INFORMATION FOR BIDDERS

The Village of Rantoul is seeking to purchase the following 15kv electrical equipment and will receive separate sealed bids for the purchase of a 2500kva (13.8kv-277/480v) three-phase pad-mounted transformer, a 2500kva (13.8kv-4.16kv) three-phase pad-mounted transformer, three (3) 15kv S&C switchgear bays, two (2) 500kva (12.5kv-120/208v) three-phase pad-mount transformers, sixty (60) light standards, sixty (60) light fixtures, sixty (60) light standard foundation anchors, and two (2) 15kv S&C switch cabinets.

General Requirements

The Village of Rantoul is seeking separate bids from vendors who will furnish, design, fabricate, construct and deliver the specified electrical equipment. This equipment consists of a 2500kva (13.8kv-277/480v) three-phase pad-mounted transformer, a 2500kva (13.8kv-4.16kv) three-phase pad-mounted transformer, three (3) 15kv S&C switchgear bays, two (2) 500kva (12.5kv-120/208v) three-phase pad-mount transformers sixty (60) light standards, sixty (60) light fixtures, sixty (60) light standard foundation anchors, and two (2) 15kv S&C switch cabinets.

Bids will be received until closing time of **2:00 P.M.** prevailing time on September 24, 2013 at the Rantoul Municipal Building, 333 South Tanner Street, Rantoul, Illinois.

Any Bid received after the closing time will not be considered and will be returned unopened.

Bids submitted by mail should be identified on the outside of the envelope as a bid for

"Purchase of Electric Utility Equipment and Materials"

"Purchase of a 2500kva 13.8kv-277/480v pad-mounted transformer, Bid #VRNTL-14-B-03 Part #1"; and/or
"Purchase of a 2500kva 13.8kv-4.16kv pad-mounted transformer, Bid #VRNTL-14-B-03 Part #2"; and/or
"Purchase of 15kv S&C switchgear bays, Bid #VRNTL-14-B-03 Part #3; and/or
"Purchase of 500kva 12.5kv-120/208v pad-mounted transformers, Bid #VRNTL-14-B-03 Part #4"; and/or
"Purchase of light standards, Bid #VRNTL-14-B-03 Part #5"; and/or
"Purchase of light fixtures, Bid #VRNTL-14-B-03 Part #6"; and/or
"Purchase of light standard foundation anchors, Bid #VRNTL-14-B-03 Part #7"; and/or
"Purchase of 15kv S&C switch cabinets, Bid #VRNTL-14-B-03 Part #8; and should be addressed to:

Scot Brandon, Comptroller
Village of Rantoul
P.O. Box 38
333 S. Tanner St.
Rantoul, Illinois 61866

The Village of Rantoul, Illinois, reserves the right to reject any or all bids and to waive any informalities.

Project Time Line

Bids will be received until closing time of **2:00 P.M.** prevailing time on **September 24, 2013,** at the Rantoul Municipal Building, 333 South Tanner Street, Rantoul, Illinois.

It is anticipated that the Village of Rantoul Board of Trustees will take formal action on the Bids at its regularly scheduled meeting of October 8, 2013.

The successful Bidder(s) will be notified following this date as to the project award and then can begin to furnish, design, fabricate, construct, and deliver the electrical equipment and materials. Bidder(s) agrees to hold his or her bid open for 60 days after the bid opening date.

Equipment Specifications #VRNTL-14-B-03 Part #1
The transformer specifications for Village of Rantoul Bid #VRNTL-14-B-03 Part #1 for a vendor to furnish, design, fabricate, construct, and deliver a 2500kva 13.8kv – 277/480v pad-mounted transformer are as follows:

Three Phase, Oil Filled, Loop Feed, pad-mount transformer
Shall be designed to provide electric service to commercial and industrial loads.

Quantity:	1					
KVA:	2500					
Primary Voltage:	12.4 / 7,200	___	13.2 / 7620	____	13.8 / Delta	**X**
Secondary Voltage:	208Y/120	___	480Y/277	**X**	4160/2400	_____
Bil:	95 KV					
Frequency:	60 HZ					
Temperature Rise:	65 degree C					
Taps:	(Taps @ 2.5% Above and Below Normal)					**X**
	(Taps @ 8170 / 7970 / 7620 / 7200 / 7020)					_____
Impedance:	6.15%+/-	allows for paralleling with existing similar transformers				
Connections:	**Delta / Wye**					

A. High Voltage Bushings and Terminals

1. The high voltage bushings provided shall be 15KV, 200A, loadbreak Bushing Insert shall conform to ANSI/IEEE 386. The current carrying path shall be all copper. The unit shall have a hex-broaded base to accommodate torque tool for installation assistance. A latched elbow indicator ring shall be provided.

2. The transformer shall be provided with six (6) high voltage bushings rated for full three-phase duty in accordance with ANSI C57.12.26 for loop feed configurations. (For this configuration the K dimension shall be 6.5 inches.)

3. The bushing height shall be in accordance with Figure 7 of ANSI C57.12.26.

4. Cable accessory parking stands shall be provided and shall be located such that the separable insulated connectors that are designed for operation after the transformer is in place can be operated by hot-line tools.

B. Low Voltage Bushings and Terminals

1. The low voltage bushings provided shall be 15KV, 600A, loadbreak Bushing Insert shall conform to ANSI/IEEE 386. The current carrying path shall be all copper. The unit shall have a hex-broaded base to accommodate torque tool for installation assistance. A latched elbow indicator ring shall be provided.

2. Cable accessory parking stands shall be provided and shall be located such that the separable insulated connectors that are designed for operation after the transformer is in place can be operated by hot-line tools.

3. The bushing height shall be in accordance with Figure 7 of ANSI C57.12.26.

C. Tank and Terminal Compartment

1. The transformer shall be compartmental type, self-cooling, tamper resistant and weather protected for mounting on a pad. The unit shall consist of a transformer tank, high voltage compartment and low voltage compartment assembled as an integral unit. There shall be no externally removable screws, bolts or other fastening devices.

2. The transformer shall have a sealed tank of sufficient strength to withstand a pressure of 7psi without permanently distorting the tank. The tank shall remain sealed for top oil temperature range of 50 degrees C to 105 degrees C. Cooling panels shall be provided on the back and sides of the tank when required by design. The tank shall include a pressure relief valve with a flow at 15 psig - 35 SCFM minimum. The tank shall have welded-in-place lifting lugs and jacking pads. The tank base must be designed to allow skidding or rolling in any direction.

3. The core and coil assembly shall be a wound core type with aluminum windings. The assembly shall be designed to reduce losses and noise and provide adequate short-circuit strength and heat dissipation. Internal leads shall be insulated, carefully trained and anchored to prevent phase to phase flashover. A tap changing mechanism shall be provided for accurate voltage adjustment without opening the tank. The tap changing mechanism shall be externally operated and shall be for de-energized operation only. Taps for two - 2 1/2% taps above and below rated voltage shall be provided and/or arraingment specified.

4. The dielectric coolant in the transformer shall be highly refined inhibited new mineral oil

and meet the minimum requirements as specified in, "Functional Property Requirements," of ASTM D3487 and ANSI C57.106.

5. All transformer oil must be bulk tested for polychlorinated biphenyl's (PCBs) per ASTM D4059 and certified, as having no detectable level of PCB.

6. The high and low voltage compartments shall be adjacent, but of independent construction and shall be separated by a steel barrier. The compartment depths shall be in accordance with ANSI C57.12.26.

7. When facing the pad mounted transformer, the low voltage compartment shall be on the right.

8. The doors shall be designed to fit flush with the front and side panels of the cabinet. The doors shall be equipped with stainless steel hinges, pins and "stops" to secure the doors when open.

9. The low voltage door shall have a three (3)-point latching mechanism, vault handle, penta-head bolt that meets the dimension set forth in ANSI C57.12.28 and provisions for a single padlock. The interlocked bolt/padlock handle assembly shall require a spring-loaded bolt to be threaded into place before the padlock can be inserted.

10. The high voltage door fastenings shall not be accessible until the low voltage door is opened. The securing of the high voltage door shall include a penta-head bolt assembly.

11. The pad mounted equipment shall meet the requirements for tamper resistance set forth in ANSI C57.12.28 including but not limited to the pry test, pull test, and wire probe test.

12. The front sill shall be removable.

13. ANSI tank grounding provisions shall be furnished in each compartment.

14. The tank shall be complete with an engraved nameplate that shall comply with the requirements of ANSI C57.12.00.

15. Painting shall with an ANSI Standard primer and the color green.

D. Additional Requirements

1. The transformer primary shall include Bayonet fusing with internal isolation link.

2. Drain valve / Sampling device

3. Spare set of fuses shall be included.

E. Testing and Losses

1. All units shall be tested for no-load (85 deg C) losses, total (85 deg C) losses, percent impedance (85 deg C), excitation current (100% voltage). Each unit shall be subjected to a full wave voltage impulse and leak test. The manufacturer shall provide certification for all design and other tests listed in Table 17 of ANSI C57.12.00 including verification that the design had passed Short Circuit Criteria per ANSI C57.12.00 and C57.12.90.

2. The manufacturer shall provide the guaranteed average no-load losses for the unit at 85 deg C.

Equipment Specifications #VRNTL-14-B-03 Part #2
The transformer specifications for Village of Rantoul Bid **#VRNTL-14-B-03 Part #2** for a vendor to furnish, design, fabricate, construct, and deliver a 2500kva 13.8kv / 4.16kv step-down pad-mounted transformer are as follows:

Three Phase, Oil Filled, Loop Feed, pad mounted, step-down transformer
Shall be designed to provide electric service to commercial and industrial loads.

Quantity:	1					
KVA:	2500					
Primary Voltage:	12.47kv / 7.2kv	__	13.2 / 7620	__	13.8 / 7970	**X**
Secondary Voltage:	208Y/120	__	480Y/277	__	4160/2400	**X**
Bil:	95 KV					
Frequency:	60 HZ					
Temperature Rise:	65 degree C					
Taps:	(Taps @ 2.5% Above and Below Normal) (Taps @ 8170 / 7970 / 7620 / 7200 / 7020)					**X**
Impedance:	6.15%+/-	allows for paralleling with existing similar transformers				
Connections:	**Wye / Wye**					

**** Neutral: H0/X0 Internally connected ****

A. High Voltage Bushings and Terminals

1. The high voltage bushings provided shall be 15KV, 200A, loadbreak Bushing Insert shall conform to ANSI/IEEE 386. The current carrying path shall be all copper. The unit shall have a hex-broaded base to accommodate torque tool for installation assistance. A latched elbow indicator ring shall be provided.

2. The transformer shall be provided with six (6) high voltage bushings rated for full three-phase duty in accordance with ANSI C57.12.26 for loop feed configurations. (For this configuration the K dimension shall be 6.5 inches.)

3. The bushing height shall be in accordance with Figure 7 of ANSI C57.12.26.

4. Cable accessory parking stands shall be provided and shall be located such that the separable insulated connectors that are designed for operation after the transformer is in place can be operated by hot-line tools.

B. Low Voltage Bushings and Terminals

1. The low voltage bushings provided shall be 15KV, 600A, loadbreak Bushing Insert shall conform to ANSI/IEEE 386. The current carrying path shall be all copper. The unit shall have a hex-broaded base to accommodate torque tool for installation assistance. A latched elbow indicator ring shall be provided.

2. Cable accessory parking stands shall be provided and shall be located such that the separable insulated connectors that are designed for operation after the transformer is in place can be operated by hot-line tools.

3. The bushing height shall be in accordance with Figure 7 of ANSI C57.12.26.

C. Tank and Terminal Compartment

1. The transformer shall be compartmental type, self-cooling, tamper resistant and weather protected for mounting on a pad. The unit shall consist of a transformer tank, high voltage compartment and low voltage compartment assembled as an integral unit. There shall be no externally removable screws, bolts or other fastening devices.

2. The transformer shall have a sealed tank of sufficient strength to withstand a pressure of 7psi without permanently distorting the tank. The tank shall remain sealed for top oil temperature range of 50 degrees C to 105 degrees C. Cooling panels shall be provided on the back and sides of the tank when required by design. The tank shall include a pressure relief valve with a flow at 15 psig - 35 SCFM minimum. The tank shall have welded-in-place lifting lugs and jacking pads. The tank base must be designed to allow skidding or rolling in any direction.

3. The core and coil assembly shall be a wound core type with aluminum windings. The assembly shall be designed to reduce losses and noise and provide adequate short-circuit strength and heat dissipation. Internal leads shall be insulated, carefully trained and anchored to prevent phase to phase flashover. A tap changing mechanism shall be provided for accurate voltage adjustment without opening the tank. The tap changing mechanism shall be externally operated and shall be for de-energized operation only. Taps for two - 2 1/2% taps above and below rated voltage shall be provided and/or arrangement specified.

4. The dielectric coolant in the transformer shall be highly refined inhibited new mineral oil and meet the minimum requirements as specified in, "Functional Property Requirements," of ASTM D3487 and ANSI C57.106.

5. All transformer oil must be bulk tested for polychlorinated biphenyl's (PCBs) per ASTM D4059 and certified, as having no detectable level of PCB.

6. The high and low voltage compartments shall be adjacent, but of independent construction and shall be separated by a steel barrier. The compartment depths shall be in accordance with ANSI C57.12.26.

7. When facing the pad mounted transformer, the low voltage compartment shall be on the right.

8. The doors shall be designed to fit flush with the front and side panels of the cabinet. The doors shall be equipped with stainless steel hinges, pins and "stops" to secure the doors when open.

9. The low voltage door shall have a three (3)-point latching mechanism, vault handle, penta-head bolt that meets the dimension set forth in ANSI C57.12.28 and provisions for a single padlock. The interlocked bolt/padlock handle assembly shall require a spring-loaded bolt to be threaded into place before the padlock can be inserted.

10. The high voltage door fastenings shall not be accessible until the low voltage door is opened. The securing of the high voltage door shall include a penta-head bolt assembly.

11. The pad mounted equipment shall meet the requirements for tamper resistance set forth in ANSI C57.12.28 including but not limited to the pry test, pull test, and wire probe test.

12. The front sill shall be removable.

13. ANSI tank grounding provisions shall be furnished in each compartment.

14. The tank shall be complete with an engraved nameplate that shall comply with the requirements of ANSI C57.12.00.

15. Painting shall with an ANSI Standard primer and the color green.

D. Additional Requirements

1. The transformer primary shall include Bayonet fusing with internal isolation link.

2. Drain valve / Sampling device

3. Spare set of fuses shall be included.

E. Testing and Losses

1. All units shall be tested for no-load (85 deg C) losses, total (85 deg C) losses, percent impedance (85 deg C), excitation current (100% voltage). Each unit shall be subjected to a full wave voltage impulse and leak test. The manufacturer shall provide certification for all design and other tests listed in Table 17 of ANSI C57.12.00 including verification that the design had passed Short Circuit Criteria per ANSI C57.12.00 and C57.12.90.

2. The manufacturer shall provide the guaranteed average no-load losses for the unit at 85 deg C.

Equipment Specifications #VRNTL-14-B-03 Part #3
The S&C Switchgear specifications for Village of Rantoul Bid **#VRNTL-14-B-03 Part #3** for a vendor to furnish, design, fabricate, construct, and deliver three (3) 15kv S&C switchgear bays are as follows:

Outdoor Distribution (15kv)

1.0 GENERAL
1.1 **The metal-enclosed outdoor switchgear shall conform to the specifications herein to match the existing five bay S&C Custom Metal-Enclosed Switchgear (System II Modular Design – Manufactured in 2003) that is in service. The new switchgear bay shall be compatible with manufacturer's specifications for CDA#776342:**

1.2 Drawings
(1) The metal-enclosed switchgear assembly shall be in accordance with the plans and drawings.
(2) The manufacturer shall furnish, with each metal-enclosed switchgear assembly, a set of drawings complete with a bill of material. The drawings shall include typical front and open side views for each module as well as typical components, their positions, and available space for cable termination; an anchor bolt plan with dimensions; a single-line diagram; and appropriate wiring diagrams.
(3) The manufacturer shall furnish a comprehensive instruction manual covering installation of the switchgear assembly and operation of the various components.

1.3 The metal-enclosed switchgear assembly shall consist of one or more (indoor, outdoor) self-supporting bays, containing interrupter switches and (power fuses, electronic fuses, or both) with the necessary accessory components, all completely factory-assembled and operationally checked.

1.4 Ratings
(1) The distribution system shall be grounded.
(2) The ratings for the integrated switchgear assembly shall be as designated below.

Nominal Voltage, kV..... _____13.8kv_____
Maximum Voltage, kV ....._____15kv_____
BIL Voltage, kV . . . . _____95kv_____
Main Bus Continuous Current, Amperes ..... _____600A_____
Short-Circuit Amperes
RMS, Symmetrical ....._____335A_____
MVA, Three-Phase Symmetrical, at Rated Nominal Voltage . _____25,000A_____
Two-Time Duty-Cycle Fault-Closing,
Amperes, RMS, Asymmetrical . .. . _____22,400A_____

The momentary and duty-cycle fault-closing ratings of switches, momentary rating of bus, and interrupting ratings of fuses shall equal or exceed the short-circuit ratings of the metal-enclosed switchgear.

1.5 Certification of Ratings
(1) The manufacturer of the metal-enclosed switchgear shall be completely and solely responsible for the performance of the basic switch and fuse components as well as the complete integrated assembly as rated.
(2) The manufacturer shall furnish, upon request, certification of ratings of the basic switch and fuse components and/or the integrated metal-enclosed switchgear assembly consisting of the switch and fuse components in combination with the enclosure(s).
(3) The integrated switchgear assembly shall have a BIL rating established by test on switchgear of the type and kind to be furnished under this specification. Certified test abstracts establishing such ratings shall be furnished upon request.

1.6 Compliance with Standards and Codes
The metal-enclosed switchgear shall conform to or exceed the applicable requirements of the following standards and codes:
(1) ANSI C37.20.3, Standard for Metal-Enclosed Interrupter Switchgear.
(2) The applicable portions of Article 710 in the National Electrical Code, including Article 710-21(e), which specifies that the interrupter switches in combination with power fuses shall safely withstand the effects of closing, carrying, and interrupting all possible currents up to the assigned maximum short-circuit rating.
(3) For standard 4.16-kV and 13.8-kV bays with 600-ampere or 1200-ampere main bus and Mini -Rupter® Switches or 1200-ampere Alduti-Rupter® Switches only: The switchgear manufacturer shall furnish equipment that is listed by Underwriters Laboratories, Inc.
(4) For 4.16-kV and 13.8-kV bays with 600-ampere or 1200-ampere main bus and Mini-Rupter® Switches or 1200-ampere Alduti-Rupter® Switches only: The switchgear manufacturer shall provide enclosures that have been proven by Underwriters Laboratories, Inc. to be in compliance with the Category A enclosure test requirements in accordance with conformance standard ANSI 37.57. Category A enclosures are intended to provide a degree of protection against contact with enclosed equipment in ground level installations subject to deliberate unauthorized acts by members of the unsupervised general public. Category A enclosures require the addition of padlockable covers for windows and accessories such as ammeters, voltmeters, kilowatt-hour meters, etc.

2.0 CONSTRUCTION
2.1 To ensure a completely coordinated design, the metal-enclosed switchgear shall be constructed in accordance with the minimum construction specifications of the fuse and/or switch manufacturer to provide adequate electrical clearances and adequate space for fuse handling.

2.2 Enclosure Construction
(1) In establishing the requirements for the enclosure design, consideration shall be given to all relevant factors, such as controlled access; tamper-resistance; corrosion-resistance; protection from ingress of rodents, insects, and weeds; and the possibility of arcing faults within the enclosure.
(2) The enclosure of each bay shall be of unitized monocoque construction to maximize strength, minimize weight, and inhibit corrosion.
(3) The material for all external sides of the enclosure and the roof shall be 11-gauge hot-rolled, pickled and oiled steel sheet.

(4) Each bay containing high-voltage components shall be a complete unit in itself, with full side sheets, resulting in double-wall construction between bays. To guard against unauthorized or inadvertent entry, side and rear sheets and the top shall not be externally bolted.
(5) The base shall be a continuous steel channel of a thicker gauge material than used for the enclosure and shall extend completely around all four sides of each bay.
(6) Access to the interior of the enclosure shall be from the front only, allowing placement of the metal-enclosed switchgear assembly tightly against a wall or back-to-back, to minimize floor-space requirements. If requested, rear access to the interior of the enclosure shall be provided.
(7) To guard against unauthorized or inadvertent entry, there shall be no access to high voltage through side or rear sheets of the metal-enclosed switchgear assembly, and no access to high voltage by means of externally removable panels.
(8) To guard against corrosion, all hardware (including door fittings, fasteners, etc.), all operating -mechanism parts, and other parts subject to abrasive action from mechanical motion shall be of either nonferrous materials, or galvanized or zinc-nickel-plated materials. Cadmium-plated ferrous parts shall not be used.
(9) Externally accessible hardware shall not be used for support of high-voltage components or switch-operating mechanisms within the switchgear.

2.3 Door Construction
(1) Doors shall be constructed of 11-gauge hot-rolled, pickled and oiled steel sheet.
(2) Doors shall have 90-degree flanges and shall overlap with the door openings. For strength and rigidity, and to minimize exposure, the door flanges shall be welded at the corners and shall be formed (at the top and both sides as a minimum) with a double bend so that the sheared-edge flanges at the top and both sides fold back parallel to the inside of the door. The double bend shall not be required on arc-resistant switchgear.
(3) Doors over 40 inches in height shall have a minimum of three concealed galvanized steel or non-ferrous hinges with stainless-steel hinge pins. Doors 40 inches in height or less shall have a minimum of two such hinges.
(4) Each door shall be equipped with a door handle. The door handle shall be padlockable and, on outdoor gear, shall incorporate a hood to protect the padlock shackle from tampering.
(5) In consideration of controlled access, tamper-resistance, and arcing faults, each door over 40 inches in height shall have a minimum of three concealed, interlocking, high-strength latches. Doors 40 inches in height or less shall have a minimum of two such latches.
(6) Doors providing access to interrupter switches or interrupter switches with power fuses shall be provided with a wide-view window, constructed of an impact-resistant material, to facilitate checking of switch position without opening the door.
(7) Doors providing access to solid-material power fuses or fused voltage transformers shall have provisions to store spare fuse units or refill units. Doors providing access to electronic power fuses shall have provisions to store spare interrupting modules if possible.
(8) All doors providing access to high-voltage components shall be provided with a sturdy, self-latching door holder, which shall be zinc-nickel plated and chromate dipped.

2.4 Access Control
Access control shall be provided as follows:
(1) Doors providing access to interrupter switches with fuses shall be mechanically or key interlocked to guard against:

(a) Opening the door if the interrupter switch on the source side of the fuse is closed, and (b) Closing the interrupter switch if the door is open.
(2) Doors providing access to interrupter switches only, which are operated by stored-energy type switch operators, shall be mechanically or key interlocked to guard against operating the interrupter switch if the door is open.
(3) Doors and hinged-bolted panels providing access to high-voltage components shall be provided with flush-mounted key-operated snaplocks and shall have provisions for padlocking.

2.5 Internal Protective Screens
(1) In addition to the enclosure door, each bay or compartment thereof containing high-voltage components shall be provided with an internal protective screen, bolted closed, to guard against inadvertent entry to these components when the enclosure door is open.
(2) Each bay containing a control-power transformer capable of 5 kVA or greater output shall be provided with an internal protective screen, bolted closed, to guard against inadvertent contact with the primary fuse when the enclosure door is open. In such cases, the screen shall also be interlocked to ensure that the secondary load has been disconnected prior to removal of these fuses.

2.6 Insulators
The interrupter-switch and fuse-mounting insulators, main-bus support insulators, insulated operating shafts, and (if applicable) push rods shall be of a cycloaliphatic epoxy resin system with characteristics and restrictions as follows:
(1) Operating experience of at least 25 years under similar conditions.
(2) Adequate leakage distance established by test per IEC Publication 507, "Artificial Pollution Test on High Voltage Insulators to be Used on AC Systems," First Edition, 1975.
(3) Adequate strength for short-circuit stress established by test.
(4) Conformance with applicable ANSI standards.
(5) Homogeneity of the cycloaliphatic epoxy resin throughout each insulator to provide maximum resistance to power arcs. Ablation due to high temperatures from power arcs shall continuously expose more material of the same composition and properties so that no change in mechanical or electrical characteristics takes place because of arc-induced ablation. Furthermore, any surface damage to insulators during installation or maintenance of switchgear shall expose material of the same composition and properties so that insulators with minor surface damage need not be replaced.
The following optional feature should be specified as required:
(6) Isolating through-bushings for the (select one: 4.16-kV, 13.8-kV) switchgear assembly shall be provided between (bay _____ and bay _____, etc.; all bays) to guard against the propagation of a fault from one bay into the adjacent bay. The isolating through-bushings shall have features and capabilities as follows:
(a) The bushings shall be of a nontracking, self-scouring, nonweathering cycloaliphatic epoxy resin. Such bushings shall be the only dielectric insulating material between the energized bus conductor and the ground plane. A single semiconducting material is permissible as an interface between the energized conductors and bushings. Isolating systems that incorporate multiple insulating materials in series shall not be acceptable, thus avoiding generation of corona that can break down the weakest insulation material.
(b) The bushings shall be designed for adequate BIL. Certified tests shall be provided upon request.

(c) The bushings shall provide a minimum of 12 1/2 inches of leakage distance between the energized bus conductor and the ground plane.
(d) To avoid thermally induced stresses that are likely to cause interface separation and failure, the bus conductor shall not be molded or cemented into the bushing.
(e) Openings between the bushings and bus conductors shall be closed with a semiconducting grommet. To avoid multiple insulating materials in series, insulating materials such as fiberglass or porcelain shall not be used for such purpose.
(f) Bushing bus conductors and main bus conductors shall be designed for direct connection and shall not require laminated or flexible bus connections.
(g) The manufacturer of the switchgear assembly shall furnish, upon request, certified tests that establish the capability of the isolating through-bushing, bus conductor, and connections to meet the short-circuit rating of the switchgear assembly. Certified tests shall be furnished, upon request, that establish the capability of the bus connections to meet applicable temperature-rise requirements.
(h) To minimize space requirements, the overall length of the bushing shall be a maximum of 9 1/2 inches from end to end.
(i) To avoid mechanical stresses that are likely to cause interface separation and failure, the isolating through-bushing shall include a flange at the ground-plane interface that shall be a formed homogeneous section of the bushing and not a separate part of dissimilar material that is molded or cemented to the bushing.
(j) Bushings shall be secured to the ground plane by clamps that overlap the bushing flanges and press the flanges securely against the ground plane, to seal the openings and restrict the propagation of ionized gases between bays.
(k) For outdoor or drip-proof applications, a drain channel shall be installed above the isolating through-bushings as a backup for the bay-to-bay gasketing, so that any moisture entering between bays will not fall on the bushing or the bus.

2.7 Bus
2.7.1 High-Voltage Main Bus
(1) Bus and interconnections shall consist of aluminum bar of a minimum 56% IACS conductivity.
(2) Bus supports, bus, and interconnections shall withstand the stresses associated with short-circuit currents up through the maximum rating of the switchgear.
(3) Before installation of the bus, all electrical contact surfaces shall first be prepared by machine -abrading to remove any aluminum-oxide film. Immediately after this operation, the electrical contact surfaces shall be coated with a uniform coating of an oxide inhibitor and sealant.
(4) Bolted aluminum-to-aluminum connections shall be made with 1/2—13 galvanized-steel bolts, with two Belleville spring washers per bolt, one under the bolt head and one under the nut. These bolts shall be tightened to 50 foot-pounds torque.
(5) Bus to which cable will be terminated shall be equipped with grounding provisions. Grounding provisions shall also be provided on the ground bus in such bays.
(6) Bus rated 1200 amperes and to which cable will be terminated shall be equipped with provisions for two cables per phase.
The following optional feature should be specified as required:
(7) Bus and interconnections shall consist of copper bar CA110, square edge, hard temper per ASTM B187. Bolted copper-to-copper connections shall have silvered interfaces and shall be made with 1/2—13 stainless-steel bolts, with two brass flat washers per bolt, one under the bolt

head and one under the nut, and with a stainless-steel split lockwasher between the flat washer and the nut. These bolts shall be tightened to 35 foot-pounds torque.

2.7.2 Ground Bus
(1) Ground bus with short-circuit rating equal to that of the integrated assembly (or a ground connection, in the case of single-bay switchgear) shall be provided, maintaining electrical continuity throughout the metal-enclosed switchgear.
(2) Ground bus shall consist of aluminum bar of a minimum 56% IACS conductivity.
(3) In each bay, the ground bus (or connector) shall be bolted to a nickel-plated steel bracket, which shall be welded in place.
(4) Nickel-plated steel brackets (at least one per bay) shall have a short-time current-carrying capability consistent with the short-circuit rating of the metal-enclosed switchgear.
(5) Bolted connections shall be as specified for the main bus, except that only one Belleville spring washer shall be required per bolt for attachment of ground bus to the nickel-plated steel bracket.
(6) For multi-bay metal-enclosed switchgear assemblies, two ground cable connectors accommodating No. 2 through 500 kc mil conductors shall be provided for connection of ground bus to station ground.
The following optional feature should be specified as required:
(7) The ground bus shall consist of copper bar CA110, square edge, hard temper per ASTM B187. Bolted copper-to-copper connections shall have silvered interfaces and shall be made with 1/2—13 stainless-steel bolts, with two brass flat washers per bolt, one under the bolt head and one under the nut, and with a stainless-steel split lockwasher between the flat washer and the nut.

2.8 Low-Voltage Components
(1) All low-voltage components, switch operators (except those integrally mounted in the switch-gear stile), source-transfer controls, meters, instruments, and relays shall be located in grounded, metal-enclosed compartments separate from high voltage to provide isolation and shall be arranged to allow complete accessibility for operation without exposure to high voltage.
(2) Space heaters, where used, shall have a grounded, perforated, galvanized steel guard.
(3) To provide isolation from high voltage, low-voltage wiring, except for short lengths such as at terminal blocks or at secondaries of sensing devices, shall be in grounded conduit, cable trays, or raceways.

2.9 Cable-Termination Space
To facilitate cable pulling and installation of cable terminators, provisions shall be made for:
(1) Full front access for positioning and removal of cable-pulling sheaves.
(2) Free access without interference from nonremovable structural members or from mechanical linkages between the interrupter-switch blades and operating mechanism.

3.0 FINISH AND FEATURES
3.2 Outdoor Switchgear
3.2.1 Outdoor Finish
(1) The enclosure finish shall conform to or exceed the applicable requirements of ANSI C57.12.28.

(2) During fabrication, the areas of structural parts which may later become inaccessible, such as folded edges and overlapping members, shall be given an iron-oxide zinc-chromate anticorrosion primer to ensure that all surfaces are protected.
(3) Full coverage at joints and blind areas shall be achieved by processing enclosures independently of components such as doors and roofs before assembly into the unitized structures.
(4) To remove oils and dirt, to form a chemically and anodically neutral conversion coating to improve the finish-to-metal bond, and to retard underfilm propagation of corrosion, all surfaces shall undergo a thorough pretreatment process comprised of a fully automated system of cleaning, rinsing, phosphatizing, sealing, drying, and cooling before any protective coatings are applied. By utilizing an automated pretreatment process, the enclosure shall receive a highly consistent thorough treatment, eliminating fluctuations in reaction time, reaction temperature, and chemical concentrations.
(5) After pretreatment, protective coatings shall be applied that shall help resist corrosion and protect the steel enclosure. To establish the capability to resist corrosion and protect the enclosure, representative test specimens coated by the enclosure manufacturer's finishing system shall satisfactorily pass the following tests:
(a) 4000 hours of exposure to salt-spray testing per ASTM B 117 with:
(i) Underfilm corrosion not to extend more than 1/32 in. from the scribe, as evaluated per ASTM D 1654, Procedure A, Method 2 (scraping); and
(ii) Loss of adhesion from bare metal not to extend more than 1/8 in. from the scribe.
(b) 1000 hours of humidity testing per ASTM D 4585, with no blistering as evaluated per ASTM D 714.
(c) 500 hours of ultraviolet-accelerated weathering testing per ASTM G 53 using lamp UVB-313, with no chalking as evaluated per ASTM D 659, and no more than a 10% reduction of paint gloss as evaluated per ASTM D 523.
(d) Crosshatch-adhesion testing per ASTM D 3359 Method B, with no loss of paint.
(e) 160-inch-pound impact, followed by adhesion testing per ASTM D 2794, with no paint chipping or cracking.
(f) 3000 cycles of abrasion testing per ASTM 4060, with no penetration to the substrate.
Certified test abstracts substantiating the above capabilities shall be furnished upon request.
(6) A heavy coat of insulating "no-drip" compound shall be applied to the inside surface of the roof structure to prevent condensation of moisture thereon.
(7) After the enclosures are completely assembled and the components (switches, fuses, bus, etc.) are installed, the finish shall be inspected for scuffs and scratches. Blemishes shall be touched up to restore the protective integrity of the finish.
(8) Touch-up materials—with complete instructions—shall be included with each shipment of metal-enclosed switchgear, for touch-up in the field.
(9) The finish shall be light gray, satisfying the requirements of ANSI Standard Z55.1 for No. 61 or No. 70; or shall be olive green, Munsell 7GY3.29/1.5.

3.2.2 Outdoor Features
(1) Enclosure Ventilation
(a) Ventilation openings shall be provided at the top and bottom on the front and rear of each bay. Ventilation openings on the front of arc-resistant switchgear shall be provided at the top only.
(b) Vents shall be rain-resistant and corrosion-resistant.

(c) Each vent shall have an inside screen and baffle to exclude insects and to protect against insertion of foreign objects.
The following optional feature should be specified as required:
(d) In consideration of exceptionally high concentrations of airborne dust, externally accessible glass-fiber filters shall be provided.
(2) Lifting eyes shall be removable. Sockets for lifting eyes shall be blind-tapped.
(3) Gasketing and Sealing
(a) Door openings and openings for hinged bolted panels (and bolted panels providing access to low-voltage components) shall have resilient compression
gasketing to prevent water from entering the enclosure.
(b) Gasket seals shall be provided at the top and side edges of adjoining bays to prevent water entry between the double walls.
(c) The top and both sides of bus openings between bays shall be covered with channel gaskets as an additional protection against entrance of water, or external labyrinthine metal rainshields shall be provided over enclosure roof flanges between adjacent bays.
(d) Roofs shall be weather-sealed in place with a suitable sealant.
(4) Space Heaters
(a) Space heaters with sheaths of high-temperature chrome steel shall be provided to maintain air circulation inside the enclosure.
(b) There shall be a space heater in each bay.
(c) Space heaters shall be wired.
The following optional feature should be specified as required:
(d) A low-voltage circuit breaker shall be provided in the strip heater circuit.

4.0 BASIC COMPONENTS (Select applicable component specifications from those that follow.)
4.1 Interrupter Switches
(1) Interrupter switches shall have a one-time or two-time duty-cycle fault-closing rating equal to or exceeding the short-circuit rating of the switchgear. These ratings define the ability to close the interrupter switch either alone (unfused) or in combination with the appropriate fuse, once or twice (as applicable) against a three-phase fault with asymmetrical current in at least one phase equal to the rated value, with the switch remaining operable and able to carry and interrupt rated current. Tests substantiating these ratings shall be performed at maximum voltage. Certified test abstracts establishing such ratings shall be furnished upon request.
(2) Interrupter switches intended for manual operation shall be operated by means of an externally operable, nonremovable handle. The handle shall have provisions for padlocking in both the open and closed positions. Interrupter switches intended for power operation shall be operated by means of a switch operator expressly designed to be compatible with the interrupter switch.
(3) Interrupter switches shall utilize a quick-make quick-break mechanism installed by the switch manufacturer. The mechanism shall swiftly and positively open and close the interrupter switch independent of the switch-handle or switch-operator-operating speed.
(a) For manually operated interrupter switches, and for interrupter switches operated by direct-motor-drive switch operators, the quick-make quick-break mechanism shall be integrally mounted to the switch frame.
(b) For interrupter switches operated by stored-energy switch operators, the quick-make quick-break mechanism shall be an integral part of the switch operator.

(4) Interrupter switches shall be completely assembled and adjusted by the switch manufacturer on a single rigid mounting frame. The frame shall be of welded steel construction such that the frame intercepts the leakage path which parallels the open gap of the interrupter switch, to positively isolate the load circuit when the interrupter switch is in the open position.
(5) Interrupter switches shall be provided with a single blade per phase for circuit closing, including fault closing, continuous current carrying, and circuit interrupting. Spring-loaded auxiliary blades shall not be permitted.
(6) Circuit interruption shall be accomplished by use of an interrupter, which is positively and inherently sequenced with the blade position. Circuit interruption shall take place completely within the interrupter, with no external arc or flame. Any exhaust shall be vented in a controlled manner through a labyrinthine muffler or a de-ionizing vent.
(7) Interrupter switches shall have a readily visible open gap when in the open position to allow positive verification of switch position.
(8) Terminals on interrupter switches to which cable will be terminated shall be equipped with grounding provisions. Grounding provisions shall also be provided on the ground bus in such bays.
(9) Terminals on interrupter switches rated 1200 amperes and, for entrance-bay applications only, terminals on interrupter switches used in conjunction with fuses rated 600 amperes or greater, shall be equipped with provisions for two cables per phase.
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4.2 Fuses
4.2.1 Solid-Material Power Fuses
(1) Solid-material power fuses shall utilize refill-unit-and-holder or fuse-unit-and-endfitting construction. The refill unit or fuse unit shall be readily replaceable.
(2) For switchgear rated up through 270 MVA at 4.16 kV, 600 MVA at 13.8 kV, 860 MVA at 25 kV, and 1000 MVA at 34.5 kV, mountings for solid-material power fuses shall be disconnect style. Non-disconnect style mountings for power fuses shall be used only where higher ratings are required.
(3) Fusible elements shall be nonaging and nondamageable, so it is unnecessary to replace unblown companion fuses following a fuse operation.
(4) Fusible elements for refill units or fuse units, rated 10 amperes or larger, shall be helically coiled to avoid mechanical damage due to stresses from current surges.
(5) Fusible elements that carry continuous current shall be supported in air to help prevent damage from current surges.
(6) Refill units and fuse units shall have a single fusible element to eliminate the possibility of unequal current sharing in parallel current paths.
(7) Solid-material power fuses shall have melting time-current characteristics that are permanently accurate with a maximum total tolerance of 10% in terms of current. Time-current characteristics shall be available which permit coordination with protective relays, automatic circuit reclosers, and other fuses.
(8) Solid-material power fuses shall be capable of detecting and interrupting all faults, whether large, medium, or small (down to minimum melting current); under all realistic conditions of circuitry; and with line-to-line or line-to-ground voltage across the power fuses. And they shall be capable of handling the full range of transient recovery voltage severity associated with these faults.

(9) All arcing accompanying solid-material power fuse operation shall be contained within the fuse, and any arc products and gases evolved during fuse operation shall be vented through exhaust control devices that shall effectively control fuse exhaust.
(10) Solid-material power fuses shall be equipped with a blown-fuse indicator that shall provide visible evidence of fuse operation while installed in the fuse mounting.
(11) Solid-material power fuses in feeder bays shall be equipped with grounding provisions on the load side of each fuse and on the enclosure ground bus.

5.0 LABELING
5.1 Hazard-Alerting Signs
(1) All external doors and hinged bolted panels providing access to high voltage shall be provided with "Caution—High Voltage—Keep Out" signs.
(2) All internal protective screens providing access to high voltage shall be provided with "Danger—High Voltage—Keep Out—Qualified Persons Only" signs.
(3) All internal protective screens providing access to interrupter switches shall be provided with warning signs indicating that "Switch Blades May Be Energized in Any Position."
(4) All internal protective screens providing access to fuses shall be provided with warning signs indicating that "Fuses May Be Energized in Any Position."

5.2 Ratings Nameplates
(1) The integrated switchgear assembly shall be provided with an external nameplate indicating the manufacturer's drawing number and the following: voltage ratings (kV, nominal; kV, maximum; kV, BIL); main bus continuous current rating (amperes); short-circuit ratings (amperes, RMS, symmetrical and MVA, three-phase symmetrical, at rated nominal voltage); and the momentary and fault-closing ratings (amperes, RMS, asymmetrical). If the assembly is UL listed, the external nameplate shall include the UL classification markings, comprised of "UL" in a circle; the word "Listed;" the assigned control number; and the product identity.
(2) Each individual bay shall bear a nameplate indicating the ratings of the interrupter switch (amperes, continuous and interrupting); the maximum rating of the fuse (amperes); and the catalog number of the fuse units, refill units, or interrupting modules and control modules. If the individual bay is UL listed, this nameplate shall include the UL classification markings, comprised of "UL" in a circle; the word "Listed;" the assigned control number; and the product identity. In addition, the enclosure category shall be specified.

6.0 ACCESSORIES (Specify as required.)
6.1 Fuse units, refill units, voltage-transformer fuses, interrupting modules, and control modules shall be provided, as required, for original installation and for spares.
6.2 A fuse handling tool and universal pole as recommended by the fuse manufacturer shall be provided.
6.3 A total of _____ set(s) of three grounding jumpers (8 ft., 10 ft.) in length shall be provided, complete with a storage bag for each set.
6.4 A voltage tester with audio-visual signal capability shall be provided, complete with batteries, shotgun clamp-stick adapter, and storage case.
6.5 A shotgun clamp stick (6 ft.–5 1/2 in., 8 ft.–5 1/2 in.) in length shall be provided, complete with canvas storage bag.

6.6 A portable remote-control station with 50-foot cord shall be provided for power-operated switch-gear, to permit open/close operations of power-operated switches from an adjacent location.
6.7 A test accessory shall be provided for power-operated switchgear, to permit preliminary checkout of the source-transfer system using a separate single-phase control source before medium voltage is connected to the switchgear.

7.0 ANALYTICAL SERVICES

The following analytical services should be specified as required:

7.1 Short-Circuit Analysis

(1) The manufacturer shall provide a short-circuit analysis to determine the currents flowing in the electrical system under faulted conditions. Since expansion of an electrical system can result in increased available short-circuit current, the momentary and interrupting ratings of new and existing equipment on the system shall be checked to determine if the equipment can withstand the short-circuit energy. Fault contributions from utility sources, motors, and generators shall be taken into consideration. If applicable, results of the analysis shall be used to coordinate overcurrent protective devices and prepare an arc-flash hazard analysis of the system.
(2) Data used in the short-circuit analysis shall be presented in tabular format, and shall include the following information:
(a) Equipment identifications.
(b) Equipment ratings.
(c) Protective devices.
(d) Operating voltages.
(e) Calculated short-circuit currents.
(f) X/R ratios.
(3) A single-line diagram model of the system shall be prepared, and shall include the following information:
(a) Identification of each bus.
(b) Voltage at each bus.
(c) Maximum available fault current, in kA symmetrical, on the utility source side of the incoming feeder or first upstream device.
(d) Data for each transformer
(i) Three-phase kVA rating
(ii) Percent impedance
(iii) Temperature rise, 65 °C and 55/65 °C
(iv) Primary voltage
(v) Primary connection
(vi) Secondary voltage
(vii) Secondary connection
(viii) X/R ratio
(ix) Tap settings and available settings
(4) The manufacturer shall use commercially available PC-based computer software such as Power System Analysis Framework (PSAF – Fault) from CYME International, CYMDIST, and/or SKM Power Tools® for Windows with the PTW Dapper Module to calculate three-phase, phase-to-phase, and phase-to-ground fault currents at relevant locations in the electrical system,

in accordance with ANSI Standards C37.010, C37.5, and C37.13. If applicable, an ANSI closing -and-latching duty analysis shall also be performed to calculate the maximum currents following fault inception.

7.2. Overcurrent Protective Device Coordination Analysis
(1) The manufacturer shall provide an overcurrent protective device coordination analysis to verify that electrical equipment is protected against damage from short-circuit currents. Analysis results shall be used to select appropriately rated protective devices and settings that minimize the impact of short-circuits in the electrical system, by isolating faults as quickly as possible while maintaining power to the rest of the system.
(2) As applicable, the analysis shall take into account pre-load and ambient-temperature adjustments to fuse minimum-melting curves, transformer magnetizing-inrush current, full-load current, hot-load and cold-load pick-up, coordination time intervals for series-connected protective devices, and the type of reclosers and their reclosing sequences. Locked-rotor motor starting curves and thermal and mechanical damage curves shall be plotted with the protective-device time-current characteristic curves, as applicable.
(3) Differing per-unit fault currents on the primary and secondary sides of transformers (attributable to winding connections) shall be taken into consideration in determining the required ratings or settings of the protective devices.
(4) The time separation between series-connected protective devices, including the upstream (source-side) device and largest downstream (load-side) device, shall be graphically illustrated on log-log paper of standard size. The time-current characteristics of each protective device shall be plotted such that all upstream devices shall be clearly depicted on one sheet.
(5) The manufacturer shall furnish coordination curves indicating the required ratings or settings of protective devices to demonstrate, to the extent possible, selective coordination. The following information shall be presented on each coordination curve, as applicable:
(a) Device identifications.
(b) Voltage and current ratios.
(c) Transformer through-fault withstand duration curves.
(d) Minimum-melting, adjusted, and total-clearing fuse curves.
(e) Cable damage curves.
(f) Transformer inrush points.
(g) Maximum available fault current, in kA symmetrical, on the utility source side of the incoming feeder or first upstream device.
(h) Single-line diagram of the feeder branch under study.
(i) A table summarizing the ratings or settings of the protective devices, including:
(i) Device identification.
(ii) Relay current-transformer ratios, and tap, time-dial, and instantaneous-pickup settings.
(iii) Circuit-breaker sensor ratings; long-time, short-time, and instantaneous settings; and time bands.
(iv) Fuse type and rating.
(v) Ground fault pickup and time delay.
(6) The manufacturer shall use commercially available PC-based computer software such as CYMTCC from CYME International and/or SKM Captor to create the time-current characteristic curves for all protective devices on each feeder.

(7) As applicable, a technical evaluation shall be prepared for areas of the electrical system with inadequate overcurrent protective device coordination, with recommendations for improving coordination.

7.3 Arc-Flash Hazard Analysis
(1) The manufacturer shall provide an arc-flash hazard analysis to verify that electrical equipment on the system is "electrically safe" for personnel to work on while energized. An arc flash is a flashover of electric current in air from one phase conductor to another phase conductor, or from one phase conductor to ground that can heat the air to 35,000° F. It can vaporize metal and cause severe burns to unprotected workers from direct heat exposure and ignition of improper clothing. And the arc blast resulting from release of the concentrated radiant energy can damage hearing and knock down personnel, causing trauma injuries.
(2) The arc-flash hazard analysis shall include the following:
(a) Identification of equipment locations where an arc-flash hazard analysis is required.
(b) Collection of pertinent data at each equipment location, including:
(i) Transformer kVA ratings, including voltage, current, percent impedance, winding ratio, and X/R ratio, plus wiring connections.
(ii) Protective device ratings, including current, time-current characteristics, settings, and time delays.
(iii) Switchgear data, including conductor phase spacing, type of grounding, and appropriate working distances.
(c) Preparation of a single-line diagram model of the system.
(d) Preparation of a short-circuit study to determine the three-phase bolted fault current at each location.
(e) Preparation of arc-flash calculations in accordance with NFPA 70E and IEEE 1584, including:
(i) Calculation of arc current in accordance with applicable guidelines.
(ii) Determination of protective device total-clearing times based upon the time-current characteristics.
(iii) Calculation of arc-flash incident energy level based on the protective device total-clearing times and appropriate working distance.
(f) Determination of appropriate personal protective equipment in accordance with risk levels defined in NFPA 70E.
(g) Calculation of the arc-flash protection boundary distance.
(h) Documentation of the results of the analysis, including:
(i) Preparation of a written report.
(ii) Preparation of single-line diagrams.
(iii) Preparation of arc-flash hazard labels to be affixed to the equipment.
(i) The manufacturer shall use commercially available PC-based computer software such as the arc-flash module in SKM Power Tools® for Windows to calculate the incident energy category levels, in accordance with IEEE 1584.

7.4. Analytical Service Site Visits
(1) The manufacturer shall perform a site walk-down to gather:
(a) Transformer ratings, including voltage, current, power, percent impedance, winding ratio, and X/R ratio, plus wiring connections.
(b) Protective device ratings, including current, time-current characteristics, settings, and time delays.

(c) Switchgear data, including conductor phase spacing, type of grounding, and appropriate working distances.

Equipment Specifications #VRNTL-14-B-03 Part #4
The transformer specifications for Village of Rantoul Bid **#VRNTL-14-B-03 Part #4** for a vendor to furnish, design, fabricate, construct, and deliver two (2) 500kva 12.47kv-120/208v pad-mounted transformers are as follows:

Three Phase, Oil Filled, Loop Feed, pad-mount transformer
Shall be designed to provide electric service to commercial and industrial loads.

Quantity:	2					
KVA:	500					
Primary Voltage:	12.47kv / 7.2kv	**X**	13.8kv / 7620	____	13.8kv /	_____
Secondary Voltage:	208Y/120	**X**	480Y/277	____	4160/2400	_____
Bil:	95 KV					
Frequency:	60 HZ					
Temperature Rise:	65 degree C					
Taps:	(Taps @ 2.5% Above and Below Normal)					**X**
	(Taps @ 8170 / 7970 / 7620 / 7200 / 7020)					_____
Impedance:	6.15%+/-	allows for paralleling with existing similar transformers				
Connections:	**Delta / Wye**					

A. High Voltage Bushings and Terminals

1. The high voltage bushings provided shall be 15KV, 200A, loadbreak Bushing Insert shall

conform to ANSI/IEEE 386. The current carrying path shall be all copper. The unit shall have a hex-broaded base to accommodate torque tool for installation assistance. A latched elbow indicator ring shall be provided.

2. The transformer shall be provided with six (6) high voltage bushings rated for full three-phase duty in accordance with ANSI C57.12.26 for loop feed configurations. (For this configuration the K dimension shall be 6.5 inches.)

3. The bushing height shall be in accordance with Figure 7 of ANSI C57.12.26.

4. Cable accessory parking stands shall be provided and shall be located such that the separable insulated connectors that are designed for operation after the transformer is in place can be operated by hot-line tools.

B. Low Voltage Bushings and Terminals

1. The low voltage bushings provided shall be 15KV, 600A, loadbreak Bushing Insert shall conform to ANSI/IEEE 386. The current carrying path shall be all copper. The unit shall have a hex-broaded base to accommodate torque tool for installation assistance. A latched elbow indicator ring shall be provided.

2. Cable accessory parking stands shall be provided and shall be located such that the separable insulated connectors that are designed for operation after the transformer is in place can be operated by hot-line tools.

3. The bushing height shall be in accordance with Figure 7 of ANSI C57.12.26.

C. Tank and Terminal Compartment

1. The transformer shall be compartmental type, self-cooling, tamper resistant and weather protected for mounting on a pad. The unit shall consist of a transformer tank, high voltage compartment and low voltage compartment assembled as an integral unit. There shall be no externally removable screws, bolts or other fastening devices.

2. The transformer shall have a sealed tank of sufficient strength to withstand a pressure of 7psi without permanently distorting the tank. The tank shall remain sealed for top oil temperature range of 50 degrees C to 105 degrees C. Cooling panels shall be provided on the back and sides of the tank when required by design. The tank shall include a pressure relief valve with a flow at 15 psig - 35 SCFM minimum. The tank shall have welded-in-place lifting lugs and jacking pads. The tank base must be designed to allow skidding or rolling in any direction.

3. The core and coil assembly shall be a wound core type with aluminum windings. The assembly shall be designed to reduce losses and noise and provide adequate short-circuit strength and heat dissipation. Internal leads shall be insulated, carefully trained and anchored to prevent phase to phase flashover. A tap changing mechanism shall be provided for accurate voltage adjustment without opening the tank. The tap changing mechanism shall be externally operated and shall be for de-energized operation only. Taps for two - 2 1/2% taps above and below rated voltage shall be provided and/or arraingment specified.

4. The dielectric coolant in the transformer shall be highly refined inhibited new mineral oil and meet the minimum requirements as specified in, "Functional Property Requirements," of ASTM D3487 and ANSI C57.106.

5. All transformer oil must be bulk tested for polychlorinated biphenyl's (PCBs) per ASTM D4059 and certified, as having no detectable level of PCB.

6. The high and low voltage compartments shall be adjacent, but of independent construction and shall be separated by a steel barrier. The compartment depths shall be in accordance with ANSI C57.12.26.

7. When facing the pad mounted transformer, the low voltage compartment shall be on the right.

8. The doors shall be designed to fit flush with the front and side panels of the cabinet. The doors shall be equipped with stainless steel hinges, pins and "stops" to secure the doors when open.

9. The low voltage door shall have a three (3)-point latching mechanism, vault handle, penta-head bolt that meets the dimension set forth in ANSI C57.12.28 and provisions for a single padlock. The interlocked bolt/padlock handle assembly shall require a spring-loaded bolt to be threaded into place before the padlock can be inserted.

10. The high voltage door fastenings shall not be accessible until the low voltage door is opened. The securing of the high voltage door shall include a penta-head bolt assembly.

11. The pad mounted equipment shall meet the requirements for tamper resistance set forth in ANSI C57.12.28 including but not limited to the pry test, pull test, and wire probe test.

12. The front sill shall be removable.

13. ANSI tank grounding provisions shall be furnished in each compartment.

14. The tank shall be complete with an engraved nameplate that shall comply with the requirements of ANSI C57.12.00.

15. Painting shall with an ANSI Standard primer and the color green.

D. Additional Requirements

1. The transformer primary shall include Bayonet fusing with internal isolation link.

2. Drain valve / Sampling device

3. Spare set of fuses shall be included.

E. Testing and Losses

1. All units shall be tested for no-load (85 deg C) losses, total (85 deg C) losses, percent impedance (85 deg C), excitation current (100% voltage). Each unit shall be subjected to a full wave voltage impulse and leak test. The manufacturer shall provide certification for all design and other tests listed in Table 17 of ANSI C57.12.00 including verification that the design had passed Short Circuit Criteria per ANSI C57.12.00 and C57.12.90.

2. The manufacturer shall provide the guaranteed average no-load losses for the unit at 85 deg C.

Equipment Specifications #VRNTL-14-B-03 Part #5
The light standard specifications for Village of Rantoul Bid **#VRNTL-14-B-03 Part #5** for a vendor to furnish, design, fabricate, construct, and deliver sixty (60) light standards as follows:

Hapco Model Number 88486-003FSP1-T3, or equivalent
10' decorative pedestal pole
4" diameter fluted extruded aluminum tube (0.125" wall)
Cast aluminum octagonal base with door (8" x 9-1/2" opening) and stainless steel screws
Festoon outlet with GFI outlet receptacle

Equipment Specifications #VRNTL-14-B-03 Part #6
The light fixture specifications for Village of Rantoul Bid **#VRNTL-14-B-03 Part #6** for a vendor to furnish, design, fabricate, construct, and deliver sixty (60) light fixtures as follows:

Cooper Lighting, Model Number UTD15SP233HJS, or equivalent
UTD Dayform Traditionaire
150W High Pressure Sodium (HPS)
Hi Reactance
120 volt
Type III lighting distribution pattern
Black
Plug-in Starter Receptacle
Factory installed ladder rest
Snap latches for tool-less lamp replacement

Equipment Specifications #VRNTL-14-B-03 Part #7

The light standard foundation anchors for Village of Rantoul Bid **#VRNTL-14-B-03 Part #7** for a vendor to furnish, design, fabricate, construct, and deliver sixty (60) light standard foundation anchors as follows:

Earth Contact Products Utility, Model Number LP-S-663-60-12, or equivalent
Light Pole Foundation – Hot Dipped Galvanized
60" Length
6.63" Foundation Diameter
Carriage Bolt
1" Base Plate Thickness
15.75" x 15.75" Base Plate Dimension
12" Helix Diameter

Equipment Specifications #VRNTL-14-B-03 Part #8
The S&C Switch Cabinet specifications for Village of Rantoul Bid **#VRNTL-14-B-03 Part #8** for a vendor to furnish, design, fabricate, construct, and deliver two (2) S&C Switch Cabinets as follows:

S&C Electric Company, Model Number PME-10, or equivalent
Nominal rated at 14.4kv; Maximum rated at 17kv; BIL rating at 95kv
Dead-front, manual operation with two (2) sets of 600 amp mini-rupter switches and two (2) 200 amp fused compartments with sets of 100 amp fuses and 40 amp fuses

Delivery Location of Equipment
The Bidder(s) agrees to furnish, design, fabricate, construct, and deliver a 2500kva (13.8kv-277/480v) three-phase pad-mounted transformer, a 2500kva (13.8kv-4.16kv) three-phase pad-mounted transformer, three (3) 15kv S&C switchgear bays, two (2) 500kva (12.5kv-120/208v) three-phase pad-mount transformers, sixty (60) light standards, sixty (60) light fixtures, sixty (60) light standard foundation anchors, and two (2) 15kv S&C switch cabinets to the Village of Rantoul Public Works Warehouse (Building 729), 621 Cook Street, Rantoul, Illinois 61866.

Additional Information
All Bidders must have a minimum of five (5) years of demonstrated success and experience in furnishing, designing, fabricating, constructing and delivering the specified electrical equipment. Any Bidder may also be invited to submit more detailed information, to make oral presentations, or both. The Village may make reasonable investigation deemed necessary and proper to determine the ability of the vendor to provide the removal of surplus material and provide guaranteed payment. The vendor shall furnish to the Village all information for this purpose that may be reasonably requested. The Village reserves the right to accept or reject any or all Bid proposals, or any part thereof, received from any vendor in connection with the request for Bids for any reason.

Bid Evaluation
Bids will be evaluated, scored, and the award recommendation based on adherence to the equipment specifications, apparent ability to deliver the equipment by said date, and equipment price.

Requesting Agency

This request for Bid is made by the Village of Rantoul, Champaign County, Illinois, having its principal office located in the Municipal Building, 333 S. Tanner Street, Rantoul, Illinois 61866. All inquiries including those for clarification of this request for Bid in connection with the specifications requested under this Bid request shall be made to:

Scot Brandon, Comptroller
Village of Rantoul
P.O. Box 38
333 South Tanner Street
Rantoul, IL 61866
Tel: 217-892-6828
Fax: 217-892-5501

BID FORM

Bid submitted by _____ (hereinafter called the "BIDDER"), organized and existing under the laws of the State of _____, doing business as a _____ .
(Individual, Partnership or Corporation)

To the Village of Rantoul, Illinois (hereinafter called the "VILLAGE").

Information for Bidders:
In compliance with the Request for Bid, the **Bidder** hereby offers to furnish, design, construct, fabricate, and deliver a 2500kva (13.8kv-277/480v) three-phase pad-mounted transformer, a 2500kva (13.8kv-4.16kv) three-phase pad-mounted transformer, three (3) 15kv S&C switchgear bays, two (2) 500kva (12.5kv-120/208v) three-phase pad-mount transformers, sixty (60) light standards, sixty (60) light fixtures, sixty (60) light standard foundation anchors, and two (2) 15kv S&C switch cabinets

By submission of this Bid, the undersigned certifies, and in the case of a joint Bid, each party thereto certifies as to his or her own organization, that in connection with the bid:

a. The price in the BID has been arrived at independently, without consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such prices with any other BIDDER or with any competitor;

b. Unless otherwise required by law, the prices which have been quoted in the BID have not knowingly been disclosed by the BIDDER prior to opening, directly or indirectly to any other BIDDER or to any competitor; and,

c. No attempt has been made or will be made by the BIDDER to induce any other person or firm to submit or not to submit a BID for the purpose of restricting competition.

d. He or she is the person in the BIDDER'S organization responsible within that organization for the decision as to the prices being bid and shall also certify that he has not participated, and will not participate, in any action contrary to Paragraph "a" through "c" above.

e. He or she is not the person in the BIDDER'S organization responsible within that organization for the decision as to the prices being proposed but that he has been authorized to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to Paragraphs "a" through "c", above, and as their agent shall so certify; and shall also certify that he has not participated, and will not participate in action contrary to Paragraphs "a" through "c" above.

BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDA:

Addenda No.	Date	Signature
_____	_____	
_____	_____	
_____	_____	

Note: Failure to acknowledge any Addendum shall be considered sufficient cause for rejection of your bid.

BIDDER offers to furnish and deliver the facilities for the following **sums**. (Sales tax is not applicable. BIDS shall include all other applicable taxes and fees.)

2500kva 13.8kv - 277 /480v three-phase pad-mounted transformer

Bid #VRNTL-14-B-03 Part #1

Bid:

Furnish and deliver a 2500kva 13.8kv – 277/480v three-phase pad mounted transformer, in the lump sum amount of,

_____ Dollars and _____ Cents.
(in writing)

$ _____
(in figures)

Respectfully submitted:

Vendor Information:

VENDOR/ COMPANY NAME:_____

ADDRESS :_____

_____

(Indicate whether a Corporation, Partnership or Private Enterprise:)

FEIN NUMBER_____

NAME OF REPRESENTATIVE (*Please Print*):_____

TITLE OF REPRESENTATIVE:_____

SIGNATURE OF REPRESENTATIVE:_____

CONTACT PHONE #_____

EMAIL ADDRESS:_____

FAX #_____

(SEAL - if BID is by a corporation)

Attest _____

Title _____

2500kva 13.8kv / 4.16kv three-phase, step-down pad-mounted transformer

Bid #VRNTL-14-B-03 Part #2

Bid:

Furnish and deliver a 2500kva 13.8kv / 4.16kv step-down pad mounted transformer, in the lump sum amount of,

_____ Dollars and _____ Cents.
(in writing)

$ _____
(in figures)

Respectfully submitted:

Vendor Information:

VENDOR/ COMPANY NAME:_____

ADDRESS :_____

_____

(Indicate whether a Corporation, Partnership or Private Enterprise:)

FEIN NUMBER_____

NAME OF REPRESENTATIVE (*Please Print*):_____

TITLE OF REPRESENTATIVE:_____

SIGNATURE OF REPRESENTATIVE:_____

CONTACT PHONE #_____

FAX #_____

(SEAL - if BID is by a corporation)

Attest _____

Title _____

15 kv S&C Switchgear bays

Bid #VRNTL-14-B-03 Part #3

Bid:
Furnish and deliver three (3) 15kv S&C Switchgear bays in the lump sum amount of,

_____ Dollars and _____ Cents.
(in writing)

$ _____
(in figures)

Respectfully submitted:

Vendor Information:

VENDOR/ COMPANY NAME:_____

ADDRESS :_____

_____

(Indicate whether a Corporation, Partnership or Private Enterprise:)

FEIN NUMBER_____

NAME OF REPRESENTATIVE (*Please Print*):_____

TITLE OF REPRESENTATIVE:_____

SIGNATURE OF REPRESENTATIVE:_____

CONTACT PHONE #_____

FAX #_____

(SEAL - if BID is by a corporation)

Attest _____

Title _____

Two (2) 500kva 12.5kv – 120/208v three-phase pad-mounted transformers

Bid #VRNTL-14-B-03 Part #4

Bid:
Furnish and deliver **two (2)** 500kva 12.5kv – 120/208v three-phase pad-mounted transformers, in the lump sum amount of,

_____ Dollars and _____ Cents.
(in writing)

$ _____
(in figures)

Respectfully submitted:

Vendor Information:

VENDOR/ COMPANY NAME:_____

ADDRESS :_____

_____

(Indicate whether a Corporation, Partnership or Private Enterprise:)

FEIN NUMBER_____

NAME OF REPRESENTATIVE (*Please Print*):_____

TITLE OF REPRESENTATIVE:_____

SIGNATURE OF REPRESENTATIVE:_____

CONTACT PHONE #_____

EMAIL ADDRESS:_____

FAX #_____

(SEAL - if BID is by a corporation)

Attest _____

Title _____

LIGHT STANDARDS
Bid #VRNTL-14-B-03 Part #5

Bid:
Furnish and deliver sixty (60) light standards in the lump sum amount of,

_____ Dollars and _____ Cents.
(in writing)

$ _____
(in figures)

Respectfully submitted:

Vendor Information:

VENDOR/ COMPANY NAME:_____

ADDRESS :_____

_____

(Indicate whether a Corporation, Partnership or Private Enterprise:)

FEIN NUMBER_____

NAME OF REPRESENTATIVE (*Please Print*):_____

TITLE OF REPRESENTATIVE:_____

SIGNATURE OF REPRESENTATIVE:_____

CONTACT PHONE #_____

EMAIL ADDRESS:_____

FAX #_____

(SEAL - if BID is by a corporation)

Attest _____

Title _____

LIGHT FIXTURES
Bid #VRNTL-14-B-03 Part #6

Bid:
Furnish and deliver sixty (60) Light Fixtures, in the lump sum amount of,

_____ Dollars and _____ Cents.
(in writing)

$ _____
(in figures)

Respectfully submitted:

Vendor Information:

VENDOR/ COMPANY NAME:_____

ADDRESS :_____

_____

(Indicate whether a Corporation, Partnership or Private Enterprise:)

FEIN NUMBER_____

NAME OF REPRESENTATIVE (*Please Print*):_____

TITLE OF REPRESENTATIVE:_____

SIGNATURE OF REPRESENTATIVE:_____

CONTACT PHONE #_____

EMAIL ADDRESS:_____

FAX #_____

(SEAL - if BID is by a corporation)

Attest _____

Title _____

LIGHT STANDARD FOUNDATION ANCHORS
Bid #VRNTL-14-B-03 Part #7

Bid:
Furnish and deliver sixty (60) light foundation screw anchors, in the lump sum amount of,

_____ Dollars and _____ Cents.
(in writing)

$ _____
(in figures)

Respectfully submitted:

Vendor Information:

VENDOR/ COMPANY NAME:_____

ADDRESS :_____

_____

(Indicate whether a Corporation, Partnership or Private Enterprise:)

FEIN NUMBER_____

NAME OF REPRESENTATIVE (*Please Print*):_____

TITLE OF REPRESENTATIVE:_____

SIGNATURE OF REPRESENTATIVE:_____

CONTACT PHONE #_____

EMAIL ADDRESS:_____

FAX #_____

(SEAL - if BID is by a corporation)

Attest _____

Title _____

S&C SWITCH CABINETS
Bid #VRNTL-14-B-03 Part #8

Bid:
Furnish and deliver **two (2)** 15kv S&C Switch Cabinet (Dead-front, 2-600amp/2-200amp), in the lump sum amount of,

_____ Dollars and _____ Cents.
(in writing)

$ _____
(in figures)

Respectfully submitted:

Vendor Information:

VENDOR/ COMPANY NAME:_____

ADDRESS :_____

_____

(Indicate whether a Corporation, Partnership or Private Enterprise:)

FEIN NUMBER_____

NAME OF REPRESENTATIVE (*Please Print*):_____

TITLE OF REPRESENTATIVE:_____

SIGNATURE OF REPRESENTATIVE:_____

CONTACT PHONE #_____

EMAIL ADDRESS:_____

FAX #_____

(SEAL - if BID is by a corporation)

Attest _____

Title _____

TO: Rantoul Press
Fax: (217) 893-9451

FROM: Scot Brandon

DATE: August 30, 2013

RE: Legal Ad

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Please place the attached ad in your Wednesday, September 4, 2013 publication.

If you have any questions please call me at 892-6828.