each volume.
   3. Complete forms on computer; handwriting is not acceptable.
   4. Delete items or clearly mark out options not provided in the supplied equipment.
   5. Cover page shall include the following information:
      a. Operation and maintenance manual.
      b. Equipment name.
      c. Specification Section number.
      d. Equipment tag numbers.
      e. Owner's name.
      f. Project number and name.
      g. Date.

B. Hard copy requirements:
   1. 3-ring D-ring binder with rigid covers.
      a. Break into separate binders as needed to accommodate size.
   2. Utilize numbered tab sheets to organize information.
   3. Label the binder spine:
      a. Equipment name.
      b. Equipment tag numbers.
      c. Project name.
      d. Owner's name.
   4. Provide original and clear text on reproducible non-colored paper:
      a. Size: 8 1/2 by 11 inches.
      b. Weight: 24 pounds.
   5. Drawings larger than 8 1/2 by 11 inches:
      a. Fold drawings separately and place in envelope bound into the manual.
      b. Label each drawing envelope on the outside regarding contents.

C. Electronic requirements:
   1. File format:
      a. Entire manual in PDF.
         1) Include text and drawing information.
         2) Provide a single PDF file.
         3) Create PDF from the native format of the document (Microsoft Word, graphics programs, drawing programs, etc.).
            a) Scanned images are not acceptable.
            b) At file opening, display the entire cover page.
         4) Pagination and appearance to match hard copy.
         5) Ensure that page numbers are included on every page of the document.
         6) Text searchable throughout the entire document, including drawings.
         7) Bookmarks: As specified in Section 01330 - Submittal Procedures.
         8) Thumbnails optimized for fast web viewing.
      b. Drawing requirements:
         1) White background.
         2) Shapes shall not degrade when closely zoomed.

3) Screening effects intended to de-emphasize detail in a drawing must be preserved.

2. Media:
   a. USB flash drive.
3. Label media with the following information:
   a. Operation and maintenance manual.
   b. Equipment name.
   c. Specification Section number.
   d. Equipment tag number.
   e. Owner's name.
   f. Project number and name.
   g. Date.
4. If multiple Submittals are made together, each Submittal must have its own subdirectory that is named and numbered based on the Submittal number.

1.05 CONTENTS

A. Cover page.

B. Table of contents: General description of information provided within each tab section.

C. Complete Attachment A - Equipment Summary Form.

D. Description of system and components.

E. Complete parts list for equipment, including, but not limited to, the following information:
   1. Catalog data: Generic title and identification number of each component part of equipment.
   2. Include bearing manufacturer, model, and ball or roller pass frequencies for every bearing.
   3. Availability.
   4. Service locations.

F. Spare parts list:
   1. Recommended number of parts to be stored at the Site and special storage instructions.

G. Engineering data:
   1. Complete set of 11-inch by 17-inch equipment drawings.
   2. Exploded view or plan and section views with detailed callouts.
   3. Outline, cross-section, and assembly drawings.
   4. System drawings: Provide interconnection and wiring diagrams, plan views, panel layouts, bill of materials, etc.
   5. Packaged equipment system drawings: Provide instrumentation loop drawings, control schematic diagrams, interconnection and wiring diagrams, plan views, panel layouts, bill of materials, etc.
   6. System drawings and data sheets: Include drawings and data furnished by the Engineer and the Supplier; provide "as installed" version.
   7. Provide electrical and instrumentation schematic record drawings.

8. Information required by the Technical Specifications.

H. Description of equipment function, normal operating characteristics, and limiting conditions.

I. Online resources.

J. Telephone resources.

K. Approved Submittals.
   1. Markup with any field changes.
   2. Quality Control Submittals:
      a. Source Testing and Functional Testing test reports and test data.
      b. Manufacturer's certificates.
      c. Performance curves.

L. Start-up procedures: Recommendations for installation, adjustment, calibration, and troubleshooting.

M. Operating procedures:
   1. Step-by-step instructions, including, but not limited to, the following:
      a. Safety precautions and applicable safety data sheets.
      b. Guidelines.
      c. Other information as needed for safe system operation and maintenance.

N. Preventative maintenance procedures:
   1. Recommended steps and schedules for maintaining equipment.
   2. Troubleshooting.

O. Storage instructions.

P. Lubrication information: Required lubricants and lubrication schedules.

Q. Overhaul instructions: Directions for disassembly, inspection, repair and reassembly of the equipment; safety precautions; and recommended tolerances, critical bolt torques, and special tools that are required.

R. Manufacturer's technical reference manuals.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ATTACHMENT A - EQUIPMENT SUMMARY FORM

EQUIPMENT SUMMARY FORM

1. EQUIPMENT ITEM: _____

2. MANUFACTURER: _____

3. EQUIPMENT TAG NUMBER(S): _____

4. LOCATION OF EQUIPMENT: _____

5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): _____

_____

_____

_____

6. NAMEPLATE DATA:

   Horsepower: _____

   Amperage: _____

   Voltage: _____

   Service Factor (S.F.): _____

   Speed: _____

   ENC Type: _____

   Capacity: _____

   Other: _____

7. MANUFACTURER'S LOCAL REPRESENTATIVE:

   Name: _____

   Address: _____

   Telephone Number: _____

8. MAINTENANCE REQUIREMENTS:

Maintenance Operation	Frequency	Lubricant (if applicable)	Comments
(List each operation required. Refer to specific information in manufacturer's manual, if applicable)	(List required frequency of each maintenance operation)	(Refer by symbol to lubricant list as required)	

9. LUBRICANT LIST:

Reference Symbol	Conoco Phillips	Exxon/Mobil	BP/Amoco	Other (List)
(Symbols used in Item 8 above)	(List equivalent lubricants, as distributed by each manufacturer for the specific use recommended)			

10. SPARE PARTS (recommendations): _____

_____

11. COMMENTS: _____

_____

12. GENERAL INFORMATION:

Date Accepted:* _____

Expected Life:* _____

Project Name and Number: _____

Design Engineer: _____

13. WARRANTY:

Start Date: _____

Expiration Date: _____

Prorated: _____

[AD1] Addendum No. 1

NEW SECTION [AD1]

SECTION 16422

MOTOR STARTERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Motor starters and contactors.

1.02 REFERENCES

A. Abbreviations:
   1. RVSS: Reduced voltage solid state.

B. Standards:
   1. Institute of Electrical and Electronics Engineers (IEEE).
   2. International Electrotechnical Commission (IEC):
      a. 801-1 - Electromagnetic Compatibility for Industrial-Process Measurement and Control Equipment - Part 1: General Information.
      b. 947-4 - Low-Voltage Switchgear and Control Gear.
   3. National Electrical Manufacturers Association (NEMA):
      a. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
      b. ICS 2-230 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays Rated 600 V.
   4. Underwriters Laboratories, Inc. (UL):
      a. 508 - Standard for Industrial Control Equipment.
      b. 508A - Standard for Industrial Control Panels.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Overload relay class: A classification of an overload relay time current characteristic by means of a number which designates the maximum time in seconds at which it will operate when carrying a current equal to 600 percent of its current rating.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing for individually enclosed starters.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures:

B. Product data:
    1. Manufacturer.
    2. Catalog cutsheets.
    3. Technical information.
    4. Complete nameplate schedule.
    5. Complete bill of material.
    6. List of recommended spare parts.
    7. Confirmation that the overload relay class for each starter meets the requirements of the equipment and motor supplier.
    8. Electrical ratings:
        a. Phase.
        b. Wire.
        c. Voltage.
        d. Ampacity.
        e. Horsepower.

C. Shop Drawings:
    1. Elementary and schematic diagrams:
        a. Provide 1 diagram for every starter and contactor.
        b. Indicate wire numbers for control wires on the diagrams:
            1) Wire numbering as specified in Section 16075 - Identification for Electrical Systems.
        c. Indicate interfaces with other equipment on the Drawings.

D. Quality Control Submittals:
    1. Manufacturer's representative qualifications.
    2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
    3. Test reports.

E. Operation and maintenance manuals:
    1. As specified in Section 01782 - Operation and Maintenance Manuals.
    2. Submit complete operating and maintenance instructions presenting full details for care and maintenance of equipment furnished or installed under this Section, including, but not limited to:
        a. Electrical ratings:
            1) Phase.
            2) Wire.
            3) Voltage.
            4) Ampacity.
        b. Complete bill of material.
        c. Manufacturer's operating and maintenance instructions starter and/or contactor component parts, including:
            1) Protective devices (fuses, breakers, overload relays, heater elements, etc.).
            2) Pilot devices.
        d. Recommended spare parts list.
        e. As-built drawings:
            1) Furnish as-built drawings for each starter and contactor indicating final:
                a) Wire numbers.

b) Interfaces with other equipment.
2) 11-inch by 17-inch format.

F. Certifications:
1. Provide manufacturer's certification that the reduced voltage solid state starter will reliably control the acceleration and deceleration of the driven load at the installed conditions.
a. Failure of the manufacturer to provide said certification will be interpreted to mean that the manufacturer has agreed that the reduced voltage solid state starter is matched to the driven load at the installed conditions and will function without fault.
b. If the reduced voltage solid-state starter fails to perform as desired, replace or modify the reduced voltage solid-state starter in order to achieve the desired operational conditions, as directed by the Engineer.

1.06 QUALITY ASSURANCE

A. Regulatory requirements:
1. Starters and components shall be UL listed and labeled:
a. UL 508 - Industrial Control Equipment.
b. UL 508A - Industrial Control Panels.
2. NEMA ICS 2 - Industrial Control and System Controllers; Contactors and Overload Relays Rated: 600 Volts.
3. Combination starters shall be UL listed and labeled.

A. Training instructor qualifications:
1. Provide resume stating instructor's technical preparation and instructional technology skills and experience.
2. Knowledgeable in the equipment/system for which they are training.
3. Experienced in conducting classes.
4. Sales representatives are not qualified instructors unless they possess the detailed operating and maintenance knowledge required for proper class instruction.

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.09 ADMINISTRATIVE REQUIREMENTS (NOT USED)

1.10 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.11 MAINTENANCE

A. Provide the following spare parts, suitably packaged and labeled with the corresponding equipment number:
1. 1 spare fuse of each size and type per starter.

PART 2 PRODUCTS

2.01 GENERAL

A. Replace four RVSS starters in HW-MCC-C.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the Site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

2.03 MANUFACTURERS

A. The following to match the MCC:
   1. Reduced voltage solid state starters:
      a. ABB.

2.04 MATERIALS (NOT USED)

2.05 MANUFACTURED UNITS

A. General:
   1. Provide combination type starters with motor circuit protector or thermal-magnetic circuit breaker and control power transformer with ratings as indicated on the Drawings.
   2. NEMA size, design, and rated:
      a. NEMA Size 1 minimum.
   3. Coordinate motor circuit protector, thermal magnetic circuit breaker, or fusible disconnect, and overload trip ratings with nameplate horsepower and current ratings of the installed motor.
      a. If motors provided are different in horsepower rating than those specified or indicated on the Drawings, provide starters coordinated to the actual motors furnished.
   4. Mount extended overload reset buttons to be accessible for operation without opening starter enclosure door.

B. RVSS:
   1. Manufactured and tested in accordance with the applicable requirements of IEEE, UL, and NEMA, including the following:
      a. Dielectric withstand in accordance with UL 508.
      b. Noise and RF immunity in accordance with NEMA ICS-2.
   2. Furnish with a motor circuit protector or thermal magnetic circuit breaker as indicated on the Drawings.
   3. Provide protection against internal faults and high SCR temperature during operation of the motor, including starting, running (except when bypassed), and stopping modes.
   4. Capable of continuously delivering full rated current of the motor plus the motor service factor in ambient temperatures from 0 degrees Celsius to 40 degrees Celsius at the installed altitude.

5. Provide a magnetically operated bypass contactor in parallel with the solid state starter:
    a. Bypass contactor to energize when the motor has reached full speed:
        1) Electronic overload protection circuits must be fully functional with the bypass contactor closed.
6. RVSS control module requirements:
    a. Microcomputer based and contains the required circuitry to drive the power semiconductors in the power section of the starter.
    b. Integrally mounted on the power section and requires no additional panel space or wiring.
    c. Mounted for easy wiring, testing, service, and replacement.
    d. Provide 3-phase current sensing.
    e. Quick disconnect plug-in connectors for current transformer inputs, line and load voltage inputs, and SCR gate firing output circuits.
    f. Operates on power supplied from a control power transformer.
    g. Phase insensitive or with phase rotation protection.
    h. Control modes:
        1) Soft start with adjustable linear ramp time and a kick start or boost feature to provide a short time (typically 0.1 seconds) application of approximately full voltage.
        2) Soft start with adjustable linear ramp time, with a current limit:
            a) Current limit shall be adjustable over the range of 2 to 4 times normal full load current.
        3) Reverse voltage ramp (line voltage to zero voltage):
            a) Adjustable from 2 to 30 seconds to provide smooth stop.
            b) Automatic shutdown at end of voltage ramp.
    i. Protective functions:
        1) Single phase protection.
        2) Under voltage protection.
        3) Short circuit electronic trip overcurrent protection. Time not to exceed 3 cycles.
        4) Inverse time running overcurrent protection.
        5) Auxiliary trip circuitry.
        6) Gate firing circuit lockout protection on trip.
        7) Jam and stall detection.
        8) Fault relay lockout protection.
        9) 100 percent to 130 percent full load running current trip adjustment.
        10) 100 percent to 450 percent of starting current limit adjustment.
        11) Dwell time at current limit with ramp continuation after acceleration.
        12) Individual light emitting diodes (LEDs) for trip and phase loss.
        13) Minimum and maximum initial starting voltage adjustments.
        14) Initial torque adjustment.
7. RVSS power section requirements:
    a. 3 sets of back-to-back phase-controlled power semiconductors:
        1) Minimum repetitive peak inverse voltage of 1,500 volts at 480 VAC.
        2) Resistor/capacitor snubber networks to prevent false firing of the SCRs.
        3) Equipped with individual heat sink assemblies.
        4) Provide high-speed fuses for protection of the SCR stacks against short circuit conditions.

b. Provide metal oxide varistors for surge protection on the line [and load] side power terminal connections:
    1) Rated for a minimum of 120 joules.
c. Capable of supplying the following current levels:
    1) 600 percent of full load current for a minimum of 10 seconds.
    2) 450 percent of full load for a minimum of 30 seconds.
d. Furnish ground lugs, 1 for incoming and 1 for outgoing ground connections.
e. Furnish pressure type terminals for top or bottom entry power terminations.

8. Remote indicators:
    a. Provide Form C dry contacts for remote indication of:
        1) Internal fault error.
        2) Undervoltage.
        3) Overvoltage.
        4) Phase reversal.
        5) Phase loss.
        6) Overload.
        7) Frequency out of range.
        8) Excessive starts per hour.
        9) Drive electronics over temperature.
        10) Stall.
        11) Jam.
        12) System failure.
        13) Starter failure.
        14) Run status.
        15) Full speed.

2.06 EQUIPMENT (NOT USED)

2.07 COMPONENTS

A. Molded case circuit breakers:
    1. General:
        a. In accordance with UL 489.
        b. Operating mechanism:
            1) Quick-make, quick-break, non-welding silver alloy contacts.
            2) Common Trip, Open and Close for multi-pole breakers such that all poles open and close simultaneously.
            3) Mechanically trip free from the handle.
            4) Trip indicating handle - automatically assumes a position midway between the manual ON and OFF positions to clearly indicate the circuit breaker has tripped.
            5) Lockable in the OFF position.
        c. Arc extinction:
            1) In arc chutes.
    2. Voltage and current ratings:
        a. Ratings as indicated on the Drawings.
        b. The starter manufacturer may adjust the current rating of the breaker based on the starter size.

3. Interrupting ratings:
    a. As indicated on the Drawings.
4. Case:
    a. Molded polyester glass reinforced.
    b. Ratings clearly marked.
5. Trip units:
    a. Thermal magnetic:
    b. Instantaneous short circuit protection.
    c. Inverse time delay overload.
    d. Ambient or enclosure compensated by means of a bimetallic element

B. Overloads:
1. Solid state electronic:
    a. Selectable Class 10, 20, 30 protection.
    b. Ambient insensitive:
        1) Operating temperature: -20 to 70 degrees Celsius.
    c. Thermal memory.
    d. Protective functions:
        1) Motor overcurrent.
        2) Phase unbalance (adjustable).
        3) Phase loss.
        4) Ground fault protection.
    e. Self-powered.
    f. Provide current transformers for metering of motor current.
    g. Visible trip indicator.
    h. Push-to-trip test.
    i. Isolated normally open alarm contact.
    j. Normally closed trip contact.
    k. Manual reset.

C. Control power transformer:
1. Furnish integral control power transformer capacity to power:
    a. Motor controls: Motor and starter accessories indicated on the Drawings or specified.
2. Primary and secondary fusing as indicated on the Drawings:
    a. Fusing sized by the manufacturer for the rating of the transformer furnished.
3. Control power transformer secondary voltage:
    a. As indicated on the Drawings.

D. Enclosures:
1. Furnish the RVSS starters in MCC buckets for a GE 8000 Line motor control section.

2.08 ACCESSORIES

A. Lugs and terminals:
1. For external connections of No. 6 AWG and larger.
2. UL listed for either copper or aluminum conductors.

B. Surge protective devices:
   1. Furnish surge protection devices across the coil of each starter, contactor, and relay.

C. Pilot devices:
   1. Provide pilot lights, switches, elapsed time meters, and other devices as specified or as indicated on the Drawings.

D. Nameplates and wire markers:
   1. As specified in Section 16075 - Identification for Electrical Systems.

E. Conformal coating:
   1. Provide conformal coating material applied to electronic circuitry and printed circuit boards to act as protection against moisture, dust, temperature extremes, and chemicals such as H_2S and chlorine.

2.09 FABRICATION (NOT USED)

2.10 FINISHES (NOT USED)

2.11 SOURCE QUALITY CONTROL

A. RVSS starters:
   1. Manufacturer of the respective RVSS starter shall supply certified test results to confirm that the controller has been tested to substantiate designs according to applicable ANSI and NEMA standards.
   2. Tests shall verify not only the performance of the unit and integrated assembly, but also the suitability of the enclosure venting, rigidity, and bus bracing. In addition, the unit shall be factory tested in accordance with ANSI standards.
   3. RVSS starter manufacturer shall test for noise immunity on both input and output power connections and provide test results to the Engineer. Noise testing shall be performed in accordance with NEMA ICS 2.

B. Source Testing:
   1. Not witnessed.
   2. Furnish test reports and Manufacturer’s Certificate of Source Testing.

PART 3 EXECUTION

3.01 EXAMINATION (NOT USED)

3.02 PREPARATION (NOT USED)

3.03 INSTALLATION

A. Install the equipment in the existing motor control center.

3.04 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.05 OWNER TRAINING

A. Provide the services of a qualified manufacturer's representative to provide Owner Training.
   1. Training will take place at the Owner's facility.
   2. Topics:
      a. Maintenance topics limited to:
         1) Equipment configuration, setup and troubleshooting.
   3. Number of sessions:
      a. Maintenance: 1.
   4. Session length: 3 hours.

3.06 ADJUSTING

A. Provide the services of a qualified manufacturer’s representative for start-up assistance:
   1. Inspection and field adjustment:
      a. Supervise equipment installation and confirm controls have been properly installed, aligned, adjusted, and readied for operation.
   2. Starter parameter and protection settings:
      a. Program protection settings coordinated with the driven equipment supplier.
   3. Provide documentation of starter settings, including, but not limited to:
      a. Ramp time.
      b. [Starting voltage.
      c. Motor nameplate information.
      d. All protection settings.

B. Make adjustments as necessary and as recommended by the manufacturer, Engineer, or testing firm.

C. Set overloads and motor circuit protectors based on the nameplate values of the installed motor.

END OF SECTION

[AD1] Addendum No. 1

NEW SECTION AD1

SECTION 16491

TRANSFER SWITCHES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Transfer switches.

1.02 REFERENCES

A. Abbreviations:
   1. ATS: Automatic transfer switch.

B. Standards:
   1. National Electrical Manufacturers Association (NEMA):
      a. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
   2. Underwriters Laboratories (UL):
      a. 1008 - Transfer Switch Equipment.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. SCCR: Short-circuit current rating, the maximum short-circuit current component and assembly can safely withstand when protected by a specific overcurrent protective device(s) or for a specified time.
   2. WCR: Withstand and closing rating, represents a transfer switch's capability to ride out a fault condition until the overcurrent protective device opens and clears the fault.

1.04 DELEGATED DESIGN (NOT USED)

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer of transfer switch.
   2. Manufacturer of component parts of the ATS.
   3. Dimensions:
      a. Width.
      b. Length.
      c. Height.
      d. Weight.
   4. Bill of material.

5. Description of operation.
6. Ratings:
    a. Voltage.
    b. Phase.
    c. Current.
    d. Number of poles.
    e. Withstand and closing rating (WCR).
7. List of recommended spare parts.
8. For equipment installed in structures designated as Seismic Design Category C, D, E, or F, submit the following as specified in Section 01850 - Design Criteria:
    a. Manufacturer's statement of seismic qualification with substantiating test data.
    b. Manufacturer's special seismic certification with substantiating test data.

C. Shop Drawings:
1. Layout drawings:
    a. Furnish full-dimension and to-scale equipment layout drawings, which include:
        1) Plan, front, and side views.
        2) Sub-panels.
        3) Interior panels.
        4) Top and bottom conduit windows.
2. Complete electrical wiring diagrams:
    a. Point-to-point connections.
    b. Indicate wire numbers.
3. Complete interface and connection diagrams.
4. Transfer equipment label indicating the short-circuit current rating (SCCR).

D. Calculations:
1. Detailed calculations or details of the actual physical testing performed on the transfer switch to prove the transfer switch is suitable for the seismic requirements at the Project Site.

E. Installation instructions:
1. Provide manufacturer's installation instructions.

F. Quality Control Submittals:
1. Manufacturer's representative qualifications.
2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
3. Manufacturer's Certificate of Installation Verification as specified in Section 01756 - Commissioning.
4. Test reports.

G. Owner Training Submittals:
1. As specified in Section 01756 - Commissioning.

H. Operation and maintenance manuals:
1. As specified in Section 01782 - Operation and Maintenance Manuals.

2. Operating instructions:
    a. Printed and framed instruction chart suitable for wall hanging.
    b. Detail the operational functions of transfer switch controls.
3. Maintenance manual:
    a. Furnish maintenance manuals with instructions covering maintenance of equipment and data identifying all parts.
    b. Furnish information needed to maintain the transfer switch, including, but not limited to, the following:
        1) Instructions for testing, adjustment, and start-up.
        2) Detailed control instructions that outline the purpose and operation of every control device used in normal operation.
        3) Description of the sequence of operation that outlines the steps that follow normal power failure, transfer to standby power, return to normal power, and fault conditions.
        4) Schematics and wiring:
            a) Furnished in a reduced 11-inch-by-17-inch fully legible format.
        5) Report listing the installed setting of adjustable parameters for the automatic transfer system.

1.06 QUALITY ASSURANCE

A. Transfer switches shall be UL listed.

A. Training instructor qualifications:
    1. Provide resume stating instructor’s technical preparation and instructional technology skills and experience.
    2. Knowledgeable in the equipment/system for which they are training.
    3. Experienced in conducting classes.
    4. Sales representatives are not qualified instructors unless they possess the detailed operating and maintenance knowledge required for proper class instruction

1.07 DELIVERY, STORAGE, AND HANDLING

A. Furnish temporary equipment heaters within the transfer switch to prevent condensation from forming.

1.08 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.09 ADMINISTRATIVE REQUIREMENTS (NOT USED)

1.10 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide transfer switches capable of transferring load circuits from utility power to standby power and back.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the Site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

B. ATS sequence of operation:
   1. When the voltage of any normal source phase drops below 80 percent and after an adjustable time delay (0 to 6 seconds minimum), the transfer switch shall start the standby generator.
   2. When standby voltage reaches 90 percent of nominal, and frequency is within 2 hertz of nominal, following an adjustable time delay (0 to 10 seconds), the switch shall transfer to standby power.
   3. When normal power has been restored to 90 percent of nominal on all phases, following an adjustable time delay (0 to 30 minutes), the switch shall retransfer to normal power:
      a. If the standby source fails during this time delay, the switch shall automatically retransfer to normal power.
      b. Switch shall have an adjustable delay transition timer (0 to 5 minutes) for the load disconnect position. An alarm shall be initiated if the switch fails to retransfer in a pre-set period of time.
   4. Following an adjustable generator cool-down timer (0 to 60 minutes), the switch shall stop the generator.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. ABB.
   2. ASCO.

2.04 MATERIALS (NOT USED)

2.05 MANUFACTURED UNITS (NOT USED)

2.06 EQUIPMENT

A. General:
   1. Capable of switching all classes of load.
   2. Rated for continuous duty when installed in a non-ventilated enclosure.
   3. Provide circuit breakers or contactors rated for continuous duty.
   4. Minimum transfer time for delayed transition ATS: 1 second.
   5. Capable of transferring successfully in either direction with 70 percent of rated voltage applied to the terminals.

6. Provide automatic transfer switches with provisions for manual operation under no load.
7. Transfer switch short circuit rating to be coordinated with the overcurrent protective devices at the fault current available on the line side of the transfer switch.

B. Electrical ratings:
   1. Voltage, configuration, and amp ratings as indicated on the Drawings.
   2. WCR in accordance with UL 1008.

C. Contacts:
   1. Mechanically held.
   2. Mechanically interlocked to prevent normal and standby sources from being closed at the same time.
   3. Silver alloy construction.
   4. Neutral contact, when indicated on the Drawings:
      a. Same ratings as the phase contacts.
      b. Break last and make first operation.

D. Controls:
   1. ATS shall have 3-phase over-voltage, under-voltage, over-frequency, and under-frequency on both normal and standby sources.
   2. Control panel:
      a. Microprocessor based.
      b. 4-line, 20-character LCD display. Displayed data shall include:
         1) Normal and standby source parameters.
         2) Diagnostic information.
         3) Switch and timer status.
      c. Keypad for making ATS settings and operating parameters:
         1) Settings shall be password protected.
      d. LED display of the following:
         1) Normal source available.
         2) Connected to normal source.
         3) Standby source available.
         4) Connected to standby source.
      e. Provisions for testing ATS operation by simulating a normal source failure.
      f. Generator exerciser:
         1) Programmable to start the generator on a daily, weekly, monthly, or yearly basis for an adjustable period of time.
         2) Load or no load selectable:
            a) When load is selected, ATS will transfer to the generator for the duration of the exercise period. Re-transfer back and cool down the generator.
            b) When no load is selected, the ATS will run the generator for the duration of the exercise period and then stop the generator.
   3. Status and control contacts:
      a. Generator start/stop contact:
         1) Single-pole, double-throw.
         2) Rated for 5 amps at 30 VDC.
      b. Status contacts:
         1) Single-pole, double-throw.

2) Rated for 10 amps at 250 VAC.
3) Provide contacts for the following:
   a) Normal source available.
   b) Normal source failure.
   c) Connected to normal source.
   d) Standby source available.
   e) Standby source failure.
   f) Connected to standby source.

E. Enclosure:
   1. Open type for installation in existing CC-MCC-B.

2.07 COMPONENTS (NOT USED)

2.08 ACCESSORIES (NOT USED)

2.09 SOURCE QUALITY CONTROL

A. Source Testing:
   1. Complete factory test to verify proper operation of timers, settings, and operation.
   2. Furnish test reports and the Manufacturer’s Certificate of Source Testing.

PART 3 EXECUTION

3.01 EXAMINATION (NOT USED)

3.02 PREPARATION (NOT USED)

3.03 INSTALLATION

A. General:
   1. Furnish components and equipment as required to complete the installation.
   2. Replace hardware lost or damaged during the installation or handling to provide a complete installation.

B. Furnish Manufacturer’s Certificate of Installation Verification.

3.04 FIELD QUALITY CONTROL

A. As specified in Section 16050 - Common Work Results for Electrical.

B. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.05 OWNER TRAINING

A. Provide the services of a qualified manufacturer's representative to provide Owner Training
   1. Training will take place at the Owner's facility.

2. Topics:
    a. Maintenance topics limited to:
        1) Equipment configuration, setup and troubleshooting.
3. Number of sessions:
    a. Maintenance: 1.
4. Session length: 3 hours.
5. Training will take place at the Owner's facility.

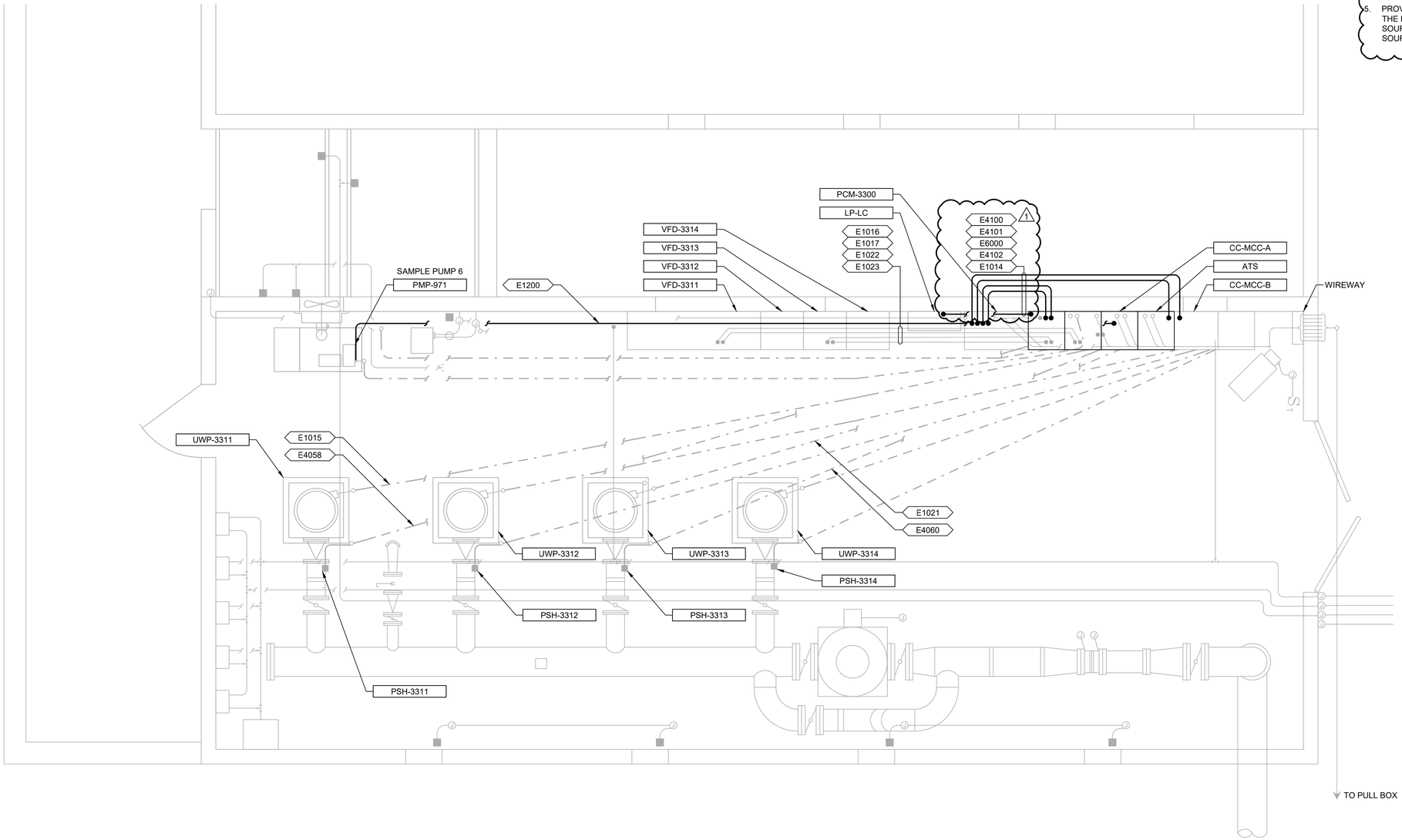
END OF SECTION

[AD1] Addendum No. 1

NORTH

GENERAL NOTES:

1. EXPOSED CONDUITS OFFSET FOR DRAWING CLARITY.
2. RECONNECT EXISTING GROUNDING CONNECTIONS.
3. SPLICE THE 120V CIRCUIT IN THE MCC WIREWAY AS REQUIRED TO SUPPLY THE LOADS INDICATED ON THE ROCKWELL AS-BUILT DRAWINGS.
4. PROVIDE A SIGN INDICATING A SPLICE AT EACH LOCATION WHERE A SPLICE IS MADE.
5. PROVIDE A LABEL FOR EACH BUCKET THAT IS FED FROM THE PANELBOARD INDICATING IT HAS MORE THAN ONE SOURCE OF POWER AND IDENTIFIES THE POWER SOURCE. (1)



PLAN

SCALE: 3/8" = 1'-0"
FILE: 6DE-01.dwg

REV	DATE	BY	DESCRIPTION
1	05/05/26	MME	ADDENDUM 1

DESIGNED CAC
DRAWN EYV
CHECKED
DATE MARCH 2026

REGISTERED PROFESSIONAL ENGINEER
No. 366286
CHRISTOPHER A CARVALHO
STATE OF UTAH

carollo

South Valley
WATER RECLAMATION FACILITY
7495 South 1300 West
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION
MCC REPLACEMENT PROJECT
ELECTRICAL
UTILITY WATER PUMPING STATION CONSTRUCTION PLAN

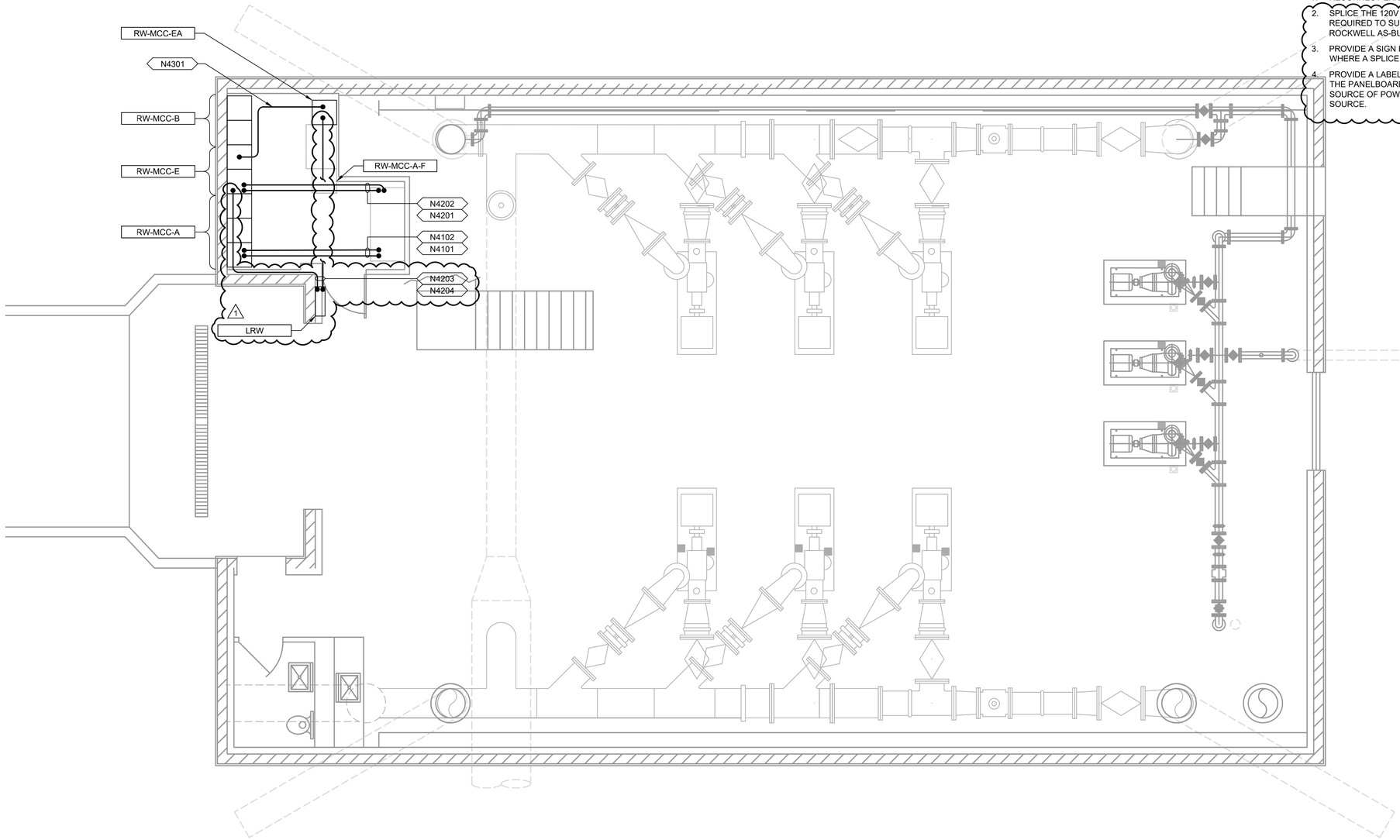
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 202633
DRAWING NO. 6E-01
SHEET NO. 137 OF 152

LAST SAVED BY: TMorabito

PROJECT NO. 202633-100000 FILE NAME: 6E-01.dwg

NORTH



GENERAL NOTES:

1. RECONNECT EXISTING GROUNDING CONNECTIONS.
2. SPLICE THE 120V CIRCUIT IN THE MCC WIREWAY AS REQUIRED TO SUPPLY THE LOADS INDICATED ON THE ROCKWELL AS-BUILT DRAWINGS.
3. PROVIDE A SIGN INDICATING A SPLICE AT EACH LOCATION WHERE A SPLICE IS MADE.
4. PROVIDE A LABEL FOR EACH BUCKET THAT IS FED FROM THE PANELBOARD INDICATING IT HAS MORE THAN ONE SOURCE OF POWER AND IDENTIFIES THE POWER SOURCE. 1

PLAN

SCALE: 1/4" = 1'-0"
FILE: 07-080-101.dwg

REV	DATE	BY	DESCRIPTION
1	05/05/26	MME	ADDENDUM 1

DESIGNED CAC
DRAWN TLM
CHECKED JGB
DATE MARCH 2026

REGISTERED PROFESSIONAL ENGINEER
No. 366286
CHRISTOPHER A CARVALHO
STATE OF UTAH

carollo

South Valley
WATER RECLAMATION FACILITY
7495 South 1300 West
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION
MCC REPLACEMENT PROJECT
ELECTRICAL
RAS/WAS BUILDING #1 LOWER LEVEL CONSTRUCTION PLAN

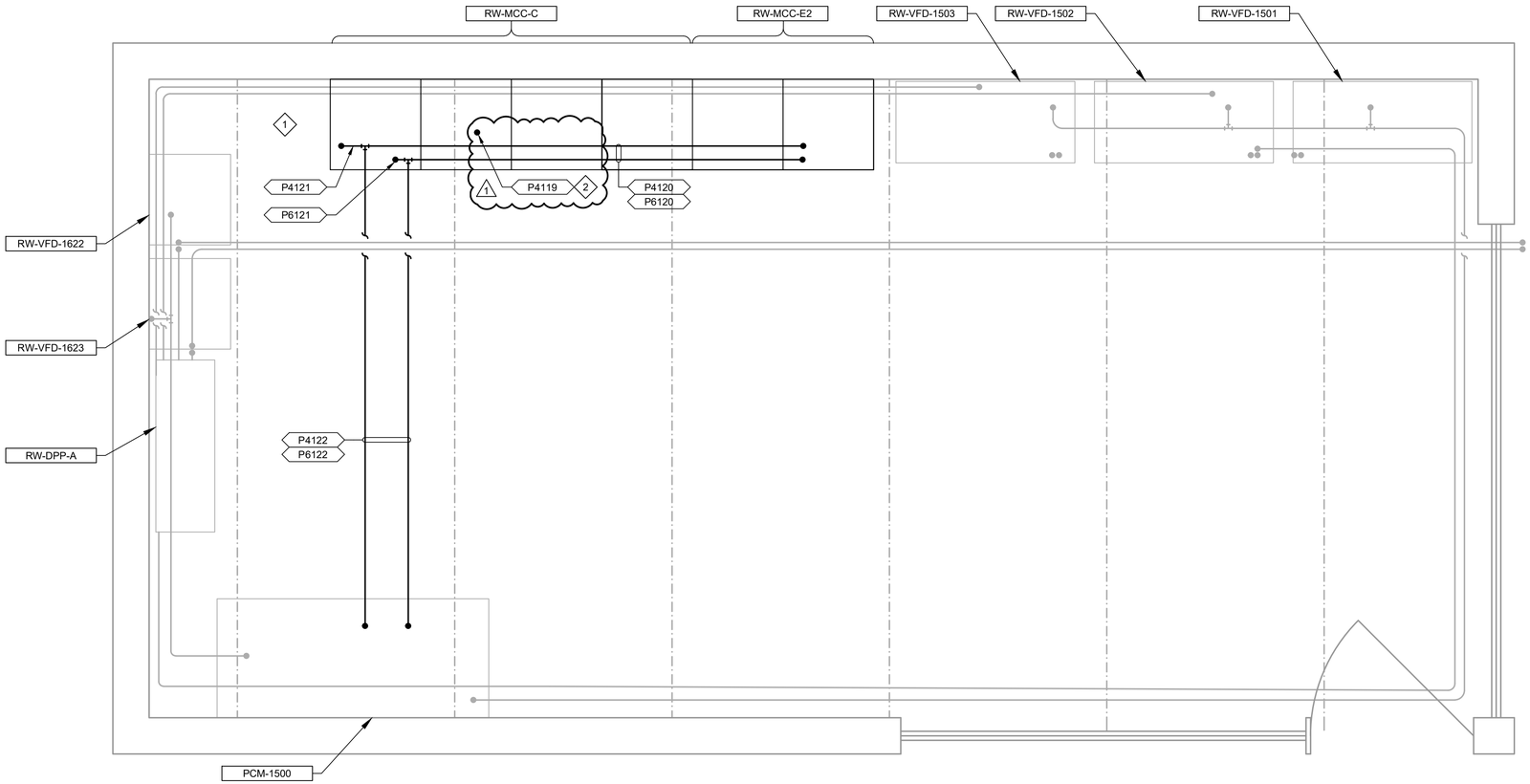
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 202633
DRAWING NO. 14E-02
SHEET NO. 139 OF 152

LAST SAVED BY: TMorabito

PROJECT NO. 202633-100000 FILE NAME: 14E-02.dwg

NORTH



PLAN

SCALE: 3/4" = 1'-0"
FILE: 07-080-201

GENERAL NOTES:

1. RECONNECT EXISTING GROUNDING CONNECTIONS.
2. SPLICE THE 120V CIRCUIT IN THE MCC WIREWAY AS REQUIRED TO SUPPLY THE LOADS INDICATED ON THE ROCKWELL AS-BUILT DRAWINGS.
3. PROVIDE A SIGN INDICATING A SPLICE AT EACH LOCATION WHERE A SPLICE IS MADE.
4. PROVIDE A LABEL FOR EACH BUCKET THAT IS FED FROM THE PANELBOARD INDICATING IT HAS MORE THAN ONE SOURCE OF POWER AND IDENTIFIES THE POWER SOURCE. (1)

KEY NOTES:

1. CAP THE CONDUITS LEFT EXPOSED BY THE DEMOLITION OF THE EXISTING RW-MCC-C SECTION 1.
2. LIGHTING PANEL LRW-A IS LOCATED ON LOWER LEVEL AND IS NOT SHOWN. UTILIZE EXISTING SPARE CONDUIT SHOWN ON D-17E-02 FOR P4119 WIRE ROUTING FROM RW-MCC-C AND CONTINUE TO LIGHTING PANEL LRW-A ON FIRST FLOOR. (1)

REV	DATE	BY	DESCRIPTION
1	05/05/26	MME	ADDENDUM 1

DESIGNED CAC
DRAWN TLM
CHECKED JGB
DATE MARCH 2026

REGISTERED PROFESSIONAL ENGINEER
No. 366286
CHRISTOPHER A CARVALHO
STATE OF UTAH

carollo

South Valley
WATER RECLAMATION FACILITY
7495 South 1300 West
West Jordan, Utah 84084

SOUTH VALLEY WATER RECLAMATION
MCC REPLACEMENT PROJECT
ELECTRICAL
RAS/WAS BUILDING #2 UPPER LEVEL CONSTRUCTION PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 202633
DRAWING NO. 17E-01
SHEET NO. 140 OF 152

LAST SAVED BY: TMorabito

PROJECT NO. 202633-100000 FILE NAME: 17E-01.dwg