



**ADDENDUM NO. 2
LIFT STATION 15 VFD & POWER IMPROVEMENTS O.F 1817.1
GREAT FALLS, MT**

KLJ PROJECT # 2304-01761

BID DATE: August 20, 2025

BID TIME: 9:45 AM Local Time

LOCATION: Gibson Conference Room, Great Falls Civic Center

This addendum is written for the purpose of clarification and/or modifications to the Contract Documents. Acknowledgement of Addenda shall be completed with the project bidding.

The following changes and/or clarifications shall be made to and become part of the project plans and specifications.

General

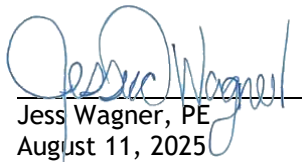
1. See attached pre-bid meeting minutes for additional information pertaining to the project.
2. Responses to additional questions
 - a. Q: Where do the conduit and wiring for lights need to be replaced?
A: Conduit and wiring will be replaced in the wet well area. Conduit and wiring in the dry areas of the lift station will be reused.
 - b. Q: What are the responsibilities for the Electrical contractor with regards to the VFD furnish, installation, program and setup?
A: Electrical Contractor is responsible for the furnishing, installation and setup. Veolia will be responsible for the programing.
 - c. Q: Is the conduit running between the building and the transformer direct buried or in a concrete duct bank?
A: The as-built do not indicate that the conduit is located in a duck bank. However, this has not been confirmed.
 - d. Q: What is the duration in which the lift station can be taken off-line?
A: The lift station operators monitored the lift station over the weekend and noted that there was about 20 minutes between pump off and pump on during the nighttime.

Specifications

1. Bid Form - **REMOVE AND REPLACE** Section 00300 Bid Form in the specifications with the 00300R Bid Form included with this Addendum No. 2.
2. Measurement and Payment - **REMOVE AND REPLACE** Measurement and Payment in the specifications with the revised Measurement and Payment (Revised) included with this Addendum No. 2.

Plans

1. Sheet E2 - **REMOVE AND REPLACE** Sheet E4 with Plan Sheet E2R included with Addendum No. 2.
2. Sheet E3 - **REMOVE AND REPLACE** Sheet E3 with Plan Sheet E3R included with Addendum No. 2.
3. Sheet E4 - **REMOVE AND REPLACE** Sheet E4 with Plan Sheet E4R included with Addendum No. 2.
4. Sheet E8 - **REMOVE AND REPLACE** Sheet E8 with Plan Sheet E8R included with Addendum No. 2.



Jess Wagner, PE
August 11, 2025



END OF ADDENDUM NO. 2



Pre-Bid Meeting Minutes

Project: Lift Station 15 VFD's and Power Improvements – O.F. 1817.1

Date: 7/24/2025

Facilitator: Jess Wagner, KLJ

Time: 10:00 AM

Room #: *City Engineering Conference Room (1025 25th Ave NE, Great Falls, MT) followed by a site visit to the LS #15.*

Agenda

1. *Introductions: Introductions were made prior to starting discussion on the agenda items. The attendees were asked to sign the sign-in sheet and it is included with these meeting minutes.*
2. Scope of work:
 - a. **Base Bid:** Furnish and install 3 VFD, one for each of the pump; automatic transfer switch; replace exterior door and doorframe; and replace portion of drainpipe in the building.
 - b. **Alternative Bid A:** Remove and replace existing sluice gates.
 - c. **Alternative Bid B:** Replace lighting within the building.
3. Schedule
 - a. Bid Opening: 9:30 a.m. local time on August 6, 2025
 - i. Received by City Clerk
 1. Civic Center #2 Park Drive, Great Falls, MT Room 204 or
 2. P.O. Box 5021 Great Falls, MT 59403
 - b. Bidder Questions:
 - i. Accepted until 5:00p.m. local time on August 1, 2025
 - ii. Send questions via email to: jessica.wagner@kljeng.com
 - c. Completion: 175 calendar days after NTP
 - i. *City will work with selected Contractor on when they would like the NTP to be issued. Majority of the work is inside the building so that time of year is not as critical. The City would like to complete the project by early next summer when the flows at the lift station increase.*
4. Contracting Requirements – Refer to Contract Documents for full list of requirements.
 - a. Complete bidder's checklist to ensure all requirements have been met prior to submitting a bid. *A copy of the checklist is included in the specification.*
 - b. Original copy of Bid Bond must be completed, signed, and submitted with bid.
 - c. Certificate of Non-Segregated Facilities must be signed and submitted with bid.



- d. Certificate of Compliance with Insurance requirements must be completed, signed, and submitted with bid.
- e. Affidavit of Non Collusion signed and dated.
- f. Project will utilize Montana Prevailing Wage Rates for Heavy Construction Services 2025.
- g. Contractors will be required to submit certified payrolls.
- h. 2-year warranty to be included with project.
- i. Addendum must be acknowledged on bid envelope.
- j. Liquidated Damages: \$1,000/day
- k. Electrical permit will be secured and paid for by the contractor.
 - i. All other permits will be the responsibility of Contractor and will be considered contingent to the project.
 - 1. *It has been confirmed that there is no building permit needed*
 - 2. *It has also been confirmed that a floodplain permit will not be required for this project.*
- l. Contractor shall be responsible for:
 - i. On-site sanitary facilities for construction personnel
 - ii. Protecting public from construction hazards
 - iii. Water pollution control
 - iv. Surface drainage: utilize Stormwater Best Management Practices (BMPs) as defined by EPA to control construction run-off and limit stormwater pollution.
 - v. De-watering
 - vi. Construction water, if required, shall be secured from a hydrant meter and permit. The cost of the permit and water used for construction purposes shall be incidental to the project.
 - vii. Restoration of the site to the existing or better condition than that prior to construction. Contractor shall provide a video of the site conditions to owner/engineer prior to start of construction.
 - viii. Diesel fuel shall be taxed clear fuel as required by state law.
 - ix. Controlling noise per Great Falls Municipal Code, Chapter 8.53.030.
 - x. All construction staking.
 - xi. Construction staging and storage. Staging and storage areas shall be approved by Owner prior to use and restored to the existing or better condition than prior to construction.
- m. Weather shall not shutdown the project unless approved by Owner.



- n. Contractor shall coordinate daily activities with Lift Station operators to avoid conflicts with daily operations.
- o. Technical Specifications
 - i. Follow MPWSS, Seventh Edition, April 2021.
 - 1. Please note the addenda/edits to the MPWSS included in the contract documents.
 - ii. Appendix B: Supplemental Technical Specifications

5. *Additional Comments*

- a. *City can be flexible on timeline*
- b. *No permits required beyond electrical*
- c. *City will provide water meter on hydrant*
- d. *Contractor needs to maintain access for garbage pickup.*
- e. *Access needs to be maintained for the operators in the lift station*
- f. *Contractors invoices will be reviewed and approved monthly*

6. Questions

Below are the questions that were asked during the pre-bid meeting in the conference room, on-site and follow up emails. Responses are also provided in addition to the questions. All changes to the plans and specifications will be included in the addendum and written separate from these meeting minutes.

Q: A question was asked regarding how the pump VFD would be programed. Would they just be used as a soft start or would they be used to turn down the pump speed.

A: The Owner wants the ability to use the VFD for both soft start and pump speed turndown. The conduct and cable schedule has been updated to reflect this change and is included in the addendum.

Q: Who will cover any cost associated with NorthWestern Energy?

A: The City has no agreement with the energy company so any cost will need to be included in the Contractors bid.

Q: Is there a location to connect to a downstream manhole?

A: A connection to a downstream manhole is not feasible due to the distance from the lift station.

Q: Bypass pumping (after the walkthrough we did see that there was a free valve on the sewer manifold that may be used) this brings the question as to where the isolation to the wet well would be located and can the bypass pumps be routed into the building?

A: Yes, there is a location on the effluent side of the pumps that could potentially be used to connect a bypass pump. As for the isolation of the wet well, the pump set levels can be set to maintain a water level in the wet well that is lower than the channel bottom in which the sluice gate



sits. If the Contractor wished the bypass pump piping routed in the building to connect to the existing force main this would need to be coordinated with the operators to ensure that they still can freely move around the lift station.

Q: Are any of the gates usable (per the original plans there was a potential to bypass one side to the other)

A: The north sluice gate is frozen in the closed position and will not open. The south gate is open.

Q: Concrete patch back (measurement and payment was in sft) this may be difficult to quantify due to the potential concrete deterioration that may be encountered once the black water level is reduced and the concrete is exposed to air.

A: A quantity for the concrete patching was included in the measurement and payment spec so that if more is needed it will make it easier to use the miscellaneous bid item. The measurement and payment spec was updated to include minor concrete patching in a measurement of CuFt and the protective coating included in this bid item was updated to a measurement of SqFt. The revised Measurement and Payment Spec will be included in addendum no. 2.

Q: Will the entire wet well need to be lined (on the walk through it appears that the concrete has a lot of Spalding above the effluence line).

A: No, a complete re-coating of the wet well is not in the budget. The sections of the wall that will be disturbed as part of the replacement of the sluice gate and valve operator stem are the only areas that will be painted. An assumed area to be coated is included in the minor concrete patching bid item.

Q: Any indication of the area of the wet well that may be below ground water level and if this will hamper the liner installation due to the concrete being in a perpetual "wet" condition.

A: The protective coatings listed in the specifications are for areas where the concrete will be immersed in and potential H₂S exposure. The manufacturer would be able to give you instructions for prepping the area properly.

Q: Any as-built on the location of the existing service to give us a location for the new tie ins.

A: The as-built that are available are included in the construction documents available at either the City or on the builders exchange.

Q: During the excavation the existing sidewalk is to be removed. Is this considered incidental to the electrical installation? How much concrete will be replaced as the condition of the existing sidewalk is spalled and pitted.

A: A bid item has been added for concrete sidewalk remove and replace. The contractor will be required just to remove and replace the portion of the sidewalk disturbed by the project work.

Q: Is there a location to tie in temporary generator to keep the station up and running in case the transformer connection takes longer than anticipated?



A: The existing generator hookup was dependent on an AFD to soft start the motors. In its current state we would not recommend a generator for across the line amperage draw. A new generator receptacle is being added to the project.

Q: Is Confined Space for wet well needed?

A: Because this wet well has stairs, fans, lighting, and railing they did not believe a confined space plan and watch were needed. However, this is up to the Contractor as to what they want to require for their employees. We would request, at minimum, that contractors have H2S monitors for safety.

Q: Do we have the average minimum and maximum KW's so contractor can be sure to have the appropriate emergency generator.

A: There is no hookup available at the lift station to connect an emergency generator. The installation of a new generator receptacle has been added to the project.

Q: Do we have record drawings of the transformer pad and as builds for current electrical routing?

A: The as-built that are available are included in the construction documents available at either the City or on the builders exchange.

7. Walk-Through



LIFT STATION 15 VFD & POWER IMPROVEMENTS – O.F. 1817.1

GREAT FALLS, MT

KLJ Project #: 2304-01761

July 24, 2025 @ 10:00 AM

| Printed Name | Company | Email |
|------------------|------------------------------|-----------------------------------|
| Kevin Brassfield | Townsend controls & electric | |
| Seth Fairbanks | TCE | Seth@townsendcontrols.com |
| Mate Selweiner | Third Element | MateS@3Econtrols.com |
| Lee VanDerBerg | Contract's Elec | Lee.VanDerBerg@Contract'sElec.com |
| Brian Reid | Loenbro | briede@loenbro.com |
| Curtis Besch | Loenbro | cbesch@loenbro.com |
| Michael Skinner | Loenbro | mskinner@loenbro.com |
| Calob Murguiz | CogF | cmurguiz@greatfallsmt.gov |
| Colton Fatz | Woodsouth Builders | colton@woodsouthbuilders.com |
| Sean Rabe | KLT | sean.rabe@klteng.com |
| Joe Fayden | Veolia | joseph.fayden@veolia.com |
| COREY J MATTHEWS | Veolia | COREY.MATTHEWS@veolia.com |
| Jesse Patton | CogF | JPATTON@GREATFALLSMT.NET |

Nick Geranios

GERANIOS ENTERPRISES INC

NICK@G-E-INC.COM

(406) 727-3430

406-870-1208

SECTION 00300R

BID FORM

PROJECT IDENTIFICATION:

LIFT STATION 15 VFD & POWER IMPROVEMENTS

(Name of Project)

810 10th Avenue SW Great Falls, MT

(Location)

THIS BID SUBMITTED TO:

City Clerk
#2 Park Drive, Room 204
P.O. Box 5021
Great Falls, MT 59403

1.01 The undersigned Bidder proposes and agrees if this Bid is accepted, to enter into an Agreement with the City in the form included in the Bidding Documents. Bidder further proposes and agrees, to perform and furnish all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the terms and conditions of the Bidding Documents.

2.01 Bidder accepts all of the terms and condition of the Advertisement or Invitation to Bid, and Instruction to Bidders, including without limitations those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for sixty (60) days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of the City.

3.01 In submitting this Bid, Bidder represents, as set forth in the Agreement, that:

A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of all which is hereby acknowledged the following Addenda:

Addendum No.

Addendum Date

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. Bidder has carefully studied all (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have

been identified in the Special Provisions, and (2) reports and drawings of a Hazard Environmental Condition, if any, which has been identified in the Special Provisions;

E. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto;

F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;

G. Bidder is aware of the general nature of the Work to be performed by the City and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

I. Bidder has given the City Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by the City Engineer is acceptable to Bidder; and

J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

4.01 Bidder further represents that this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation. Bidder further represent that Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over the City.

The BIDDER certifies that no official of the City, the City Engineer, or any member of such officials' immediate family, has direct or indirect interest in the pecuniary profits or Contracts of the BIDDER.

5.01 The Bidder will complete the Work in accordance with the Contract Documents for the following prices(s):

GREAT FALLS LIFT STATION NO. 15 VFD & POWER IMPROVEMENTS

BASE BID: ELECTRICAL SWITCHES AND VFDS

| ITEM | DESCRIPTION | EST. QUANTITY | UNIT | UNIT PRICE (\$) | TOTAL PRICE (\$) |
|------|--|------------------|------|--------------------|---------------------|
| 101 | Mobilization | 1 | LS | _____ | _____ |
| 102 | Door Removal and Replacement | 1 | LS | _____ | _____ |
| 103 | Bypass Pumping | 1 | LS | _____ | _____ |
| 104 | Floor Drain Removal and Replacement | 1 | LS | _____ | _____ |
| 105 | Electrical Removals and MCC Modifications | 1 | LS | _____ | _____ |
| 106 | Variable Frequency Drive | 3 | EA | _____ | _____ |
| 107 | Automatic Transfer Switch | 1 | EA | _____ | _____ |
| 108 | Fused Disconnect Switch | 3 | EA | _____ | _____ |
| 109 | Manual Transfer Switch w/Generator Receptacle | 1 | EA | _____ | _____ |
| 110 | Utility Metering and Coordination | 1 | LS | _____ | _____ |
| 111 | 2" PVC | 1 | LS | _____ | _____ |
| 112 | 2" RMC | 1 | LS | _____ | _____ |
| 113 | 4" PVC | 1 | LS | _____ | _____ |
| 114 | 4" RMC | 1 | LS | _____ | _____ |
| 115 | 1/C#10 AWG CU THWN2 | 1 | LS | _____ | _____ |
| 116 | 1/C#6 MCM CU RHW2 | 1 | LS | _____ | _____ |
| 117 | 1/C#1/0 AWG CU GRD (INS./BARE) | 1 | LS | _____ | _____ |
| 118 | 3/C#2 AWG CU, #6G TC-ER | 1 | LS | _____ | _____ |
| 119 | 1/C#350MCM CU RHW2 | 1 | LS | _____ | _____ |
| 120 | Trench Excavation, Backfill, Compaction | 25 | LF | _____ | _____ |
| 121 | 4" Concrete Sidewalk Remove and Replace | 20 | LF | _____ | _____ |
| 122 | VFD Startup and Training Manual | 1 | LS | _____ | _____ |
| 123 | Miscellaneous Work | 50,000 | EA | <u>\$ 1.00</u> | <u>\$ 50,000.00</u> |

BASE BID: TOTAL AMOUNT ITEMS 101–123 \$ _____

(Words)

Bid selection will be based on the Base Bid Price but to be considered a responsive bidder, the bidder shall provide unit prices for the Base Bid and Alternate Bid A and Alternate Bid B. Alternate Bid A and/or Alternate Bid B may be added to the Contract, at the Owner's discretion, if funds are available.

ALTERNATE BID A: REPLACE SLUICE GATE

| ITEM | DESCRIPTION | EST. QUANTITY | UNIT | UNIT PRICE (\$) | TOTAL PRICE (\$) |
|------|-------------------------------------|------------------|------|--------------------|---------------------|
| 201 | Mobilization | 1 | LS | _____ | _____ |
| 202 | Sluice Gate Removal and Replacement | 2 | EA | _____ | _____ |
| 203 | Minor Concrete Patching | 2 | EA | _____ | _____ |
| 204 | Bypass Pumping | 1 | EA | _____ | _____ |
| 205 | Miscellaneous Work | 50,000 | EA | <u>\$ 1.00</u> | <u>\$ 50,000.00</u> |

ALTERNATE BID A: TOTAL AMOUNT ITEMS 201–205 \$ _____

(Words)

ALTERNATE BID B: REPLACE LIGHTING

| ITEM | DESCRIPTION | EST. QUANTITY | UNIT | UNIT PRICE (\$) | TOTAL PRICE (\$) |
|------|--|------------------|------|--------------------|---------------------|
| 301 | Mobilization | 1 | LS | _____ | _____ |
| 302 | Explosion Proof Luminaire | 18 | EA | _____ | _____ |
| 303 | Industrial LED | 21 | EA | _____ | _____ |
| 304 | Emergency LED | 8 | EA | _____ | _____ |
| 305 | Wall Pack LED | 4 | EA | _____ | _____ |
| 306 | 1" RMC | 1 | LS | _____ | _____ |
| 307 | 1/C#10 AWG CU THWN2 | 1 | LS | _____ | _____ |
| 308 | L1 Lighting Panel, Transformer, Circuit Breaker | 1 | LS | _____ | _____ |
| 309 | Miscellaneous Work | 20,000 | LS | <u>\$ 1.00</u> | <u>\$ 20,000.00</u> |

ALTERNATE BID B: TOTAL AMOUNT ITEMS 301–309 \$ _____

(Words)

A. Unit Prices have been computed in accordance with the Instructions to Bidders;

B. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents;

C. The undersigned agrees that the unit prices shall govern in checking the Bid, and should a discrepancy exist in the Total Estimated Price and Total Amount of Unit Prices Bid as listed above after extensions are checked and corrections made, if any, the Total Amount of Unit Prices Bid as corrected shall be used in awarding this Contract; and

D. The City reserves the right to reject any or all bids.

6.01 Bidder agrees that the Work will be completed and ready for final payment in accordance with the Construction Agreement or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified above, which shall be stated in the Agreement.

7.01 The following documents are attached to and made a condition of the Bid:

A. Required Bid security in the amount of 10% of the maximum Bid price including alternates, if any, and in the form of a Bid Bond identified in the Instructions To Bidders.

8.01 The terms used in this Bid with the initial capital letters have the meanings indicated in the Instructions To Bidders.

SUBMITTED on _____, _____
(Date)

Montana Contractor's Registration # (if any) _____.

Employer's Tax ID No. _____.

If BIDDER is:

An Individual: _____
(Name typed or printed)

By: _____
(Individual's Signature)

Doing business as: _____

Business Address: _____

Phone No.: _____ FAX No.: _____

A Partnership: _____
(Partnership Name)

By: _____
(Name, typed or printed)
(Signature) _____

Business Address: _____

Phone No.: _____ FAX No.: _____

A Corporation: _____
(Corporation Name)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature of person authorized to sign)

Title: _____

Attest: _____
(Signature)

Business Address: _____

Phone No.: _____ FAX No.: _____

Date of Qualification To Do Business Is: _____

(Corporate Seal)

A Joint Venture: Each Joint Venturer Must Sign

Joint Venturer Name: _____
(Name)

By: _____
(Signature of Joint Venture Partner)

Name: _____
(Name, printed or typed)

Title: _____

Business Address: _____

Phone No.: _____ FAX No.: _____

Joint Venturer Name: _____
(Name)

By: _____
(Signature of Joint Venture Partner)

Name: _____
(Name, printed or typed)

Title: _____

Business Address: _____

Phone No.: _____ FAX No.: _____

Address of Joint Venturer for Receipt of Official Communication:

Address: _____

Phone No.: _____ FAX No.: _____

(Each Joint Venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

END OF SECTION 00300

MEASUREMENT AND PAYMENT (REVISED)

The **Measurement and Payment** section of this document and **Special Provision SP-18, Incidental Pay Items**, supersede PART 4 MEASUREMENT AND PAYMENT contained in each MPWSS specification section.

SCOPE: The following description of work, measurement of pay quantity, and method of payment shall govern payment to Contractor under this Contract. Payment for these items shall be full compensation for the completed item of work furnished and installed, and the cost of any incidental work or materials required to complete the item. No additional payment will be made for materials purchased and not installed as a result of field adjustments in field quantities versus Bid Form.

- 101; 201; 301 Mobilization 5% Max:** Measurement shall be made at the contract Lump Sum price for "Mobilization". Payment will be made at 50% of the contract unit Lump Sum price at the beginning of project and the remaining 50% will be paid at the end of the project. Payment for this item shall include all costs related to general contract requirements, administration, and overhead and shall be merged and included in the contract lump sum price for "Mobilization". The cost of all bonds, insurance, permits, licenses, safety, fees, royalties and taxes; purchasing permits and licenses, temporary electric and telephone service, utility location, shop drawings and samples, general administration and overhead, movement of equipment, tools, and workmen, as necessary, and other incidental work required for occupying the site and performing the work shall be merged and included in the contract lump sum price for "Mobilization". **The contract price for "Mobilization" shall not exceed five (5) percent of the total bid and shall not include any anticipated profit.** Anticipated profit shall be distributed proportionately among the various contract bid items. Any bids that contain a lump sum price for mobilization greater than five percent of the bid shall be reduced in price to the five percent limit without adding costs to other bid items or rejected at the option of the Owner.
- 102. Door Removal and Replacement:** Measurement shall be made at the contract Each price for Door Removal and Replacement. Payment will be made at the contract Each price for removal and replacement of the door and door frame as specified in the construction plan sheets. Payment will be made at the contract unit price per Each and includes the following work: removal and disposal of existing door and frame; supply new door and frame; placing new door and frame; painting of door and all other work necessary for completion of the item.
- 103; 204 Bypass Pumping:** Measurement shall be made as a contract Lump Sum price for bypass pumping for the duration of time in which the lift station is shut down for project work. Payment will be made at the contract Lump Sum price for installing a temporary bypass to maintain uninterrupted sewer service as required during the lift station project work. All costs in connection with the work, including furnishing all materials, pipe, fittings, pumps, equipment, traffic control, supplies and appurtenances; and performing all necessary labor and supervision to fully complete the Work, shall be included in a Lump Sum price bid.
- 104. Floor Drain Removal and Replacement:** Measurement shall be made as a contract Lump Sum unit price for the Floor Drain Removal and Replacement. Payment will be made at the contract Lump Sum price for removal and replacement of PVC drain pipe, 2-90 degree bends and Wye fitting. Payment will be made at the contract unit price per Lump Sum, and includes the following items: piping, fittings, and all other work necessary for completion of the item.

105. **Electrical Removals and MCC Modifications:** Contractor shall coordinate with the owner and electrical utility on outages in order to deenergize power for electrical removals. Outages will be required to be approved by the owner/engineer 2 weeks in advance and will be required to be taken during seasonal and daily low flow times of operation which may be outside standard hours of operation. Contractor will be responsible to monitor the system for changes and return the station to normal operations if required.

The Electrical Contractor will be required to make modifications to the MCC. The existing motor starters and overload relays in MCC bucket 4, 5, and 6 will be removed and replaced by the new VFDs and motor saver relays. The cost of these relays shall be included in the bid item. The terminal block and associated wiring in bucket 6 should also be removed along with the existing VFD, reactor, and filter located on the west wall. The existing emergency main breaker, and controls shall be covered and decommissioned. A surge protective device will be installed on the existing MCC and shall be included as part of this bid item. Contractor shall stockpile and salvage items to the owner. At the end of the project contractor shall remove and dispose of any items that remain.

Measurement shall be made on a Lump Sum basis for all items being completed. This shall include all costs in connection with the work, including furnishing all materials, equipment, supplies and appurtenances; providing all equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in this item. Required Control Wiring, and coordination will not be awarded separate payment and shall be considered incidental to this item.

Payment will be made at the contract unit price per Lump Sum, and includes the following items: Coordination, Removals, Motor Saver Installation, and Surge Protector Installation.

106. **Variable Frequency Drive:** Measurement shall be made at the contract price for Each Variable Frequency Drive. The Each price shall cover all work shown on the Construction Drawings and required by the specifications and other Contract Documents. Measurement shall be made by the Each in-place. Payment will be made at the contract unit price per Each and includes the following items: furnish and install variable frequency drive, control wiring, conduit, and mounting and labor. All costs in connection with the work, including furnishing all materials, equipment, supplies and appurtenances; providing all equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in each bid. Required Control Wiring will not be awarded separate payment and shall be considered incidental to the VFD installation.

107. **Automatic Transfer Switch:** Measurement shall be made at the contract price for Each Automatic Transfer Switch. The Each price shall cover all work shown on the Construction Drawings and required by the specifications and other Contract Documents. Measurement shall be made by the Each in-place. Payment will be made at the contract unit price per Each and includes the following items: furnish and install Automatic Transfer Switch, Coordination with the Owner/Engineer on potential outages, conduit risers, conduit fittings, connections, fuses, internal wiring, grounding, control wiring, accessories, mounting, testing, and labor. All costs in connection with the work, including furnishing all materials, equipment, supplies and appurtenances; providing all equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in this bid item.

108. **Fused Disconnect Switch:** Measurement shall be made at the contract price for Each Fused Disconnect Switch. The Each price shall cover all work shown on the Construction Drawings and required by the specifications and other Contract Documents. Measurement shall be made by the

Each in-place. Payment will be made at the contract unit price per Each and includes the following items: furnish and install Fused Disconnect Switch, Electrical Utility Coordination, Coordination with the Owner/Engineer on outages, conduit risers, conduit fittings, connections, fuses, grounding and bonding wires, exothermic welds to existing ground ring, ground rods, mounting and labor. All costs in connection with the work, including furnishing all materials, equipment, supplies and appurtenances; providing all equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in this bid item.

109. **Manual Transfer Switch w/ Generator Receptacle:** Measurement shall be made at the contract price for Each Manual Transfer Switch and generator receptacle. The Each price shall cover all work shown on the Construction Drawings and required by the specifications and other Contract Documents. Measurement shall be made by the Each in-place. Payment will be made at the contract unit price per Each and includes the following items: furnish and install manual Transfer Switch and generator receptacle, Coordination with the Owner/Engineer on potential outages, conduit risers, conduit fittings, connections, fuses, internal wiring, grounding, control wiring, accessories, mounting, testing, and labor. All costs in connection with the work, including furnishing all materials, equipment, supplies and appurtenances; providing all equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in this bid item.
110. **Utility Metering and Coordination** Measurement for this Lump Sum item will be made at the contract Lump Sum price for all coordination and installation. The price shall cover all work shown on the Construction Drawings and required by the specifications and other Contract Documents. This bid item shall include coordination with the owner and electrical utility on outages in order to de-energize power for electrical removals. Coordination with the utility on the installation of a new utility supplied transformer, coordination with the utility on the installation of service entrance cables from the transformer to the fused disconnect switch, Meter Sockets, conduit for the meter loop, conduit risers, conduit fittings, grounding and bonding, mounting of utility instrument cabinets and labor.

Outages will be required to be approved by the owner/engineer 2 weeks in advance and will be required to be taken during seasonal and daily low flow times of operation which may be outside standard hours of operation. Contractor will be expected to update the system in a manner that minimizes outages. Contractor will be responsible to monitor the system for changes and return the station to normal operations if required.

Payment will be made at a Lump Sum price for all items in this bid item being completed and accepted by the owner/engineer. This shall include all costs in connection with the work, including furnishing all materials, equipment, supplies and appurtenances; providing all equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in this bid item.

- 111-114; 306 **Conduit:** Underground conduits and duct banks shall be measured by the lump sum basis for conduits and duct banks installed, including encasement, locator tape, labelling, all measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes. Conduit adapters, fittings, and conduit seals shall be included in this bid item. Labor and other items associated with the trench of the duct shall be included in the Trench, Excavation, Backfill, and Compaction.

Payment will be made at the contract unit price per lump sum for each type and size of conduit or duct bank completed and accepted, including trench and backfill with the designated

material, and, for drain lines, the termination at the drainage structure. This price shall be full compensation for removal and disposal of existing duct banks and conduits as shown on the plans, furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications.

- 115-119; 307 Cable:** Cables, wires, and conductors shall be measured by the lump sum of cables, wires, and conductors installed, including pulling, terminations, and energization all measured in place, completed, and accepted.

Separate payment will not be made for ground rods, ground wells, connectors, splices, exothermic welds, or labelling. The cost of all excavation, backfill, dewatering and restoration regardless of the type of material encountered shall be included in the unit price bid for the work when a direct buried cables, wires, or conductors is required. When existing cable are present in a duct bank or conduit, additional payment will not be made for removal and salvage of the cables, wires, and/or conductors.

The measurement for this item shall include additional quantities required for slack and an additional 10% has been factored into the bid quantities. Adjustments to the final unit total, will be the length of cables, wires, and conductors installed. Separate measurement shall be made for each cable, wire, or conductor installed in trench, duct bank or conduit.

Payment will be made at the contract unit price for cable, wires, and conductors installed in trench (direct-buried), or cable and equipment ground installed in duct bank or conduit, in place by the Contractor and accepted by the owner/engineer. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals, including ground rods and ground connectors and trench marking tape, labelling, necessary to complete this item.

- 120. Trench Excavation. Backfill. Compaction:** shall be measured by the linear feet of all trenches measured in place, completed, and accepted. Payment is based on a max width of trench of 10 feet. This item shall include all excavation, backfill, compaction, dewatering, and restoration regardless of the type of material encountered. Contractor is responsible for any and all damages caused either veridantly or inadvertently caused due to the trench excavation, backfill, and compaction. Payment will be made at the contract unit price per linear foot measured for trenches completed and accepted, including trench and backfill with the designated material. This price shall be full compensation, for all preparation, labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications.
- 121. 4" Concrete Sidewalk Remove and Replace:** Measurement shall be made by the linear feet. Payment will be made at the contract unit price per linear feet and includes the following items: removal and disposal of all existing sidewalk materials; excavation and disposal; saw cutting; compacting subgrade; backfill; furnishing, placing, and compacting 3- inches of 1½-inch minus crushed base course; furnishing, placing, finishing, and curing of 4- inch thick concrete sidewalk; dowels; pre-molded mastic expansion joints; contraction joints; backfilling behind sidewalk as necessary; cleanup; and all other work necessary for completion of the item
- 122. VFD Startup and Training Manual:** Measurement of control system upgrades is made on a lump sum basis. The lump bid price shall cover all work shown on the Construction Drawings and required by the specifications and other Contract Documents to complete the installation of the VFD. Measurement shall be made by the Lump Sum in-place. Payment will be made at the contract

unit price per Lump Sum and includes the following items: phone support, wiring review, programming of the VFDs and PLC, startup, travel, labor, and cost of VFD programming Training manual. All costs in connection with the work, including furnishing all materials, supplies and appurtenances; providing all equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in a lump sum price bid. All work not specifically described in the project manual shall be considered a subsidiary obligation of Contractor and all costs in connection therewith shall be included in the lump sum bid.

123; 205; 309 Miscellaneous Work: Measurement shall be made at the contract unit price of \$1.00 for miscellaneous unforeseen work that occurs during construction. Work shall include any additional work that is directed by and approved by the Owner. All work shall be approved by the Owner in writing prior to the commencement of miscellaneous work. Payment will be made at the contract unit price of \$1.00 per unit to a maximum as shown on the bid form for the Base Bid, Alternative Bid A and Alternative Bid B.

202. Sluice Gate Removal and Replacement: Measurement shall be made at the contract Each price for the Sluice Gate Removal and Replacement. Work shall include removing existing frame, yoke, cover slide, wall thimbles, stems, all fasteners, and anchor bolts. Replacement of these items in accordance with ASTM standards specified in specifications. Included in this payment item is water control to ensure one side of the channel remains operational during construction. Measurement shall be made by the Each in place. Payment will be made at the contract unit price per Each and includes the following items: furnishing and installing gates, operator, and all other work necessary for completion of the item.

203. Minor Concrete Patching: Measurement shall be made at the contract Each unit price for minor concrete patching necessary as a result of the removal of the sluice gate. This shall include minor concrete patch repairs, surface preparation and protective coating. The concrete volume required for patching is assumed to be 16 cubic feet. The area assumed for application of a protective coating is 50 square feet. Payment will be made at the contract unit price per Each and includes the following items: supplying the materials and prep work required to repair existing concrete. Repairs shall be completed to provide a solid surface to adhere the new sluice gates onto. This shall include applying a protective coating to the finished concrete surface left exposed following completion of the sluice gate and minor concrete patching work.

302-305 Luminaire: Payment will be made at the Contract Each price for each complete explosion proof luminaire, Industrial LED, Emergency LED, Outdoor Lighting installed by the Contractor and accepted by the owner/engineer. Removal of unusable existing electrical equipment and localized electrical wiring needed for the improvements as well as switches and occupancy sensors shall be included in this item and will not be awarded separate payment. Conduit and homerun wiring may be paid for under conduit and cable installation bid items. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

Payment will be made at the Contract unit price for Each type of luminaire installed by the Contractor and accepted by the owner/engineer. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

308. **L1 Lighting Panel, Transformer, Circuit Breaker:** Payment will be made on a lump sum basis for L1 lighting panel, transformer and circuit breaker installed by the Contractor and accepted by the owner/engineer. Removal of unusable existing electrical equipment. Work shall include replacement of existing lighting panel service, circuit breaker, cable and conduit as needed, transformer and installation of a new panel. Refer to Plan Sheet E2 Note 10 for details. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

END OF SECTION



| REVISION | DATE | NO. |
|----------|------------|-----|
| 1 | 08/11/2025 | 1 |

| | |
|----------------|------------|
| DRAFTED | TJC |
| REVIEWED | DD |
| PROJECT NUMBER | 2304-01761 |
| ISSUE DATE | 08/11/2025 |

LIFT STATION 15 VFD & POWER IMPROVEMENTS
THE CITY OF GREAT FALLS
GREAT FALLS, MONTANA
ONE LINE DIAGRAM

SHEET
E2R

GENERAL NOTES:

FIELD VERIFY THE EXACT LOCATION OF EXISTING UNDERGROUND UTILITIES BEFORE COMMENCING WORK. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

COORDINATE WITH THE UTILITY ON NEW CABLE INSTALLATION, TRANSFORMER REPLACEMENT, METERING, AND UTILITY DISCONNECTS.

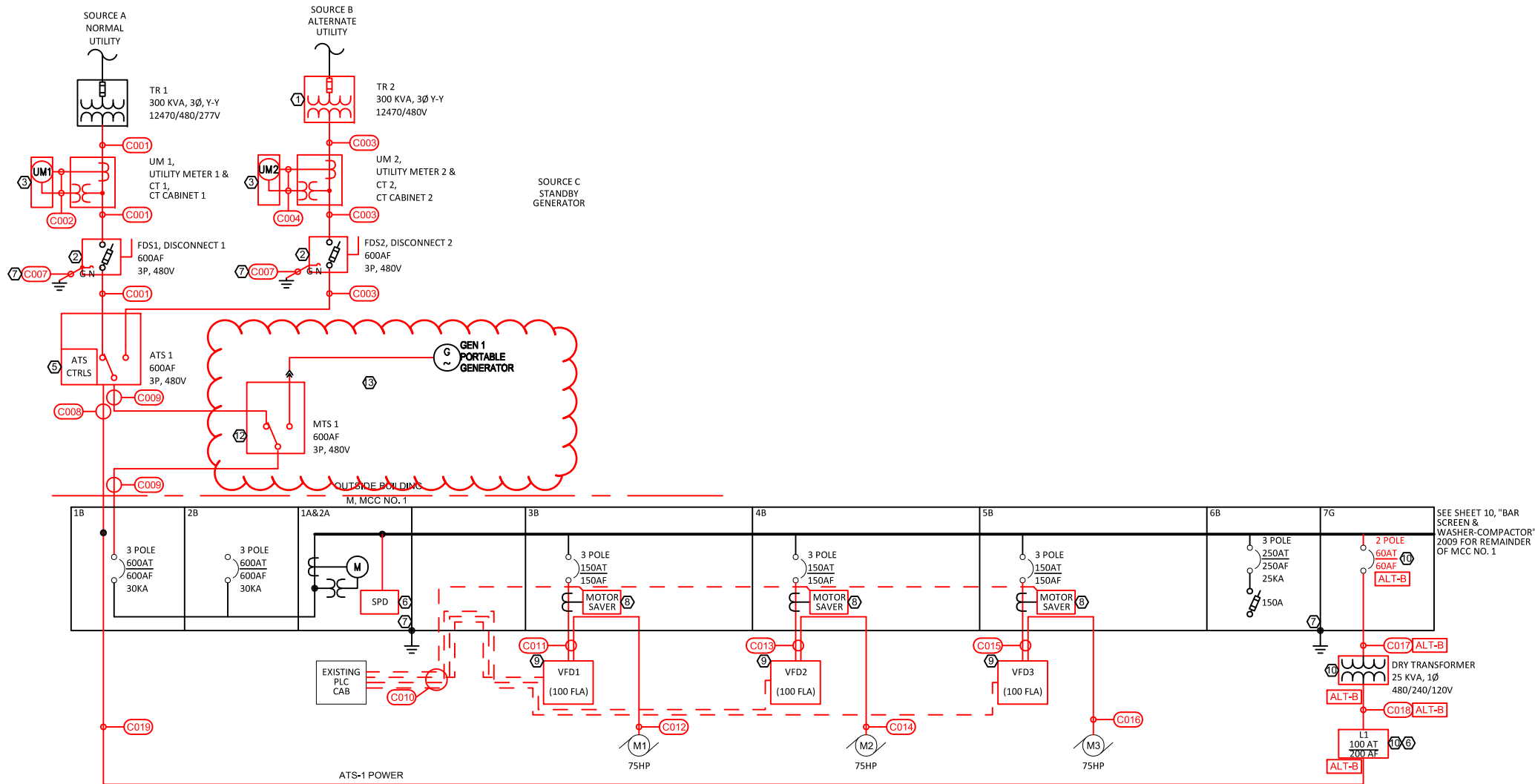
THE ELECTRICAL UTILITY SERVING THE SITE IS: NORTHWEST ENERGY. CONTACT: TAYLOR DAVIS, PHONE: EMAIL: TAYLOR.DAVIS@NORTHWESTERN.COM

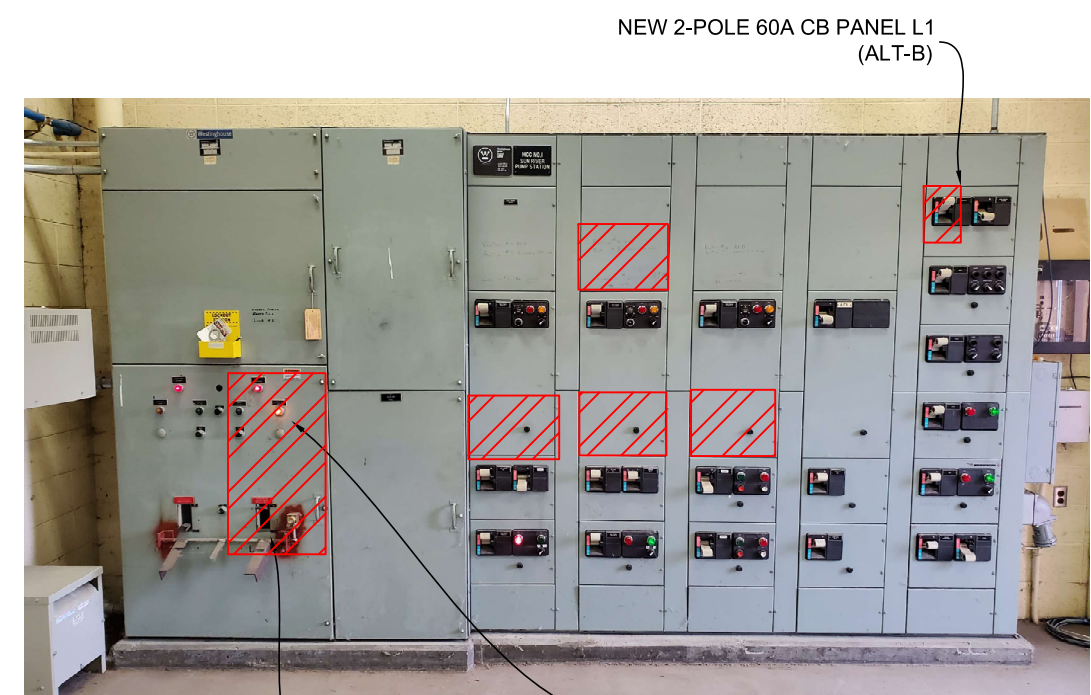
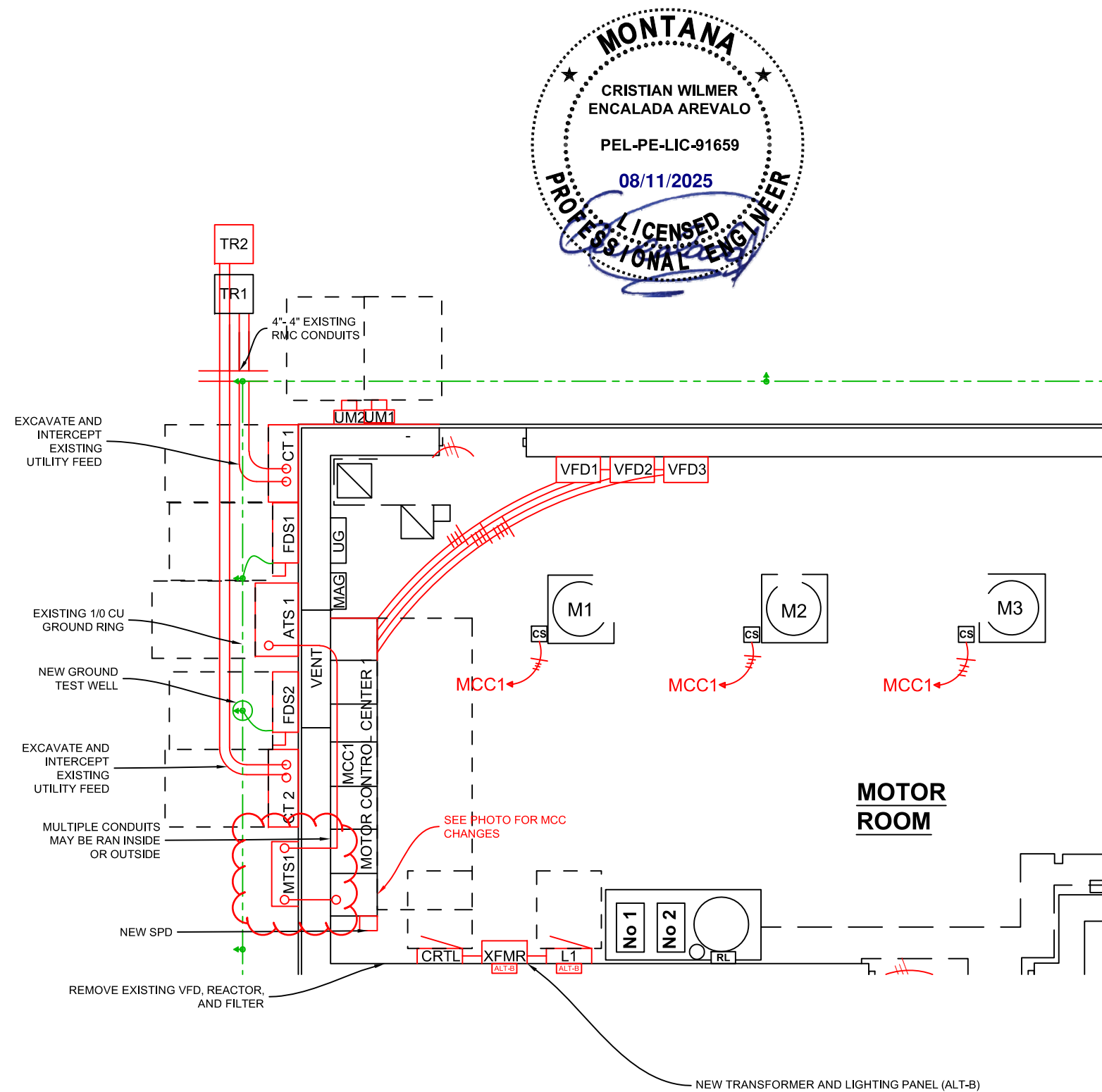
NEW EQUIPMENT SHOWN IN RED, EXISTING EQUIPMENT SHOWN IN BLACK.

PUMP CONTROLS TO BE INTERLOCKED TO ALLOW A MAXIMUM OF ONE PUMP TO RUN WHILE ON GENERATOR POWER.

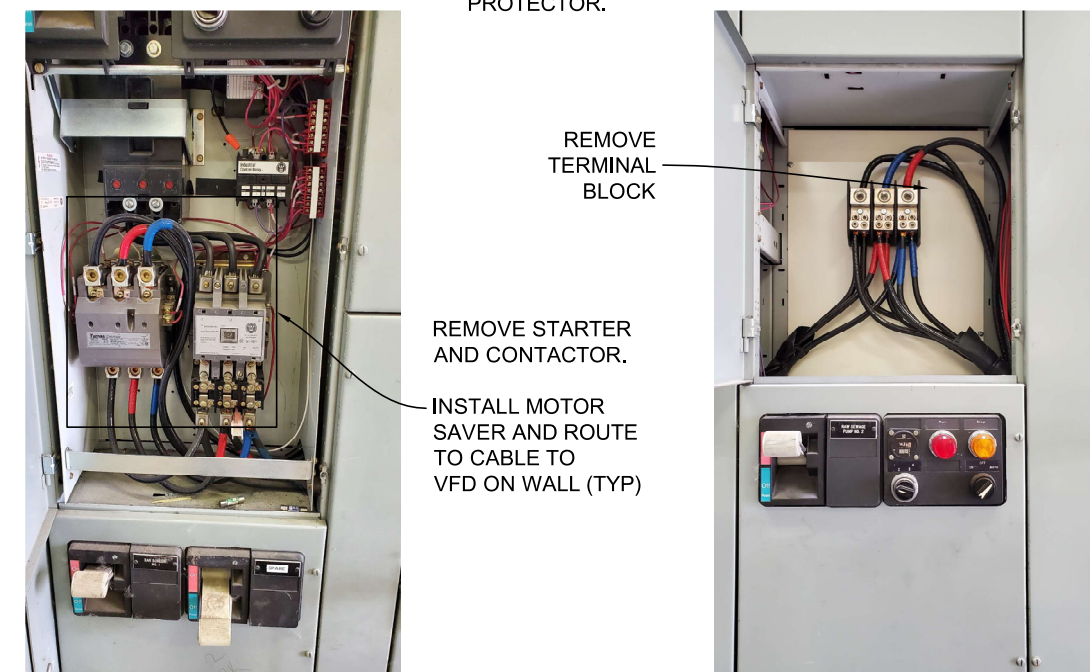
KEY NOTES:

- UTILITY TO REMOVE EXISTING DELTA SECONDARY TRANSFORMER AND INSTALL WYE/WYE CONNECTED TRANSFORMER.
- INSTALL FUSED DISCONNECT SWITCH AND CONDUIT.
- INSTALL 3Ø INSTRUMENT RATED UTILITY METER SOCKET, CONDUIT, AND 36 INCH CT CABINET. UTILITY TO PROVIDE METER, CURRENT TRANSFORMERS, AND SECONDARY CABLES TO ATS1.
- NOT USED
- REFER TO SPECIFICATION SECTION 26 00 00 - GENERAL ELECTRICAL REQUIREMENT FOR AUTOMATIC TRANSFER SWITCH DETAILS
- INSTALL SURGE PROTECTIVE DEVICE PER SPECIFICATIONS.
- INSTALL #1/0 AWG TINNED COPPER GROUNDING ELECTRODE CONDUCTOR FROM EACH FDS TO GROUND RING. GROUND TO NEUTRAL CONNECTIONS ARE TO BE REMOVED ON ALL OTHER EQUIPMENT.
- REMOVE EXISTING CONTACTOR AND OVERLOAD AND INSTALL LITTLEFUSE MOTOR AND PUMP PROTECTION RELAY 777-ACCUPOWER WITH 100:5 CURRENT TRANSFORMERS.
- INSTALL VARIABLE FREQUENCY DRIVES PER SPECIFICATION 26 2923 INCLUDING PROGRAMMING AND MANUAL.
- FOR ALTERNATE BID B, REPLACE EXISTING LIGHTING PANEL SERVICE WITH 2-POLE 60A, 20KA CIRCUIT BREAKER, NEW CABLE, CONDUIT AS REQUIRED, 25KVA TRANSFORMER, AND NEW PANEL.
- INSTALL LOCKS ON ELECTRICAL BOXES, SMOOTH ANY SHARP EDGES ON SURFACES.
- INSTALL 600A MANUAL TRANSFER SWITCH. (POWER ASSEMBLIES PWA-MTS-06XE-5 OR EQUAL.)
- GENERATOR RECEPTACLE SHALL BE OUTDOOR RATED (NEMA 3R) AS MANUFACTURED BY APPLINGTON OR APPROVED EQUAL.





COVER EMERGENCY SOURCE CIRCUIT BREAKER. INSTALL SURGE PROTECTOR.

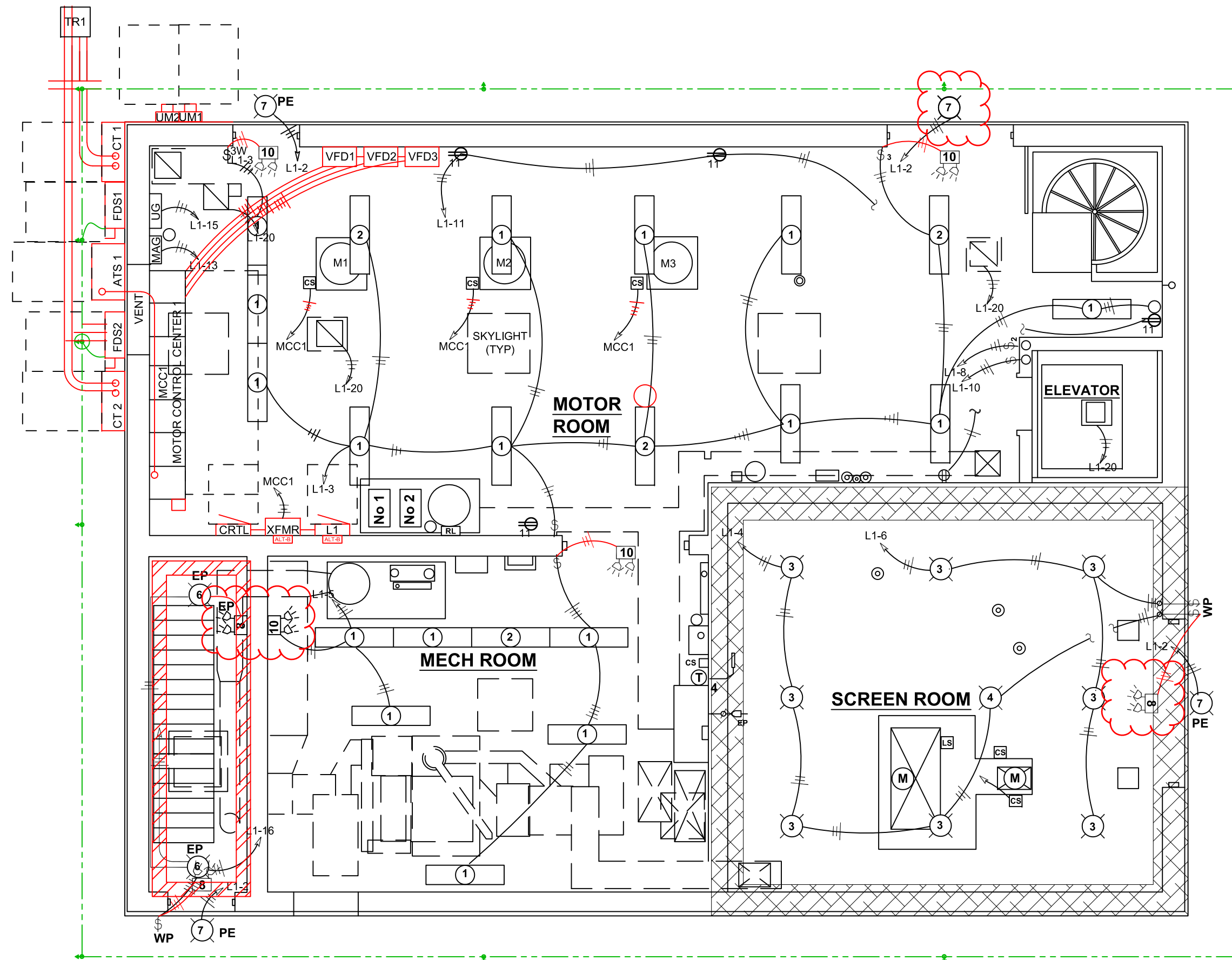


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| NO. | DATE | REVISION |
| 1 | 08/11/2025 | Addendum No. 2 |
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| DRAFTED TJC | | |
| REVIEWED DMD | | |
| PROJECT NUMBER 2304-01761 | | |
| ISSUE DATE 08/11/2025 | | |

15 VFD & POWER IMPROVEMENTS

THE CITY OF GREAT FALLS GREAT FALLS, MONTANA

MOTOR ROOM POWER PLAN



NOTES:
1: THE CLASSIFICATION IS BASED ON THE BEST UNDERSTANDING OF THE ORIGINAL FACILITY DESIGN PLANS. ACTUAL FIELD INSTALLATION MAY VARY. ANY CONFLICTING AREAS TO BE CONFIRMED WITH THE NEC AND NFPA 820.

| NO. | DATE | REVISION |
|-----|------------|----------------|
| 1 | 08/07/2025 | Addendum No. 2 |

DRAFTED
TJC

REVIEWED
DMD

PROJECT NUMBER
2304-01761

ISSUE DATE
08/07/2025

LIFT STATION 15 VFD & POWER IMPROVEMENTS

THE CITY OF GREAT FALLS
GREAT FALLS, MONTANA

OPERATING FLOOR LIGHTING PLAN

SHEET
E4R

OPERATING FLOOR LIGHTING PLAN (ALT-B)



| LIGHTING SCHEDULE | | | | | | | | | |
|-------------------|------------------------|---------------------------------------|-----------------------------|-------------|------------|--------------------|--------------------|---------------------------|--|
| TAG | MANUFACTURER | MODEL | LAMP TYPE | LUMENS | ENERGY USE | OPTICS | MOUNTING | FINISH | DESCRIPTION |
| 1 | LITHONIA OR EQUAL | CLX-L48-7000LM-RDL-EZ1-40K | LED 4000K COLOR TEMPERATURE | 7000 LUMENS | 45W | NORMAL | 4' CEILING SURFACE | WHITE | 4' INDUSTRIAL STRIP LED LUMINAIRE RATED FOR DAMP LOCATION. INCLUDE ROUND DIFFUSER, AND MOUNTING HARDWARE AS REQUIRED. |
| 2 | LITHONIA OR EQUAL | CLX-L48-7000LM-RDL-EZ1-40K-E10WSTAR | LED 4000K COLOR TEMPERATURE | 7000 LUMENS | 45W | NORMAL | 4' CEILING SURFACE | WHITE | 4' INDUSTRIAL STRIP LED LUMINAIRE RATED FOR DAMP LOCATION WITH BATTERY BACKUP. INCLUDE ROUND DIFFUSER, AND MOUNTING HARDWARE AS REQUIRED. |
| 3 | APPLETON OR EQUAL | MERCMASER MLLED-4-N-BU | LED 4000K COLOR TEMPERATURE | 5150 LUMENS | 50W | NORMAL | CEILING PENDANT | GREY, CORROSION RESISTANT | EXPLOSION PROOF AREA LED FOR CLASS 1, DIVISION 2 HAZARDOUS LOCATIONS. SUITABLE FOR WET LOCATION. REPLACE JUNCTION BOXES AND OR CONDUIT AS REQUIRED FOR CLASSIFICATION. |
| 4 | APPLETON OR EQUAL | MERCMASER LOW PROFILE MLLED-4-N-BU-H | LED 4000K COLOR TEMPERATURE | 5150 LUMENS | 50W | NORMAL | CEILING PENDANT | GREY, CORROSION RESISTANT | EXPLOSION PROOF AREA LED FOR CLASS 1, DIVISION 2 HAZARDOUS LOCATIONS WITH BATTERY BACKUP. SUITABLE FOR WET LOCATION. REPLACE JUNCTION BOXES AND OR CONDUIT AS REQUIRED FOR CLASSIFICATION. |
| 5 | APPLETON OR EQUAL | CODE MASTER CMLED-C-17-D-W-BU | LED 4000K COLOR TEMPERATURE | 7900 LUMENS | 50W | WIDE | CEILING STANCHION | GREY, CORROSION RESISTANT | EXPLOSION PROOF AREA LED FOR CLASS 1, DIVISION 1 HAZARDOUS LOCATIONS. SUITABLE FOR WET LOCATION. REPLACE JUNCTION BOXES AS REQUIRED FOR CLASSIFICATION. |
| 6 | APPLETON OR EQUAL | CODE MASTER CMLED-17-N-G | LED 4000K COLOR TEMPERATURE | 7900 LUMENS | 50W | WIDE | CEILING | GREY, CORROSION RESISTANT | EXPLOSION PROOF AREA LED FOR CLASS 1, DIVISION 1.2 HAZARDOUS LOCATIONS. SUITABLE FOR WET LOCATION. REPLACE JUNCTION BOXES AS REQUIRED FOR CLASSIFICATION. |
| 7 | LITHONIA OR EQUAL | DSXW1-20C-700-40K-TFTM-MVOLT-PE-DOBXD | LED 4000K COLOR TEMPERATURE | 5000 LUMENS | 46W | FORWARD THROW | WALL | DARK BRONZE | OUTDOOR WALL LED LUMINAIRE WITH BUG RATING OF 102 AND PHOTOCELL. PROVIDE MOUNTING HARDWARE AS REQUIRED. |
| 8 | EXIT LIGHT CO OR EQUAL | EXPLOSION PROOF EMR EXIT ELX C1D1 | LED 4000K COLOR TEMPERATURE | 1000 LUMENS | 10W | 2 ADJUSTABLE HEADS | WALL | GREY, CORROSION RESISTANT | EXPLOSION PROOF EMERGENCY LED FOR CLASS 1, DIVISION 1 HAZARDOUS LOCATIONS. SUITABLE FOR WET LOCATION. REPLACE JUNCTION BOXES AS REQUIRED FOR CLASSIFICATION. |
| 9 | EXIT LIGHT CO OR EQUAL | C1D2 EXIT EMER ELX C0C1D2 | LED 4000K COLOR TEMPERATURE | 1000 LUMENS | 10W | 2 ADJUSTABLE HEADS | WALL | WHITE | EMERGENCY LED FOR CLASS 1, DIVISION 2 HAZARDOUS LOCATIONS. SUITABLE FOR WET LOCATION. REPLACE JUNCTION BOXES AS REQUIRED FOR CLASSIFICATION. |
| 10 | EXIT LIGHT CO OR EQUAL | WET LOC EXIT EMER WLFCOMBO-G-W-BB | LED 4000K COLOR TEMPERATURE | 1000 LUMENS | 10W | 2 ADJUSTABLE HEADS | WALL | WHITE | EMERGENCY LED SUITABLE FOR WET LOCATION. INSTALL JUNCTION BOX/CONDUIT AS REQUIRED FOR INSTALLATION. |

| LIGHTING PANEL "L1" PANEL SCHEDULE | | | | | | | | | | | | |
|------------------------------------|---------|--------------|--|------|------|------|-----|------|------|-------|----------------------------|--|
| FED FROM | GND | MB | BUS | SC | Φ | WIRE | SPC | SUSE | NEMA | MOUNT | VOLTAGE | |
| (3) - #2 AWG CU RHW, 2" RMC | #6 CU | 100 | 200 | 10KA | 1 | 3 | 42 | N | 1 | SURF. | 120/240V | |
| CIRCUIT DESCRIPTION | V-A | AMPS | BKR | CKT | WIRE | | CKT | BKR | AMPS | V-A | CIRCUIT DESCRIPTION | |
| LIGHTS CATWALK | 1,298 | 10.8 | 20 | 1 | 12 | 12 | 2 | 20 | 0.2 | 29 | EXTERIOR LIGHTS | |
| LIGHTS MOTOR ROOM | 1,235 | 10.3 | 20 | 3 | 12 | 12 | 4 | 20 | 6.0 | 720 | LIGHTS SCREEN ROOM | |
| LIGHTS MECH. ROOM | 665 | 5.5 | 20 | 5 | 12 | 12 | 6 | 20 | 6.0 | 720 | LIGHTS SCREEN ROOM | |
| RECEPTACLE BASEMENT | 760 | 6.3 | 20G | 7 | 8 | 12 | 8 | 20 | 1.0 | 120 | LIGHTS BASEMENT | |
| RECEPTACLE SCREEN ROOM | 540 | 4.5 | 20G | 9 | 8 | 12 | 10 | 20 | 4.6 | 550 | LIGHTS BASEMENT | |
| RECEPTACLE MOTOR ROOM | 1,120 | 9.3 | 20G | 11 | 8 | 12 | 12 | 20G | 0.1 | 10 | RECEPTACLE MECHANICAL ROOM | |
| MAG. FLOW METERS & I-R-T | 300 | 2.5 | 20 | 13 | 10 | 12 | 14 | 20 | 0.1 | 12 | SPARE | |
| ULTRASONIC GENERATOR | 350 | 2.9 | 20 | 15 | 10 | 12 | 16 | 20 | 0.1 | 12 | LIGHTS WET WELL | |
| ELEVATOR LIGHTING | 100 | 0.8 | 20 | 17 | 10 | 12 | 18 | 20 | 0.1 | 10 | ROTAX LEVEL CONTROL | |
| FIELD VERIFY | 0 | 0.0 | 20 | 19 | 12 | 12 | 20 | 20 | 0.1 | 10 | INSTRUMENT AIR DRYER | |
| PRV-2 (1/3 HP) | 864.0 | 7.2 | 20 | 21 | 10 | 12 | 22 | 20 | 0.1 | 12 | FIELD VERIFY | |
| PRV-1 (1/4 HP) | 696.0 | 5.8 | 20 | 23 | 10 | 12 | 24 | 20 | 0.1 | 12 | FIELD VERIFY | |
| PRV-3 (1/20 HP) | 174.0 | 1.5 | 20 | 25 | 10 | 12 | 26 | 20 | 0.1 | 10 | FIELD VERIFY | |
| PRV-4 (1/8 HP) | 348.0 | 2.9 | 20 | 27 | 10 | - | 28 | 20 | 0.0 | | SPARE | |
| SPARE | | | 20 | 29 | | | 30 | 20 | | | SPARE | |
| SPARE | | | 20 | 31 | | | 32 | 20 | | | SPARE | |
| SPARE | | | 20 | 33 | | | 34 | 20 | | | SPARE | |
| SPARE | | | 20 | 35 | | | 36 | 20 | | | SPARE | |
| SPARE | | | 20 | 37 | | | 38 | 20 | | | SPARE | |
| SPARE | | | 50 | 39 | | | 40 | 20 | | | SURGE PROTECTOR | |
| SPARE | | | 50 | 41 | | | 42 | 20 | | | | |
| TOTAL VA AND AMPERES | 16175.5 | 44.9 69.8 | NOTES: G - GFCI CIRCUIT OR BREAKER, FIELD VERIFY AND CONFIRM LOADS, WIRE SIZES AND BREAKERS. | | | | | | | | | |

| CONDUIT AND CABLE SCHEDULE | | | | | | | |
|----------------------------|----------|----------|-------------|---------------------------|--------|--------------|---|
| ID | FROM | TO | DESCRIPTION | CABLE | GROUND | CONDUIT | REMARKS |
| C001 | TR 1 | FDS1 | POWER | 2 SETS 4#350MCM CU RHW2 | NA | 2-4" RMC | CABLES BY UTILITY, CONTRACTOR TO ASSIST WITH EXCAVATION/LOCATES |
| C001 | FDS1 | ATS 1 | POWER | 2 SETS 4#350MCM CU RHW2 | 1/0 CU | 2-4" RMC | NEW CONDUIT AND CABLE |
| C002 | CT 1 | UM1 | POWER | 10#12 CU | RMC | 2" RMC | CABLES BY UTILITY, CONTRACTOR TO PROVIDE CONDUIT |
| C003 | TR2 | FDS2 | POWER | 2 SETS 4#350MCM CU RHW2 | NA | 2-4" RMC | CABLES BY UTILITY, CONTRACTOR TO ASSIST WITH EXCAVATION/LOCATES |
| C003 | FDS2 | ATS 1 | POWER | 2 SETS 4#350MCM CU RHW2 | 1/0 CU | 2-4" RMC | NEW CONDUIT AND CABLE |
| C004 | CT 1 | UM 2 | POWER | 10#12 CU | RMC | 2" RMC | CABLES BY UTILITY, CONTRACTOR TO PROVIDE CONDUIT |
| C007 | FDS1 | GROUND | POWER | | 1/0 CU | 1" PVC | INSTALL 1/0 CU GROUND TO EXISTING GROUND RING |
| C007 | FDS2 | GROUND | POWER | | 1/0 CU | 1" PVC | INSTALL 1/0 CU GROUND TO EXISTING GROUND RING |
| C010 | PLC CRTL | VFD 1/M1 | CONTROL | 3#2 CU RHW2 | RMC | 2-4" RMC | NEW CONDUIT AND CABLE (TO MCC IN BASE BID) |
| | | VFD 2/M2 | CONTROL | BELDEN 3090A 1PR #16 (3) | RMC | 1-2" RMC | NEW CONDUIT AND CABLE (TO MCC IN BASE BID) |
| | | VFD 3/M3 | CONTROL | 2 SETS 350MCM CU RHW2 | 1/0CU | 2-4" RMC/PVC | NEW AND EXISTING CONDUIT, NEW CABLE |
| | | VFD 1/M1 | SPEED CNTRL | BELDEN 8760 1PR #18 (4) | RMC | 2.5" RMC | NEW CONDUIT AND CABLE |
| | | VFD 2/M2 | SPEED CNTRL | BELDEN 8760 1PR #18 (4) | | | |
| C011 | MCC1 | VFD1 | POWER | BELDEN 8760 1PR #18 (4) | | | |
| C012 | MCC1 | M1 | POWER | BELDEN 8760 1PR #18 (4) | | | |
| C013 | MCC1 | VFD2 | POWER | BELDEN 8760 1PR #18 (4) | | | |
| C014 | MCC1 | M2 | POWER | BELDEN 8760 1PR #18 (2) | | | |
| C015 | MCC1 | VFD3 | POWER | BELDEN 8760 1PR #18 (2) | | | |
| C016 | MCC1 | M3 | POWER | BELDEN 8760 1PR #18 (2) | | | |
| C017 | MCC1 | XFMR | POWER | BELDEN 8760 1PR #18 (2) | 2-6CU | 1-3" RMC | NEW CONDUIT AND CABLE FROM MCC TO VFD TO MCC |
| C018 | XFMR | L1 | POWER | 2 SETS 3/C#2 AWG CU TC-ER | 6CU | 1-1/2" RMC | EXISTING CONDUIT, NEW CABLE |
| C019 | L1 | MCC1 | POWER | 3/C#2 AWG CU TC-ER | 2-6CU | 1-3" RMC | NEW CONDUIT AND CABLE FROM MCC TO VFD TO MCC |
| C020 | MCC1 | SPD | POWER | 3/C#2 AWG CU TC-ER | 6CU | 1-1/2" RMC | EXISTING CONDUIT, NEW CABLE |
| C021 | MCC1 | SPD | POWER | 2 SETS 3/C#2 AWG CU TC-ER | 10CU | 1" RMC | NEW CONDUIT AND CABLE (ALTERNATE BID B) |
| | | | | 3#6 CU RHW2 | 6CU | 2" RMC | NEW CONDUIT AND CABLE (ALTERNATE BID B) |
| | | | | 3#2 CU RHW2 | 6CU | 2" RMC | NEW CONDUIT AND CABLE (ALTERNATE BID B) |
| | | | | 3#2 CU RHW2 | 8CU | NA | NEW CONDUIT AND CABLE (ALTERNATE BID B) |

NOTES:
1) Confirm wiring with manufacturer.
2) Conductor to be insulated to 90C and sized to 75C. Conductor size shown as minimum (upsized if required).
3) All conductors to be solid copper except as noted.
4) Provide continuous grounding per NEC. #1/0 Tinned Copper and Exothermic Welds Required below grade. Ground locknuts, wires, couplings, etc. incidental.
5) Control / Communication wiring to be placed in separate conduits from power conductors.
6) Plug conduit openings with Duct Seal. Cap unused conduits. Conduit through concrete slab to be weather sealed.
7) Contractor to provide all necessary wire-ways, conduits, junction boxes for incoming electrical service and outgoing branch circuits while maintaining separation for different voltage levels.
8) Contractor may make changes to conduit, but must leave spares as listed in table.



REVISION

DATE

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08/11/2025

2304-01761

08/11/2025

LIFT STATION 15 VFD & POWER IMPROVEMENTS

THE CITY OF GREAT FALLS

GREAT FALLS, MONTANA

ELECTRICAL SCHEDULES

SHEET

E8R