

REQUEST FOR QUOTATION

****THIS IS NOT AN ORDER****

Return Quotes To:

The University of Tennessee
Purchasing Department
5723 Middlebrook Pike
Knoxville, TN 37921

Vendor Address

Bidder # D99999
University of T
PARENT RFQ
UT TN

Information

Date: 05/28/2010
RFQ No: 6000038515
Collective No: 10035175
Return Quote By: 06/11/2010 2:30 pm EDT
Promised Ship Date: (Furnish) _____
Payment Terms: (Furnish) _____
FOB UT Dest Unless Otherwise Specified Below

Buyer: Pamela Newlon
Phone: 865-974-0900
Fax: 865-974-2973

Item	Quantity	UM	Material/Description	Price Per Unit	Net Amount
------	----------	----	----------------------	----------------	------------

Any unregistered bidder must register at: <http://purchasing.tennessee.edu> Scroll to "Bid & Proposal Advertisements" under Quick Links, and follow the instructions. Failure to do so will result in rejection of your bid.

The University will be the sole judge of whether any proposed item is equal to the specifications.

*** DELIVERY MAY BE A FACTOR IN THE AWARD ***

Project #: D-10324
Doc #: P10-10963

00001 1 EA Pad mounted switchgear, as follows: _____

S&C VISTA medium voltage switch, SF6 gas filled, pad mounted, 4 way, 25,000 AIC switchgear. The switchgear to consist of a gas-tight 304 stainless steel tank containing SF6 gas, load interrupter switches, resettable fault interrupters, visible open gap, and integral visible grounds. A 2" wide x 3/8" thick tinned copper ground bus to be provided with two 5/16in holes drilled in ground bus every 6" along the entire length of the gas tank of the switchgear.

The switchgear to be in accordance with the one line diagram, and must meet all attached specifications.

The successful bidder to submit shop drawings upon award.

Manufacturer _____ # _____

Warranty _____

DELIVERY MAY BE A FACTOR IN THE AWARD

Delivery is requested as soon as possible. Please state your best delivery in the space provided below:

Best delivery date _____

REQUEST FOR QUOTATION

****THIS IS NOT AN ORDER****

Return Quotes To:

The University of Tennessee
Purchasing Department
5723 Middlebrook Pike
Knoxville , TN 37921

Vendor Address

Bidder # D99999
University of T
PARENT RFQ
UT TN

Information

Date: 05/28/2010
RFQ No: 6000038515
Collective No: 10035175
Return Quote By: 06/11/2010 2:30 pm EDT
Promised Ship Date: (Furnish) _____
Payment Terms: (Furnish) _____
FOB UT Dest Unless Otherwise Specified Below

Buyer: Pamela Newlon
Phone: 865-974-0900
Fax: 865-974-2973

Item	Quantity	UM	Material/Description	Price Per Unit	Net Amount
ATTACHMENT					
1-			SPECIFICATIONS - (11 pages)		

SPECIAL BID CONDITIONS**SBC 1 CONFLICT OF CONDITIONS**

In the event that there are any conflicts between the general bid conditions and these special bid conditions the special bid conditions shall take precedence.

SBC 2 BID AS SPECIFIED OR EQUAL

The items on this request for quotations shall be as specified or equal. When the specifications specify a product by name of a manufacturer or vendor, or whenever the terms (similar to) and (equal to), or (approved equal) are used, the terms named are intended to set the standard for such materials or articles. The burden of proof shall rest solely with the supplier to prove that the proposed substitutes are equal to the materials or articles specified. The university shall be the sole judge as to whether the items submitted are equal to those specified.

SBC-3- SEALED BID

The envelope in which quotations will be submitted should be identified by placing the required information on the outside of the envelope as follows: It is imperative that your name and address appear in the upper left corner of the envelope and that the collective number, due date and time of opening appear in the lower left corner. Bid openings shall be public, on the date and at the time specified on the bid form. All sealed bids must be received in the purchasing department on or before the date and hour specified for bid opening. Sealed bids that miss the deadline will be rejected and returned unopened or kept on file in the purchasing department. No qualifying letters or statements from vendors will be considered a justification for accepting late bids.

SBC-4 WARRANTY

Each bidder is required to attach to their quotation a detailed statement of warranty or guarantee. The statement should include the period of time involved as well as the specific details of the warranty.

SBC-5- FOB

PLEASE QUOTE F.O.B. DESTINATION DELIVERED. TO INCLUDE ANY AND ALL FREIGHT CHARGES.

SBC 6 BID MUST BE IN ACCORDANCE WITH SPECIFICATIONS

Bidders are cautioned that unless otherwise stipulated in their bids, it will be assumed that they are bidding in strict accordance with the specifications and will be required to strictly comply therewith. Any

REQUEST FOR QUOTATION

****THIS IS NOT AN ORDER****

Return Quotes To:

The University of Tennessee
Purchasing Department
5723 Middlebrook Pike
Knoxville, TN 37921

Vendor Address

Bidder # D99999
University of T
PARENT RFQ
UT TN

Information

Date: 05/28/2010
RFQ No: 6000038515
Collective No: 10035175
Return Quote By: 06/11/2010 2:30 pm EDT
Promised Ship Date: (Furnish) _____
Payment Terms: (Furnish) _____
FOB UT Dest Unless Otherwise Specified Below

Buyer: Pamela Newlon
Phone: 865-974-0900
Fax: 865-974-2973

Item	Quantity	UM	Material/Description	Price Per Unit	Net Amount
------	----------	----	----------------------	----------------	------------

deviations whatever from the specifications must be fully set forth and itemized in detail in a letter accompanying the bid. Generalized statements submitted with your bid in order to avoid complying with this requirement in full detail will not be accepted.

SBC 7 INTERPRETATIONS AND ADDENDA

Any questions concerning conditions and specifications should be directed to the purchasing department in writing no later than five (5) days prior to the bid opening. Inquiries must reference the date of bid opening and RFQ number.

SBC-8 PRODUCT LIABILITY INSURANCE

Certificate of insurance -

The successful Bidder shall file with the purchasing department of The University of Tennessee, prior to the commencement of this contract (or work), an appropriate certificate of insurance, in duplicate, evidencing compliance with the insurance requirements of this bid.

Such certificate of insurance shall name The University of Tennessee as the certificate holder and provide that the insurer or the insurance agent of the successful Bidder will notify The University of Tennessee of any change, cancellation or non-renewal within twenty (20) days of the occurrence.

The insurance required hereunder naming The University of Tennessee as an additional insured shall be primary insurance to any and all insurance that might be in force for the benefit of The University of Tennessee.

The successful Bidder who provides products and goods to The University of Tennessee will provide the University with satisfactory evidence of products/completed operations insurance in effect in the amount of at least \$500,000 combined single limits of liability (bodily injury and property damage). Such insurance shall be written by an insurer deemed acceptable to The University of Tennessee. The certificate of insurance shall indicate whether the policy or policies are written on a claims-made or occurrence basis.

GENERAL BID CONDITIONS: All University of Tennessee general bid conditions apply to this bid. To view these conditions, which include protest procedures, please visit website "http://purchasing.tennessee.edu/general_bid_conditions.htm". If for some reason you are unable to access this website you may telephone (865) 974-3311 for a hard copy of these conditions.

REQUEST FOR QUOTATION

****THIS IS NOT AN ORDER****

Return Quotes To:

The University of Tennessee
Purchasing Department
5723 Middlebrook Pike
Knoxville, TN 37921

Vendor Address

Bidder # D99999
University of T
PARENT RFQ
UT TN

Information

Date: 05/28/2010
RFQ No: 6000038515
Collective No: 10035175
Return Quote By: 06/11/2010 2:30 pm EDT
Promised Ship Date: (Furnish) _____
Payment Terms: (Furnish) _____
FOB UT Dest Unless Otherwise Specified Below

Buyer: Pamela Newlon
Phone: 865-974-0900
Fax: 865-974-2973

Item	Quantity	UM	Material/Description	Price Per Unit	Net Amount
------	----------	----	----------------------	----------------	------------

IF THE BIDDER TAKES EXCEPTION TO ANYTHING IN THE SPECIFICATIONS OR TERMS AND CONDITIONS THE EXCEPTION MUST BE LISTED BELOW IF NECESSARY YOU MAY SUPPLEMENT YOUR COMMENTS WITH AN ATTACHEMENT LISTING YOUR EXCEPTIONS. IF NO EXCEPTIONS ARE TAKEN WRITE 'NONE' IN THE AREA FURNISHED BELOW IF NO COMMENTS ARE FURNISHED IT WILL BE ASSUMED THAT NO EXCEPTIONS ARE BEING TAKEN.

CERTIFICATION: MY COMPANY IS CLASSIFIED AS A:

NOTE: It will be assumed that business category is large if no response is furnished

LARGE BUSINESS _____ SMALL BUSINESS _____ WOMAN OWNED _____

PLEASE INDICATE BELOW ONLY IF YOUR FIRM IS AT LEAST 51 PERCENT OWNED BY A MEMBER(S) OF THE FOLLOWING GROUPS

BLACK AMERICAN _____ HISPANIC AMERICAN _____ ASIAN PACIFIC AMERICAN _____ NATIVE AMERICAN _____ ASIAN INDIAN AMERICAN _____

IT IS UNDERSTOOD AND AGREED THAT THIS BID WHEN CERTIFIED BY AN AUTHORIZED SIGNATURE SHALL CONSTITUTE AN OFFER WHICH WHEN ACCEPTED IN WRITING BY THE UNIVERSITY'S PURCHASING DEPARTMENT AND SUBJECT TO THE TERMS AND CONDITIONS OF SUCH ACCEPTANCE WILL CONSTITUTE A VALID AND BINDING CONTRACT BETWEEN THE UNIVERSITY OF TENNESSEE AND THE BIDDER/CONTRACTOR SUBMITTING SUCH OFFERING.

WE OFFER TO SELL TO YOU THE ABOVE MATERIAL(S) OR SERVICES AT THE PRICE AND TERMS SPECIFIED HEREON AND IN ACCORDANCE WITH THE UNIVERSITY'S GENERAL AND ANY SPECIAL BID CONDITIONS FURNISHED AND INCORPORATED INTO THIS DOCUMENT ALL EXCEPTIONS ALTERNATIVE MATERIALS, OR SPECIFICATIONS IF ANY HAVE BEEN CLEARLY INDICATED IF YOU HAVE ANY QUESTIONS ABOUT THIS REQUEST FOR QUOTATION CONTACT THE BUYER AT THE ADDRESS OR TELEPHONE NUMBER SHOWN ABOVE

WHEN OFFERING A "NO BID" PLEASE INDICATE YOUR REASON(S) BELOW AND RETURN THIS INFORMATION WITH YOUR RESPONSE

____ DO NOT HANDLE THIS TYPE EQUIPMENT _____ CANNOT MEET SPECIFICATIONS
____ CANNOT MEET REQUIRED DELIVERY _____ MATERIALS NOT AVAILABLE
____ OTHER (SPECIFY) _____

IN COMPLIANCE WITH THE REQUIREMENTS OF CHAPTER 878 PUBLIC ACTS OF 2006 THE CONTRACTOR HEREBY ATTESTS THAT THE CONTRACTOR SHALL NOT KNOWINGLY UTILIZE THE SERVICES OF AN ILLEGAL IMMIGRANT IN THE PERFORMANCE OF THIS CONTRACT AND SHALL NOT KNOWINGLY UTILIZE THE SERVICES OF ANY SUBCONTRACTOR WHO WILL UTILIZE THE SERVICES OF AN ILLEGAL IMMIGRANT IN THE PERFORMANCE OF THIS CONTRACT

ALL FIRMS WISHING TO DO BUSINESS WITH THE UNIVERSITY MUST LIST THEIR FEDERAL TAX ID NO OR SOCIAL SECURITY NO (IF INDIVIDUAL) IN THE SPACE PROVIDED:
TAX ID OR SSN: _____

(Signature)

(Printed Name and Company Name)

(Telephone # Toll free if available)

(E-Mail Address)

(Date)

(Title)

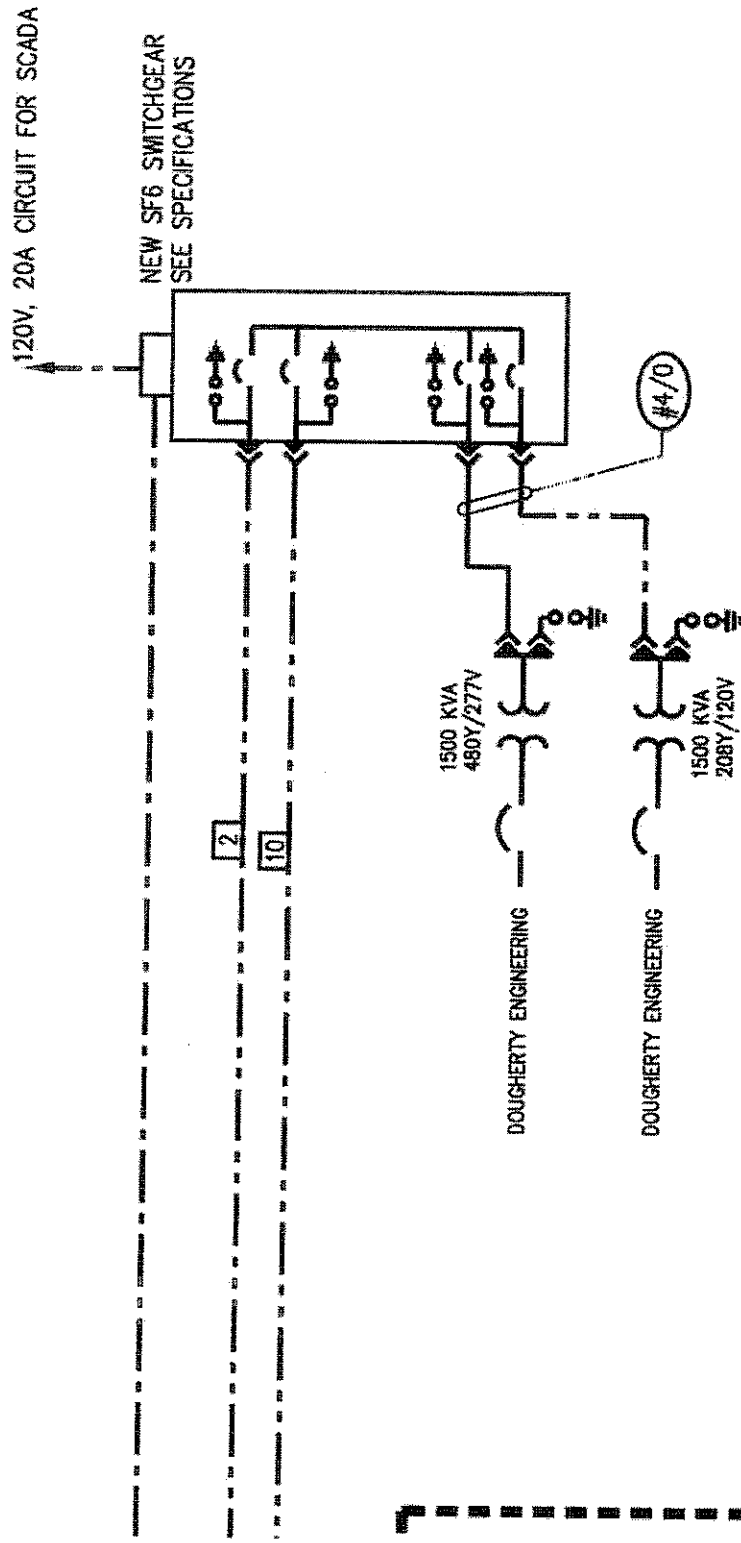
(FAX #)

(WEB Site Address)

SPECIFICATIONS

REQ # 10035175

COPE OF WORK



SECTION 16465 - SF6 GAS FILLED PAD MOUNTED SWITCHGEAR

PART 1 - GENERAL

- 1.01 The switchgear shall be in accordance with the one-line diagram, and shall conform to the following specification.
- 1.02 The switchgear shall consist of a gas-tight tank containing SF 6 gas, load-interrupter switches and resettable fault interrupters with visible open gaps and integral visible grounds, and a microprocessor-based overcurrent control. Load-interrupter switch terminals shall be equipped with bushings rated 600 amperes continuous, and fault-interrupter terminals shall be equipped with bushing wells rated 600 amperes continuous or bushings rated 600 amperes continuous (as specified) to provide for elbow connection. Manual operating mechanisms and viewing windows shall be located on the opposite side of the tank from the bushings and bushing wells so that operating personnel shall not be required to perform any routine operations in close proximity to high-voltage elbows and cables.

1.03 RATINGS

- A The ratings for the integrated switchgear shall be as designated below.

Frequency, Hz	60
Short-Circuit Rating	
Amperes, RMS Symmetrical	25,000
kV, Maximum	15.5
kV, BIL	95
Main Bus Continuous, Amperes	600
Three-Pole Load-Interrupter Switches	
Continuous, Amperes	600
Load Dropping, Amperes	600
Fault-Closing, Duty-Cycle	
Three-Time, Amperes RMS Symmetrical	25,000
Three-Time, Amperes, Peak	65,000
10-Time, Amperes RMS Symmetrical	12,500
10-Time, Amperes, Peak	32,500
Fault Interrupters	
Continuous, Amperes	600
Load Dropping, Amperes	600
Fault Interrupting, Duty-Cycle	
Three-Time, Amperes RMS Symmetrical	25,000
Ten-Time, Amperes RMS Symmetrical	12,500
Fault-Closing, Duty-Cycle	
Three-Time, Amperes RMS Symmetrical	25,000
Three-Time, Amperes, Peak	65,000
10-Time, Amperes RMS Symmetrical	12,500
10-Time, Amperes, Peak	32,500

1 04 CERTIFICATION OF RATINGS

- A The manufacturer of the switchgear shall be completely and solely responsible for the performance of the load-interrupter switch and fault interrupter as well as the complete integrated assembly as rated
- B The manufacturer shall furnish, upon request, certification of ratings of the load-interrupter switch, fault interrupter and the integrated switchgear assembly consisting of switches and fault interrupters in combination with the gas-tight tank

1 05 COMPLIANCE WITH STANDARDS AND CODES

- A The switchgear shall conform to or exceed the applicable requirements of the following standards and codes:
 - 1 The applicable portions of ANSI C57.12.28, covering enclosure integrity for pad-mounted equipment.
 - 2 The applicable portions of ANSI C37.71, ANSI C37.72, ANSI C37.73, IEC 56, and IEC 265-1 (Class A), which specify test procedures and sequences for the load-interrupter switches, fault interrupters, and the complete switchgear assembly.
 - 3 For gear rated 25-kA short circuit, the applicable portions of IEC 298, Appendix AA covering arc resistance, through 25 kA for 15 cycles.

PART 2 - CONSTRUCTION

2 01 SF 6 -GAS INSULATION

- A The SF 6 gas shall conform to ASTM D2472.
- B The switchgear shall be filled with SF 6 gas to a pressure of 7 psig at 68° F.
- C The gas-tight tank shall be evacuated prior to filling with SF 6 gas to minimize moisture in the tank.
- D The switchgear shall withstand system voltage at a gas pressure of 0 psig at 68° F.
- E A gas-fill valve shall be provided.
- F A temperature-compensated pressure gauge shall be provided that is color coded to show the operating range. The gauge shall be mounted inside the gas-tight tank (visible through a large viewing window) to provide consistent pressure readings regardless of the temperature or altitude at the installation site.

2 02 GAS-TIGHT TANK

- A The tank shall be submersible and able to withstand up to 10 feet of water over the base.
- B The tank shall be of welded construction and shall be made of Type 304 stainless steel.
- C A means of lifting the tank shall be provided.

2 03 VIEWING WINDOWS

- A Each load-interrupter switch shall be provided with a large viewing window at least 6 inches by 12 inches to allow visual verification of the switch-blade position (open, closed, and grounded) while shining a flashlight on the blades.
- B Each fault interrupter shall be provided with a large viewing window at least 6 inches by 12 inches to allow visual verification of the disconnect-blade position (open, closed, and grounded) while shining a flashlight on the blades.
- C Viewing windows shall be located on the opposite side of the gear from the bushings and bushing wells so that operating personnel shall not be required to perform any routine operations in close proximity to high-voltage elbows and cables.
- D A cover shall be provided for each viewing window to prevent operating personnel from viewing the flash which may occur during switching operations.

2 04 HIGH-VOLTAGE BUS

- A Bus and interconnections shall withstand the stresses associated with short-circuit currents up through the maximum rating of the switchgear.
- B Before installation of aluminum bus, all electrical contact surfaces shall first be prepared by machine abrading to remove any oxide film. Immediately after this operation, the electrical contact surfaces shall be coated with a uniform coating of an oxide inhibitor and sealant.

2 05 PROVISIONS FOR GROUNDING

- A Provide a 2" WX3/8"D tinned copper ground bus along the entire length of the gas tank of the switchgear. Provide two 5/16" holes drilled in ground bus every 6" along bus. Bolt ground bus to ground connection pads on switchgear.
- B The ground-connection pad shall be constructed of stainless steel and welded to the gas-tight tank, and shall have a short-circuit rating equal to that of the switchgear.

2 06 TERMINATIONS

- A For gear rated 25-kA short circuit, terminals for load-interrupter switches shall have 600-ampere bushings, and terminals for fault interrupters shall have 600-ampere bushing wells.
- B Bushings and bushing wells shall be located on one side of the gear to reduce the required operating clearance.
- C Bushings rated 600 amperes continuous shall be provided without a threaded stud.
- D Terminals for fault interrupters shall be equipped with 600-ampere bushings.

2 07 BUSHINGS AND BUSHING WELLS

- A Bushings and bushing wells shall conform to ANSI/IEEE Standard 386 (ANSI Standard C119.2).

- B Bushings and bushing wells shall include a semiconductive coating.
- C Bushings and bushing wells shall be mounted in such a way that the semiconductive coating is solidly grounded to the gas-tight tank

PART 3 - BASIC COMPONENTS

3 01 FAULT INTERRUPTERS

- A Fault interrupters shall have a three-time and ten-time duty-cycle fault-closing and fault interrupting rating as specified under "Ratings." This rating defines the fault interrupter's ability to close the designated number of times against a three-phase fault with asymmetrical (peak) current in at least one phase equal to the rated value and clear the resulting fault current, with the interrupter remaining operable and able to carry and interrupt rated current. Certified test abstracts establishing such ratings shall be furnished upon request.
- B The fault interrupter shall be provided with a disconnect with an integral ground position that is readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to ground the equipment.
- C The ground position shall have a three-time and ten-time duty-cycle fault-closing rating.
- D The disconnect shall be provided with an open position that is readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to establish a visible gap.
- E The fault interrupter, including its three-position disconnect, shall be a single integrated design so that operation between the closed and open positions or the open and grounded positions is accomplished with a single, intuitive movement.
- F The open gaps of the disconnect shall be sized to allow cable testing through a feedthru bushing or the back of the elbow.
- G An internal indicator shall be provided for each fault interrupter to show when it is in the tripped condition. The indicator shall be clearly visible through the viewing window.

3 02 OPERATING MECHANISMS

- A Load-interrupter switches and fault interrupters shall be operated by means of a quick-make, quick-break mechanism.
- B The manual handle shall charge the operating mechanism for opening, closing, and grounding of the switches and fault interrupters.
- C A single, integrated operating mechanism shall fully operate each fault interrupter or load interrupter switch in a continuous movement, so that additional operations are not required to establish open or ground positions.
- D Operating mechanisms shall be equipped with an operation selector to prevent inadvertent operation from the closed position directly to the grounded position, or from the grounded position directly to the closed position. The operation selector shall require physical movement to the proper position to permit the next operation.

- E Operating shafts shall be padlockable in any position to prevent operation
- F The operation selector shall be padlockable to prevent operation to the grounded position
- G The operating mechanism shall indicate switch position which shall be clearly visible from the normal operating position

3 03 OVERCURRENT CONTROL

- A A microprocessor-based overcurrent control shall be provided to initiate fault interruption.
- B The control shall be mounted in a watertight enclosure and shall be removable in the field without taking the gear out of service.
- C Control settings shall be field programmable using a personal computer connected via a data port to the control. The data port shall be accessible from the exterior of the enclosure.
- D Power and sensing for the control shall be supplied by integral current transformers.
- E The minimum total clearing time (from initiation of the fault to total clearing) for fault interruption shall be 40 milliseconds (2 4 cycles) at 60 hertz or 44 milliseconds (2 2 cycles) at 50 hertz.
- F The control shall feature time-current characteristic (TCC) curves including standard E-speed, K-speed, coordinating-speed tap, and coordinating-speed main curves. Coordinating-speed tap curves shall optimize coordination with load-side weak-link/backup current-limiting fuse combinations, and coordinating-speed main curves shall optimize coordination with tap-interrupter curves.
- G The standard E-speed curve shall have phase-overcurrent settings ranging from 25E through 400E. The coordinating-speed tap curve shall have phase-overcurrent and independent ground-overcurrent settings ranging from 50 amperes through 400 amperes. The coordinating-speed main curve shall have phase-overcurrent and independent ground-overcurrent settings ranging from 100 amperes through 800 amperes.
- H The control shall have instantaneous-trip (1 kA through 8 kA) and definite-time delay (32 ms through 96 ms) settings to allow tailoring of the coordinating-speed tap and coordinating-speed main curves to the application.
- I Event records shall be easily extractable from the control using a personal computer connected to the data port.
- J The control shall store sufficient energy to operate the motor operators for the interrupter switches without impacting the accuracy or coordination under fault conditions.

3 04 VOLTAGE INDICATION

- A. Voltage indication with provisions for low-voltage phasing
 - 1. Voltage indication with provisions for low-voltage phasing for each load-interrupter switch and fault interrupter, shall be provided by means of capacitive taps on the bushings. There shall be no need for cable handling and exposure to high voltage

to test the cables for voltage and phasing. This feature shall include a flashing LCD display to indicate the presence of voltage for each phase, and a solar panel to supply power for testing of the complete voltage-indication circuit and phasing circuit.

2. The voltage-indication feature shall be mounted on the covers for the viewing windows on the opposite side of the gear from the bushings and bushing wells so that operating personnel shall not be required to perform any routine operations in close proximity to high-voltage elbows and cables.

3.05 LOW-VOLTAGE ENCLOSURE AND COMPONENTS

- A. The low-voltage enclosure shall have a minimum space of 16" high x 26" wide x 11" deep for a user-specified RTU and communications device.
- B. The low-voltage enclosure shall be a separate, grounded structure. It shall be mounted on the outside of the pad-mounted enclosure for the pad-mounted switchgear style. It shall be mounted to a vault wall for the vault-mounted switchgear style. It shall be mounted on a customer supplied pad above grade level for the UnderCover switchgear style.
- C. All low-voltage components, including the batteries, shall operate over the temperature range of -40 deg. C to +65 deg. C.
- D. To guard against unauthorized or inadvertent entry, the low-voltage enclosure shall not have any externally accessible hardware.
- E. The low-voltage enclosure shall include appropriate vents to prevent gas and moisture buildup. Vents shall be screened and filtered to prevent entry of insects and to minimize entry of dust into the enclosure.
- F. All low-voltage components, including motor operator controls, RTUs, communication devices, batteries, and battery charger, shall be located in a grounded, steel-enclosed compartment separate from medium voltage to provide isolation, and shall allow complete accessibility for test and/or maintenance without exposure to medium voltage.
- G. Low-voltage wiring, except for short length, such as connections connectors to terminal blocks, shall be shielded for isolation from medium voltage.
- H. For submersible applications, all motor operator wiring between the switchgear tank and the low-voltage enclosures shall be submersible.
- I. For submersible applications, all current and voltage sensing wiring between the switchgear tank and the low-voltage enclosure shall be submersible.
- J. The low-voltage enclosure shall be made of 14-gauge mild steel.
- K. Control cabling between the tank and the low-voltage enclosure that is 15 feet or greater in length shall be furnished with a braided shield to protect electronic components from damage under surge and transient conditions.
- L. Single-point grounding methods shall be used on cabling between the tank and the low-voltage enclosure to protect electronic components from damage under surge and transient conditions.

- M Low voltage enclosure shall be large enough to accommodate motor operators in the event that they will be installed at a future date

3.06 OPTIONAL FEATURES

- A Three-phase current sensing.
- B Three-phase voltage sensing.
- C Portable remote control for motor operator. This device plugs into an adapter on the face of the motor control board and allows the user to activate the motor operator from a maximum distance of 50 feet from the gear tank.
- D Gear shall be Remote-Supervisory ready for integration into campus SCADA system.

PART 4 - SWITCHGEAR STYLE

4.01 PAD-MOUNTED STYLE

- A To guard against corrosion due to extremely harsh environmental conditions, the gas-tight tank shall be made of Type 304 stainless steel
- C Enclosure
 - 1 The switchgear shall be provided with a pad-mounted enclosure suitable for installation of the gear on a concrete pad.
 - 2 The pad-mounted enclosure shall be separable from the switchgear to allow clear access to the bushings and bushing wells for cable termination
 - 3 The basic material shall be 14-gauge hot-rolled, pickled, and oiled steel sheet
 - 4 The enclosure shall be provided with removable front and back panels, and hinged lift-up roof sections for access to the operating and termination compartments. Each roof section shall have a retainer to hold it in the open position
 - 5 Lift-up roof sections shall overlap the panels and shall have provisions for pad-locking that incorporate a means to protect the padlock shackle from tampering.
 - 6 The base shall consist of continuous 90-degree flanges, turned inward and welded at the corners, for bolting to the concrete pad.
 - 7 Panel openings shall have 90-degree flanges, facing outward, that shall provide strength and rigidity as well as deep overlapping between panels and panel openings to guard against water entry
 - 8 For bushings rated 600 amperes continuous, the termination compartment shall be of an adequate depth to accommodate encapsulated surge arresters mounted on 600-ampere elbows having 200-ampere interfaces.
 - 9 For bushing wells rated 200 amperes continuous, the termination compartment shall be of an adequate depth to accommodate 200-ampere elbows mounted on feed-thru inserts.

10 An instruction manual holder shall be provided.

11 Non-removable lifting tabs shall be provided.

D Enclosure Finish

- 1 All exterior welded seams shall be filled and sanded smooth for neat appearance.
- 2 To remove oils and dirt, to form a chemically and anodically neutral conversion coating to improve the finish-to-metal bond, and to retard under film 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.
- 3 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 manufacturer's finishing system shall satisfactorily pass the following tests:
 - a 4000 hours of exposure to salt-spray testing per ASTM B 117 with:
 - (1) Under film corrosion not to extend more than 1/32" from the scribe as evaluated per ASTM D 1645, Procedure A, Method 2 (scraping); and
 - (2) Loss of adhesion from bare metal not to extend more than 1/8" from the scribe.
 - b 1000 hours of humidity testing per ASTM D 4585 using the Cleveland Condensing Type Humidity Cabinet with no blistering as evaluated per ASTM D 714.
 - c 500 hours of accelerated weathering testing per ASTM G 53 using lamp UVB-313 with no chalking as evaluated per ASTM D 659, and no more than 10% reduction of gloss as evaluated per ASTM D 523.
 - d Crosshatch adhesion testing per ASTM D 3359 Method B with no loss of finish.
 - e 160-inch-pound impact adhesion testing per ASTM D 2794 with no chipping or cracking. (vi) Oil resistance testing consisting of a 72-hour immersion bath in mineral oil with no shift in color, no streaking, no blistering, and no loss of hardness.
 - 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.
- 4 The finish shall be inspected for scuffs and scratches. Blemishes shall be touched up by hand to restore the protective integrity of the finish.

- 5 The finish shall be olive green, Munsell 7GY3 29/1.5

PART 5 - LABELING

5.01 HAZARD-ALERTING SIGNS

- A The exterior of the pad-mounted enclosure (if furnished) shall be provided with "Warning—Keep Out—Hazardous Voltage Inside—Can Shock, Burn, or Cause Death" signs.
- B Each unit of switchgear shall be provided with a "Danger—Hazardous Voltage—Failure to Follow These Instructions Will Likely Cause Shock, Burns, or Death" sign. The text shall further indicate that operating personnel must know and obey the employer's work rules, know the hazards involved and use proper protective equipment and tools to work on this equipment.
- C Each unit of switchgear shall be provided with a "Danger—Keep Away—Hazardous Voltage—Will Shock, Burn, or Cause Death" sign.

5.02 NAMEPLATES, RATINGS LABELS, AND CONNECTION DIAGRAMS

- A Each unit of switchgear shall be provided with a nameplate indicating the manufacturer's name, catalog number, model number, date of manufacture, and serial number.
- B Each unit of switchgear shall be provided with a ratings label indicating the following: voltage rating; main bus continuous rating; short-circuit rating; fault-interrupter ratings including interrupting and duty-cycle fault-closing; and load-interrupter switch ratings including duty-cycle fault-closing and short-time.

PART 6 - ACCESSORIES

- 6.01 A shotgun clamp stick (6-5/2 - 8-5/2) in length shall be provided complete with a canvas storage bag.
- 6.02 An adapter cable for connecting an overcurrent control to a user-furnished personal computer (having a 25-pin or 9-pin serial communication port) in the field shall be provided.
- 6.03 An adapter cable for connecting an overcurrent control removed from its enclosure to a user-furnished personal computer (having a 25-pin or 9-pin serial communication port) in the shop shall be provided.

END OF SECTION 16465