INVITATION TO BID
Ordnance Project – Switch Gear
ITB-002 (Phase 1 RVSS Switch Gear)

Sealed bids for the purchase of RVSS – medium-voltage switch gear for the Ordnance Project will be received by the Board of Commissioners of Umatilla County at the Umatilla County Courthouse, Pendleton, Oregon, on December 28, 2022, until 10:00 A.M. Bids will be publicly opened and read in Room 121, Umatilla County Courthouse, Pendleton, Oregon.

The valves types and quantities are listed in the bid sheet form. Delivery will be to the Hermiston, Oregon area.

Dated: November 17, 2022

Package Contents

# INSTRUCTIONS TO BIDDERS

## 1.0 SUBMITTAL OF PROPOSAL

All bids must be presented in a sealed envelope to the Umatilla County Board of Commissioners before 10:00 A.M., December 28, 2022. Bids submitted electronically or by fax will are not acceptable.

1.1 COMPLETE PROPOSAL MUST BE RETURNED. Bidders shall use the attached bid form. Bidder shall complete unit price, extended price and lead time for each component, along with the bid subtotal, freight total and total bid amount, and the amount of days the bid will be valid. The firm name and signature of an authorized person shall be in space provided.

All bids shall be valid for 60 calendar days.

Bids may not be changed or withdrawn after the opening of Bids.

Along with the bid sheet form, please provide manufacturer's cutsheets for all items listed in the bid sheet.

Each Bid shall be identified on the exterior of the sealed envelope as follows:

Bid For: ITB-002 (Phase 1 Switch Gear)

1.2 RIGHT TO REJECT BIDS

The Board of Commissioners reserves the right to reject any or all bids, accept the bid deemed most satisfactory to the County, or terminate this invitation to bid at any time.

1.3 Bids to be submitted by mail shall be addressed to:

Umatilla County
Attn: Board of Commissioners
216 S. E. 4th Street
Pendleton, Oregon 97801

## 2.0 SWITCH GEAR SPECIFICATIONS

The specifications for the switch gear are set out in Attachment 1, attached to this document and incorporated by this reference. An electrical single line diagram for the Ordnance Pump Station is attached as Attachment 2.

## 3.0 CONTRACT AWARD

Award of the contract will be made to one bidder. Notice of Intent to Award by the Board of Commissioners will normally be made within 20 calendar days of opening. If a longer period of time is required, all bidders will be notified. Following the 7 day protest period,

a contract will be provided to the selected bidder. A draft contract is included for information.

## 4.0 DELIVERY

All items listed in the bid sheet need to be delivered by January 31, 2024. If expedited service fees are required to meet this delivery date these fees shall be provided in the bid sheet. Bidders shall set forth the date of delivery in the space provided on the bid sheet. Deliveries should be consolidated as much as possible to minimize the number of deliveries received on site. Delivery date shall be taken into consideration before awarding the contract.

The equipment herein specified shall be delivered to the area of Hermiston, Oregon. A more specific delivery location will be determined at a later date. Any necessary parts for operating the equipment that are not mentioned in the specifications are, by this inference, included and shall not become a cause for extra compensation to the successful bidder.

## 5.0 RVSS POWER FACTOR CORRECTION

Supplier shall include the cost and the impact on the overall gear dimensions to add Power Factor Correction (PFC) into bid item #1 as an optional. The Power Factor equipment shall be included within the overall gear housing/sections, acceptable locations are within the RVSS section or within an additional adjacent section as part of the overall gear lineup. Power factor correction implementation methods shall function in a way that it is PFC is only applied to the motor circuit after the motor is up to speed and the RVSS has been bypassed. All capacitors shall have discharge resistors to drain residual capacitor or voltage to 50 volts for less in one minute of de-energization.

## 6.0 REQUESTS FOR INFORMATION

All requests for information (RFI) need to be provided in writing to the following email address (ordnanceproject@umatillacounty.gov) within 14 calendar days of the bid opening. Response to RFIs will be completed and published on Umatilla County's website (https://umatillacounty.gov/departments/bcc/notices) 7 calendar days prior to the bid closing date.

## 7.0 CUTSHEETS AND MANUALS

Bidders are to supply manufacturer's standard cutsheets for all items listed in the bid sheet as part of the supplier's proposal package.

Within 4 weeks of award, the successful bidder will need to submit all manufacturer's stand cut sheets, verified VFD and switch gear assembly dimensional drawings and mounting details electronically for technical approval to ordnanceproject@umatillacounty.gov.

Within 8 weeks of award, the successful bidder will need to submit all complete wiring diagrams, operation and maintenance manuals electronically to ordnanceproject@umatillacounty.gov.

Ship three (3) hard copies of complete wiring diagrams, operation and maintenance manuals with the equipment.

8.0 PAYMENT

Payment for the equipment herein specified will be made immediately after the 10th day of the month following full and satisfactory delivery.

9.0 WARRANTY SPECIFICATIONS

Bidder shall state all items under warranty and for how long in time and/or machine hours the warranty is good.

Bidder shall completely and adequately specify items, terms and conditions of warranty. If certain items are warranted by agencies other than bidder (or principal manufacturer), these items and warranties shall be expressly identified on a separate sheet indicating terms and conditions. If no such listing is included in this bid, it shall be understood that all items are warranted by the bidder (or principal manufacturer) under the warranty to the attached as part of this bid. Failure to include warranty information in the bid documents may result in your bid being considered non responsive.

## GENERAL CONDITIONS

1. Units offered under this bid shall be new, standard production models of the latest design in current production, unless otherwise specified.

2. Materials shall be of good commercial quality for the intended service and shall be produced by use of current manufacturing processes.

3. The bidder shall list on a separate sheet of paper any variations from, or exceptions to, the conditions and specifications of this bid. This sheet shall be labeled "Exception (s) to Bid Conditions and Specifications", and shall be attached to the bid.

ATTACHMENT 1

ITB-002

# SECTION 26 18 39 RVSS – MEDIUM-VOLTAGE SWITCH GEAR & MCC

## PART 1 – GENERAL

### 1.1 Scope

A. This specification defines the requirements for the design, manufacture, and test of one complete Medium Voltage Switch gear unit (i.e assembly). The unit shall consist of the following :
   a. One Main Service Entry and service rated main breaker and service disconnect.
   b. Interconnecting power distribution bus work to all sections.
   c. Two power distribution feeder sections to power externally mounted and connected VFD, each with fused load break switch.
   d. Two RVSS (Reduced Voltage Solid State) motor control sections each with fused load break switch.

B. Refer to the Single Line Diagram included for layout and sizing arrangements.

C. The unit shall be NEMA Type I enclosure with door gasketing. The electrical system is 4160V, 3 phase, 60 Hz, 60 kV BIL.

### 1.2 Type and Description

A. The switch gear unit shall be UL listed and shall consist of a metal-enclosed, free-standing, dead front, vertical steel structure.

B. The unit shall be NEMA Type I enclosure with door gasketing. The electrical system is 4160V, 3 phase, 60 Hz, 60 kV BIL.

### 1.3 Submittals

A. The motor control manufacturer shall submit standard submittal drawings and information on the proposed equipment at the time of bid.

B. As-Built Drawings and Instruction Manuals: Three (3) copies of equipment instruction manuals for material purchased under these specifications shall be furnished. Each copy shall thoroughly address equipment installation, operation and maintenance. Each copy shall also include final test reports, equipment drawings, and renewal parts lists for all replaceable parts and assemblies. Manuals shall be bound by a durable means, properly indexed to identify contents and clearly labeled to indicate the project and equipment covered.

C. A material list shall be furnished listing the quantity, rating, type, and manufacturer's catalog number of all equipment on each unit.

D. Installation, operating and maintenance instructions shall cover all the equipment furnished including all motor controls, protective relays, power fuses, auxiliary relays, etc., and shall include characteristic curves of each power fuse.

## PART 2 – MATERIALS

### 2.1 Codes and Standards

A. The assemblies shall be constructed, wired and tested in accordance with all applicable sections of the latest listed Standards and Codes.

B. American National Standards Institute, Inc. (ANSI)/IEEE C37

C. IEC

D. IEEE 519

E. UL347A

F. National Electrical Manufacturers Association (NEMA)

G. NEC / NFPA

H. It shall be the manufacturer's responsibility to be, or to become, knowledgeable of the requirements of these Standards and Codes.

## 2.2 Power Requirements and Service Conditions

A. The units shall operate from a 3 phase, 4160Vac, 60Hz system.

B. Operating Temperature will not exceed 40$^{O}$C. The RVSS equipment will be in a controlled atmosphere building with low relative humidity, non-condensing. Internal space heaters are required for when the unit is not in service. The project is at 500 ft above sea level in a seismic zone 2B.

## 2.3 Switch Gear Design Requirements

A. The switchgear shall have a voltage rating of 4.76 kV, with one main circuit breaker and one feeder circuit breaker. Switchgear construction shall be NEMA 1, non-walk-in outdoor. The switchgear will be used in a 4160V, 3-phase, 60 Hz system. It shall be composed of factory assembled metal clad cubicles. The circuit breakers shall be designed with vacuum interrupter technology and shall incorporate a spring-operated stored energy mechanism which shall include a shunt trip device.

B. Rated Maximum Voltage 4.76 kV
C. Operating Voltage 4160 V
D. Main Bus Continuous Rating 1000 A
E. Main and ground bus material shall be tin platted copper
F. Control bus DC Voltage (Nom.) 48 VDC
G. Circuit Breaker Interrupting 40 kA
H. Close and Latch 65 kA Peak
I. Breaker Interrupting Time 3 cycles
J. Temperature rise of the switchgear will be in accordance with the latest revision of ANSI C.37.20 for Metal-Clad switchgear.
K. The equipment shall be completely factory assembled and tested prior to shipment.
L. The design shall be bottom entrance and exit conductor arrangements.
M. The compartment door shall be securely held with tamper-resistant hinges and sealed with tamper-resistant fasteners. Compartment doors will include provisions for padlocking.
N. Distribution class, 6kV lightning arrestors shall be furnished on the incoming bus, one per phase.
O. Each main breaker compression lugs shall be, 2 hole for 500 kcmil copper conductor, two per phase for line shall be furnished. All lugs shall be rated "Copper Only" and be rated for 12 ton compression tool.
P. Circuit breaker cart / truck and rails shall be furnished if required for removal and installation of power circuit breaker from cubicle.
Q. Supplier shall furnish one remote racking mechanism to facilitate racking the power circuit breaker without standing in front of the cubicle. Remote mechanism shall be powered by 120 VAC power.

## 2.4 Power Circuit Breakers

A. The power circuit breakers shall be electrically operated, 3-pole, draw-out type, with electric motor and manual charging of a spring type stored energy operating mechanism. The power circuit breakers shall be provided with self-aligning line-side and load-side disconnecting devices. Breaker racking system shall allow smooth, consistent breaker movement with the door closed and have three positions in addition to the withdrawn position; disconnect, test and connected.

B. The draw-out mechanism shall hold the breaker rigidly in the CONNECTED (primaries and secondaries engaged), TEST (primary contacts disconnected and shutter closed, but control

contacts engaged) and DISCONNECTED (both primary and secondary contacts disengaged) positions, with the door closed.

C. Interlocks shall be provided which will prevent connecting the breaker to, or disconnecting it from, the bus stabs unless the breaker is OPEN (tripped), assuring proper sequencing and safe operation. The close springs of the circuit breaker will automatically discharge when the breaker is released from the cell by pulling in on the truck latch assembly.

## 2.5 RVSS Design Requirements

A. The line-up shall include two RVSS motor control units containing the following:
   1. Tin plated 1000 copper power and 600A ground bus
   2. A main non-load break isolating switch and operating handle for each starter
   3. Vacuum contactors as required
   4. Three (3) current limiting power fuses, as appropriate for motor protection
   5. Three (3) current transformers, one per phase and (1) zero sequence current transformer
   6. Control power transformers
   7. Low voltage control panels
   8. Space for necessary auxiliary control and metering devices
   9. Provide for bottom entry of supply cables. Include 2 hole compression lugs for 3/0 CU wire, 1 per phase. Include one, 2 hole compression lug for #6 CU ground conductor. For feeder circuits include 2 hole compression lugs for 3/0 CU wire, 1 per phase with one 2 hole compression lug for #6 AWG CU ground conductor. Lugs shall be rated "Copper Only" and be rated for 12 ton compression tool.

B. Each structure shall have two (2) non-removable base sill channels and removable lifting angles or brackets for handling and installation.

C. Each RVSS unit shall be divided into three (3) isolated compartments:
   1. Main power and ground bus compartment
   2. Power cell compartment
   3. Low voltage compartment

D. Metal or glastic barriers shall be provided between each vertical section, between the low voltage compartment and the power cell and/or main power bus compartment and between the power cell and main power bus compartment. Personnel shall have access to the low voltage compartment, with the controller energized, without being exposed to any medium voltage.

E. Mechanical interlocking shall be provided to prevent the opening of any power cell door or medium voltage compartment until the non-load break isolating switch is fully in the open position (the external operating handle must be in the "OFF" position).

F. As standard all exterior and interior metal parts shall be painted ANSI 61 medium light gray. All metal back plates in the power cell and low voltage compartments shall be painted high gloss white for high visibility. Field "touch-up" spray can(s), matching the enclosure color, shall be supplied. The horizontal/vertical bus work and the bus in the main power cell(s) shall be braced and tested in accordance with NEMA ICS 2-3 and U.L. 347 (paragraph 32). The bus work and cabling shall be braced to withstand 40 kA maximum fault duty.

G. The continuous tin plated copper ground bus shall be provided along the entire length of the motor control center line-up.

H. The main power cell of each control shall have an externally operated, 3-pole, gang operated, fixed mounted, load break isolating switch. In the "OFF" position, the isolating switch shall provide a means of grounding appropriate medium voltage power cell components, bleeding off hazardous stored energy, thus providing safe operation and maintenance.

I. The contactors shall have a maximum nominal voltage rating of 5000 volts, 60 Hz and a minimum interrupting rating of 3000 amps.

J. Each motor control unit shall include the following items:
   1. Nameplates - black on white
   2. Control wire markers - shrink type, point to point
   3. Control wire, MTW or approved equal
   4. Control wire terminals - non insulated locking fork type
   5. Motor control cubicle space heater - 250 VAC
   6. Terminal blocks - GE EB 27 or equal
   7. Red & Green LED indicating lights
   8. Start & Stop function shall be incorporated into SEL 710
   9. Local / Remote selector switch - Standard C/H
   10. CPT as appropriate
   11. PT's as required
   12. Provide control for motor space heaters
   13. Shorting blocks for current transformers located in LV control compartment
   14. Load cable bottom entry. Include 2 hole compression lugs, one per phase for 1/0 CU.
   15. Load cable ground: Include one two hole compression lug for #6 AWG CU ground.

K. Motor RTD Functions
   1. Each RVSS unit shall monitor six RTD's installed in the motors. Each motor will be provided with (4) Winding RTD's, and (2) Bearing RTD's. The RVSS shall shutdown when RTD values are reach trip levels. Tripped levels with be determined based on the motor manufacturers recommendations.
   2. If the manufacturers RVSS unit does not support all six motor RTD's inputs, it is recommended the Schweitzer Engineering 710 Motor Protection relay be included to support these inputs. This relay shall we wired back to the RVSS units to activate an external trip when the values reach tripped levels. Tripped levels with be determined based on the motor manufacturers recommendations.

### 2.6 Load Break Switches

A. Fused Load Break Switch shall be rated 5 kV, 200A (minimum), 60 kV BIL and meet standards as described in ANSI 37, most recent edition.

B. Features shall include viewing window, external operating handle with provisions for locking and, to the extent possible, match the RVSS Motor Control line-up.

C. 200A Power Fuses shall be included, one per phase for each RVSS and VFD power feeder sections.

## PART 3 – EXECUTION

### 3.1 Shipping

A. All accessory items shall be shipped with the switchgear. Boxes and crates containing accessories will be clearly marked with the contents.

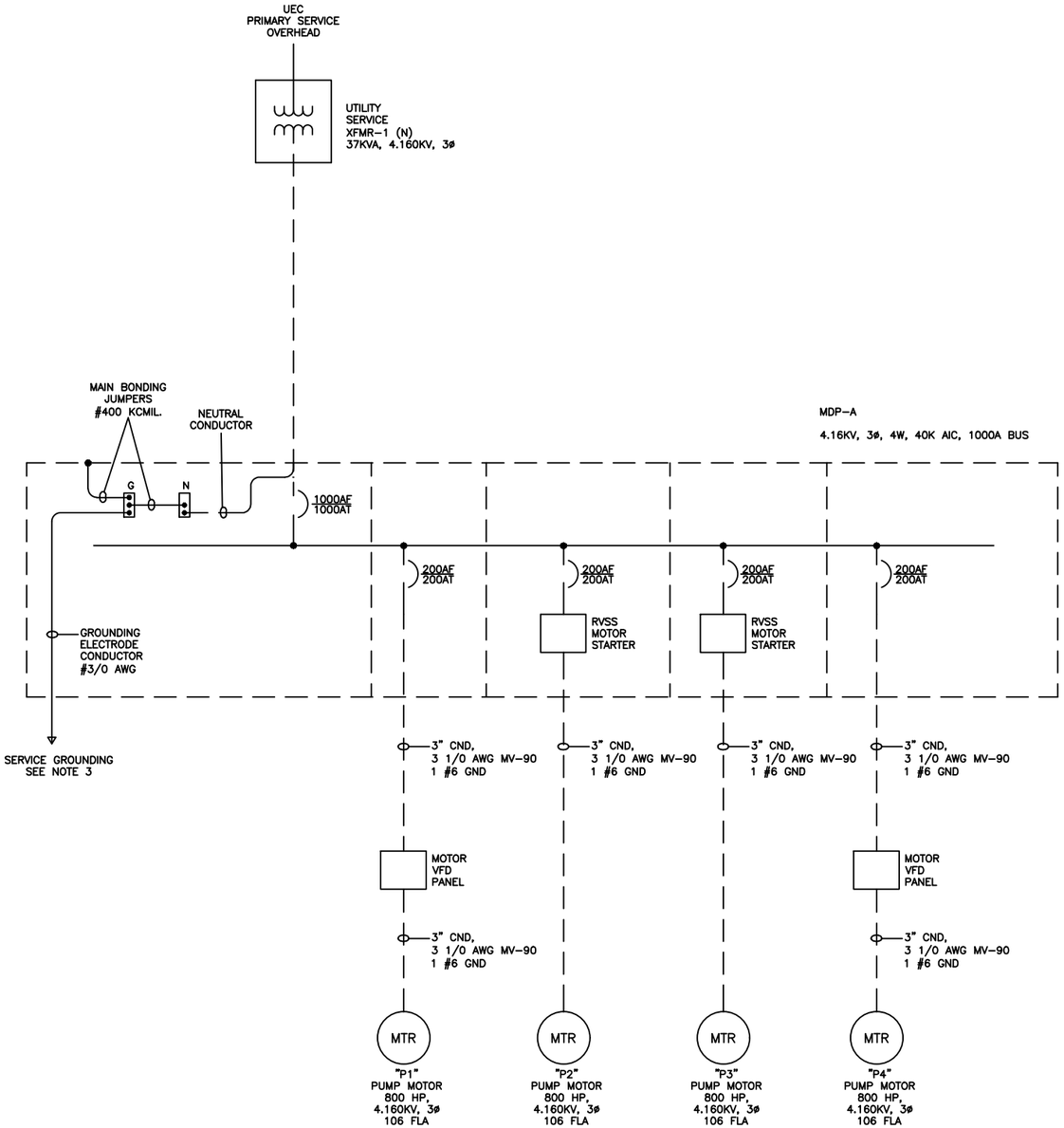
### 3.2 Warranty

A. The manufacturer shall warranty the design, material and workmanship of the motor control for a period of 18 months from time of delivery. This shall not exceed 12 months from the date of commissioning. Warranty shall cover defects of materials, design or manufacture.

### 3.3 Training

A. The manufacturer shall provide startup training and testing/commissioning for each line-up. This will require a minimum of two site visits.

**END OF SECTION**




1 4,160V SINGLE LINE DIAGRAM

Scale: NTS

**NOTES:**

1. INSTALLATION SHALL BE IN ACCORDANCE WITH NEC AND LOCAL CODES.
2. ALL CONDUCTORS SHALL BE COPPER "CU".
3. CONTRACTOR SHALL SIZE CONDUIT PER NEC CODE REQUIREMENTS USING 40% FILL.
4. COORDINATE SERVICE WITH UEC.

| | |
|---|---|
| DRAWN | JACK GOURLEY |
| DESIGNED | JACK GOURLEY |
| APPROVED | JACK GOURLEY |
| DATE | 11/15/2022 |
| SCALE | NTS |
| PROJECT | 220305 |

IRZ ENGINEERING & CONSULTING
IRZ ORDANANCE PUMP STATION

IRZ ENGINEERING & CONSULTING
500 N 1ST, HERMISTON, OREGON 97838
OFFICE (541) 567-0252 FAX (541) 567-4239
G6 | ENGINEERING LLC
Kennewick, WA 99336
509-581-2229

Revisions

| N0. | Description | Date |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |

0 SCALE CHECK 1"

Stamp:

**DRAWING FOR INFORMATION ONLY, NOT FOR CONSTRUCTION**

Sheet Name and Description:
Issued for Bid
SINGLE LINE DIAGRAM
4,160V

Drawing Number:
E1000

# BID SHEET
## ITB-002 Ordnance Project Phase 1
## Switch Gear

| Line Item | Description | Quantity | Unit of Measurement | Unit Price (USD) | Extended Price (USD) | Lead Time |
|---|---|---|---|---|---|---|
| **1** | Medium Voltage Switch Gear and MCC | 1 | EA | | | |
| **2** | Power Factor Correction Adder For Each 800 HP RVSS | 2 | EA | | | |
| **3** | Expedited Delivery Fees (When Applicable) | 1 | LS | | | |
| | | | | **Bid Subtotal** | | |
| | | | | **Freight Total** | | |
| | | | | **Total Bid Amount** | | |

Bidder certifies this bid is valid for _____ calendar days.

Bidder_____

Address_____

By (Print)_____

By (Signed)_____