

REQUEST FOR QUOTATION

Contact person/Telephone/Email Larry Waxman/212-435-4639/lwaxman@panynj.gov	Collective# / Bid Due Date 0000046154/ 06/15/2016 Bids must be received no later than 11:00 AM on the above Bid Due Date. Deliver Goods/Services To: Path ATTN: GLEN SMILEY ACADEMY STREET JERSEY CITY NJ 07302
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Quantity	Description	Unit Price	Total
	Batteries, Battery Charger/Battery Eliminator, Racks, Spill containment and accessories replacement at Substation #02, Jersey City, New Jersey. Furnish and Deliver (ONLY) per specifications FLOODED BATTERIES, CHARGER, RACK AND SPILL CONTAINMENT UNIT FOR PATH-SUB2 DATED APRIL 2016. THAT INCLUDES PRICING SHEET ON PAGE 2. QUOTE FOB DELIVERED PRICING ON ALL ITEMS. IN THE EVENT OF AN ORDER ADVISE DELIVERY IN _____ DAYS A.R.O. WITH BID RESPONSE ADVISE EQUIPMENT TO BE OFFERED: ITEM #1 MANUFACTURER: _____ PLANT LOCATION: _____ MAKE/MODEL/PART NUMBER: _____ ITEM #2 MANUFACTURER: _____ PLANT LOCATION: _____ MAKE/MODEL/PART NUMBER: _____ ITEM #3 MANUFACTURER: _____ PLANT LOCATION: _____		
	PAYMENT TERMS PLEASE QUOTE FULLY DELIVERED PRICES	Total Delivered Price	

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Signed _____
 Firm Name _____
 Telephone number _____ Date _____
 Fax Number _____
 Federal Taxpayer ID _____

Bidder
 Must
 Sign
 in
 Two
 Places

NOTICE TO BIDDERS: Unless the following term of assurance that the above offer is irrevocable is signed, the offer submitted herein shall not be deemed to be complete.
 The foregoing offer shall be irrevocable for 90 days after the date on which The PORT AUTHORITY TRANS-HUDSON CORPORATION opens this proposal.
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 Firm Name _____

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Bid Due Date
 06/15/2016

Quantity	Description	Unit Price	Total
	MAKE/MODEL/PART NUMBER: _____ ITEM #4 MANUFACTURER: _____ PLANT LOCATION: _____ MAKE/MODEL/PART NUMBER: _____ ITEM #5 MANUFACTURER: _____ PLANT LOCATION: _____ MAKE/MODEL/PART NUMBER: _____ INCLUDE WITH YOUR BID RESPONSE TWO COPIES OF CATALOG CUTS/SPECIFICATIONS/DRAWINGS FOR PORT AUTHORITY/PATH REVIEW AND APPROVAL. PLEASE FOLLOW RETURN TO BID INSTRUCTIONS. REPLY ONLY ON P.A./PATH REQUEST FOR QUOTATION FORM AS ATTACHING YOUR COMPANY'S TERMS & CONDITIONS MAY CAUSE YOUR BID TO BE DEEMED NON RESPONSIVE AND OR DELAY AN AWARD ISSUED. A price preference of 10 % is available for NY/NJ Minority and Women Business Enterprises (M/WBE) or 5% for NY/NJ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> PAYMENT TERMS </div>		
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Quantity	Description	Unit Price	Total
	Small Business Enterprises (SBE) certified by the Port Authority (PA) by the day before bid opening for awards not exceeding \$1,000,000. My firm was certified as a _____ on _____ QUESTIONS ONLY CONTACT: LARRY WAXMAN TEL: 212 435 4639 OR FAX 212 435 4695 OR EMAIL: Lwaxman@panynj.gov		
PLEASE QUOTE FULLY DELIVERED PRICES		PAYMENT TERMS	Total Delivered Price

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	<p>This is a Formal Bid Invitation</p> <p>Mail Sealed Bids to:</p> <p>The Port Authority of NY & NJ Attn: Bid Custodian Procurement Department 4 World Trade Center 150 Greenwich Street, 21st Floor New York, NY 10007</p> <p>by the date and time listed above, where it will be publicly opened and read.</p> <p>If you do not use or have an envelope provided, you must clearly mark the outside envelope/package with 'BID ENCLOSED' and show the company name, address, as well as Bid number and Due date as slated on this bid document.</p> <p>Bids are only accepted Monday through Friday, excluding Port Authority holidays, between the hours of 8 A.M. & 5 P.M., via regular mail, express delivery service or hand delivery. Express carrier deliveries by commercial vehicles can be made via vendors approved by Silverstein Properties, the 4 World Trade Center (4WTC) Property Manager, through the Vehicle Security Center (VSC). Presently, UPS is the only delivery vendor with approved recurring delivery times. There is extensive security at the World Trade Center Site. Individuals must present a valid government-issued photo ID</p>		
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	to enter 4 WTC. Individuals without packages or carrying small packages or boxes that can be conveyed by hand or on a hand truck may enter through the lobby. All envelopes, packages and boxes may be subject to additional security screening. There is no parking available at 4 WTC/150 Greenwich Street, and parking in the surrounding area is extremely limited. A valid government-issued photo ID is required to gain access into the building to attend the bid opening or hand deliver a bid. Bids that are not received by the bid custodian by the scheduled bid opening date will be considered late.		
1 LOT	130vdc BATTERIES, BATTERY CHARGER & RACK Batteries, Battery Charger/Battery Eliminator, Racks, Spill containment and accessories replacement at Substation #02, Jersey City, New Jersey. Furnish and Deliver (ONLY) per specifications FLOODED BATTERIES, CHARGER, RACK AND SPILL CONTAINMENT UNIT FOR PATH-SUB2 DATED APRIL 2016. THAT INCLUDES PRICING SHEET ON PAGE 2.		
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TERMS AND CONDITIONS

1. The Port Authority (PA) reserves the right to request information relating to seller's responsibility, experience and capability to perform the work.
2. Unless otherwise provided, complete shipment of all items must be in one delivery FOB delivery point. Payment will not be made on partial deliveries unless authorized in advance by the party to be charged and the discount, if any, will be taken on the total order.
3. PA payment terms are net 30 days. Cash discounts for prompt payment of invoices may be taken but will not be considered in determining award, except in the case of tie bids.
4. Separate unit and total FOB delivered prices must be shown.
5. Sales to the PA and to PATH are currently exempt from New York and New Jersey State and local taxes and generally from federal taxation. The seller certifies that there are no federal, state, municipal or any other taxes included in the prices shown hereon.
6. The PA shall have the absolute right to reject any or all proposals or to accept any proposal in whole or part and to waive defects in proposals.
7. Unless the phrase "no substitute" is indicated, bidder may offer alternate manufacturer / brands, which shall be subject to Port Authority approval. Please indicate details of product being offered with bid.
8. Acceptance of seller's offer will be only by Purchase Order Form signed by the PA. No change shall be made in the agreement except in writing.
9. If the seller fails to perform in accordance with the terms of this purchase order, the PA may obtain the goods or services from another contractor and charge the seller the difference in price, if any, a reletting cost of \$100, plus any other damages to the PA.
10. Upon request, sellers are encouraged to extend the terms and conditions of any terms agreement with the PA to other government and quasi-government entities by separate agreement.
11. By signing this quotation or bid, the seller certifies to all statements on Form PA 3764A regarding non-collusive bidding; compliance with the PA Code of Ethics; and the existence of investigations, indictments, convictions, suspensions, terminations, debarments and other stated occurrences to assist the PA in determining whether there are integrity issues which would prevent award of the contract to the seller. The PA has adopted a policy set forth in full on PA 3764A, that it will honor a determination by an agency of the State of New York or New Jersey that a bidder is not eligible to bid on or be awarded public contracts because the bidder has been determined to have engaged in illegal or dishonest conduct or to have violated prevailing wage legislation. The Terms and Conditions of PA 3764A apply to this order. A copy can be obtained by calling (212) 435-4600 or at <http://www.panynj.gov/business-opportunities/become-vendor.html>
12. The vendor may subcontract the services or use a supplier for the furnishing of materials required hereunder to such persons or entities as the Manager, Purchasing Services may from time to time expressly approve in writing. All further subcontracting shall also be subject to such approval.
13. The successful bidder (vendor) shall not issue nor permit to be issued any press release, advertisement, or literature of any kind, which refers to the Port Authority or that goods will be, are being or have been provided to it and/or that services will be, are being or have been performed for it in connection with this Agreement, unless the vendor first obtains the written approval of the Port Authority. Such approval may be withheld if for any reason the Port Authority believes that the publication of such information would be harmful to the public interest or is in any way undesirable.
14. Neither the Commissioners of the Port Authority, nor Directors of PATH, nor any of them, nor any officer, agent or employee thereof, shall be charged personally by the Contractor with any liability, or held personally liable to the Contractor under any term or provision of this Agreement, or because of its execution or attempted execution, or because of any breach, or attempted or alleged breach, thereof.

BID# 46/84 ✓

PORT AUTHORITY TRANS-HUDSON CORPORATION
ONE PATH PLAZA
JERSEY CITY, NEW JERSEY 07306

FURNISH AND DELIVERY SIXTY (60) LEAD ACID BATTERIES

GENERAL PROVISION AND SPECIFICATION

**FLOODED BATTERIES, CHARGER, RACK AND SPILL
CONTAINMENT UNIT FOR PATH -SUB 02**

APRIL 2016

Description

Furnish and Deliver One (1) 480Vac (3 phase) to 130Vdc Battery Charger/Battery Eliminator; Sixty (60) Lead Calcium Flooded Type Batteries; Battery Racks spill containment and Accessories as per the following bullet items and technical requirement as outlined in PART 1 and PART 2 of this document.

Ratings and Characteristics:

- One (1) Battery Eliminator/Battery Chargers each rated at 480 Vac (three phase) to 130 Vdc output with 150 amps DC output, AT30-130-150 or approved equal. Existing Charger has Model# GGS-120-T-150, 480volt/3phase, 44.2 amps, GNB industrial Battery Co. Dimension: 21" W x 32" L x 36" H
- Sixty (60) EC-13M, Lead Calcium Flooded Type Batteries rated at 525ah or approved equal including accessories listed below. Existing Battery has Model# MCX-13, SP. GR. 1.215
- Seismic Battery Rack to hold 60 of the specified Batteries, including Spill Containment System, for Battery Rack System. Existing has Two Racks each 82" (L) x 50" (H) x 16"(W), One Rack 42"(L) x 50"(H) x 16"(W). Inside dimension of room 7'-4" x 6'-4".
- Submit, with bid, proposed batteries, charger and accessories. All bid submission information shall affirm that all materials will meet all requirements and specifications.
- This Purchase is to solely furnish and deliver Batteries, Battery charger, Battery Racks, Spill Containment Unit and Accessories only. There are no installation requirements.

- There is no contract drawings associated with this purchase order.

Delivery

The Vendor shall make delivery of all merchandise within 12 weeks of an approved Purchase Order to 120 Academy Street, Jersey City. Deliver all in a vehicle with a lift-gate, suitable for lowering to ground level and remove of items with a pallet jack. PATH personnel will unload merchandise. Delivery hours will be limited to weekdays between the hours of 8:00 a.m. to 2:00 pm. 48 hours advance notification shall be given to Mr. Glen Smiley, telephone No. (201) 216-6962.

PRICE SHEET

No #	Description	Qty	Unit Price	Total Price
#1,	Sixty (60) Lead Calcium Batteries as per specification.	60	EA	\$-----
#2.	One (1) Battery Rack system as per specification	1	EA	\$-----
#3,	One (1) Battery Spill Containment Unit as specification	1	EA	\$-----
#4,	One (1) 480vac input – 130vdc output Filtered Battery Eliminator-Charger as per Specification	1	EA	\$-----
#5.	Tier to Tier cables, Connectors, Jumpers & accessories	1	EA	\$-----

#6. **FOB TOTAL DELIVERED PRICE** \$-----

(1 + 2 + 3 + 4 + 5 = 6)

PART 1 - GENERAL

1.01 REFERENCES

- A. American National Standards Institute (ANSI)
 - 1. Z55.1 - Gray Finishes for Industrial Apparatus and Equipment
- B. Institute of Electric and Electronic Engineers (IEEE)
 - 1. 450 – IEEE Recommended Practice for Maintenance, Testing and Replacement of Vented Lead-Acid Batteries for Generating Stations and Substations
 - 2. 484 – IEEE Recommended Practice for Installation Design and Implementation of Vented Lead – Acid Batteries for Stationary Applications
 - 3. 485 – IEEE Recommended Practice for Sizing Large Lead-Acid for Stationary Applications
- C. National Electrical Manufacturers Association (NEMA)
 - 1. 250 - Enclosures for Electrical Equipment (1000 Volts Maximum)
- D. Underwriters Laboratories, Inc. (UL)
 - 1. 50 – Enclosures for Electrical Equipment

1.02 SUSTAINABLE DESIGN REQUIREMENTS

- A. None

1.03 QUALITY ASSURANCE

- A. Batteries & battery Charger of types and sizes required shall have been in satisfactory use for purposes similar to those intended herein for not less than three years.

1.04 SUBMITTALS

- A. Submit the following "Shop Drawings, Catalog Cuts, and Samples"
 - 1. Shop Drawings

- a. Shop drawings, showing all mechanical parts and assemblies including electrical components, complete connection details, as well as a complete list of parts with full identification.
 - b. Shop drawings for battery racks, battery chargers.
 - c. Schematic and wiring diagrams.
 - d. Seismic anchoring details
- 2. Catalog Cuts
 - a. Cabinets
 - b. Terminal Blocks
 - c. Relays
 - d. Accessories
- B. Submit installation, operation and maintenance manuals in accordance with the following requirements:
 - 1. Furnish six complete manuals when the final shop drawings are submitted.
 - 2. Furnish nine additional complete manuals, including any required factory corrections, after the equipment has been factory tested.

1.05 SEISMIC REQUIREMENTS

- A. The equipment and major components shall be suitable for and certified to meet all applicable seismic requirements of Uniform Building Code (UBC) for Zone 2b application. Guidelines for the installation consistent with these requirements shall be provided by the battery assembly manufacturer and be based upon testing of representative equipment. The test response spectrum shall be based upon a 5 percent minimum damping factor, UBC: a peak of 0.75 and a ZPA of 0.38 applied at the base of the equipment. The tests shall fully envelop this response spectrum for all equipment natural frequencies up to at least 35 Hz.

1.06 DELIVERY, AND HANDLING

- A. Deliver equipment and separately packaged terminal blocks and accessories in manufacturers' original, unopened, protective packaging.
- B. Store equipment and separately packaged terminal blocks and accessories, in original packaging, in a clean, dry space and protect them from weather.
- C. Handle in a manner to prevent damage to finished surfaces.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements of this Section, provide control power batteries and battery racks manufactured by one of the following companies, or approved equal:
1. Battery Chargers
 - a. ALCAD Standby Batteries
 - b. Enersys Inc.
 - c. Hindle Power
 - d. C & D Power Systems, Inc.
 2. Batteries and Battery Racks
 - a. ALCAD Standby Batteries
 - b. C & D Power Systems, Inc.
 - c. Enersys Inc.

2.02 CONSTRUCTION FEATURES

- A. **General**
1. Provide batteries, racks, and battery charger in accordance with the requirements of these Specifications.
 2. Batteries and battery charger and associated equipment shall be for indoor use. Quantity, rating, sizes and locations shall be as mention in general provision and specification. Provide Tier to Tier cables, Connectors and Jumpers.
 3. No polyvinylchloride (PVC) insulation or materials shall be utilized in the construction, or wiring, of the equipment.
- B. **Battery Racks**
1. Battery racks shall be constructed of steel rails, frames and braces capable of supporting specified batteries. Rail insulation shall be provided with 0.06-inch thick plastic channels on the rails. The battery cells rest on the plastic channels. The entire rack shall be painted at the factory with two coats of acid resisting enamel paint. Paint color shall be ANSI 61 conforming to ANSI Z5 5.1.

2. Rack dimensions and configurations shall be for One 2 Step/2 Tier (40 Batteries) and One 2 Tier (20 batteries). Maximum Rack dimensions: 2step/2tier (31" wide x 84" length x 66" Height). 2-Tier (17" wide x 84"length x 56" Height).
3. Seismic Battery Rack to hold 60 of the specified Batteries or approved equal for Battery Rack System.

C. Spill Containment

1. The Spill Containment System shall meet the requirements of Article 80 of the Uniform Fire Code, NFPA Article I, Chapter 35, NFPA Article 76, IEEE 484, and Article 64 of the Uniform Fire Code, Section 6401.99.1 as adopted by the UBC, UFC, NFPA & OSHA building standards.
2. The Spill Containment Unit shall be appropriately sized for the Battery Rack System Supplied.

D. Batteries

1. The battery, consisting of identically sized cells of the same construction and Connected in series, shall be lead-acid type and conforming to ANSI 450, IEEE 484, and IEEE 485. Lead-Antimony batteries will not be accepted.
2. The cell container shall be transparent, heat and impact resistant plastic, with the cover permanently sealed to container. The cell container shall be provided with high and low-level lines at all faces of the cell container.
3. Lead Calcium Flooded Type Batteries EC-13M , rated at 525ah or approved equal.
4. The batteries shall include the following accessories:
 - a. Flame arrestors
 - b. Pressure- sensitive cell number labels
 - c. Inter-tier, inter-rack and inter-cell connectors and cables. Inter-cell connectors Shall be lead-plated copper.
 - d. Lead-plated terminal plates and compression-crimp type solderless lugs for cable connections.
 - e. Stainless steel bolt connectors.
 - f. Portable digital hydrometer with wall mount holder.
 - g. Thermometer
 - h. Two (2) Cell lifting devices
5. Batteries shall have a minimum discharge rate as follows for an 8 hr rate @ 77 degrees F (25 degrees C) and 1.75V.P.C

- a. 65 amps @ 8 hrs
- b. 274 amps @ 1 hr
- c. 511 amps @ 15 minutes

6. Batteries shall have a minimum discharge rate as follows for an 8 hr rate @ 77 degrees F (25 degrees C) and 1.81V.P.C

- a. 62 amps @ 8 hrs
- b. 242 amps @ 1 hr
- c. 421 amps @ 15 minutes

E. Battery Charger

1. General

- a. The battery charger shall be installed to match the existing.
- b. Battery charger input voltage and voltage source shall be as per general provision and specification.
- c. Battery charger, shall be capable of supplying the connected D.C. load and maintaining line voltage even with the battery disconnected.

2. The battery charger shall consist of four major sections which work together to produce stable regulated, filtered output as follows:

- a. Power Input Transformer to supply AC voltage of the proper magnitude and capacity to the rectifier section and to supply various other voltages used by the control unit and accessories.
- b. Silicon Controlled Rectifier (SCR) consists mainly of voltage regulating SCR and power rectifier diodes to rectify AC voltage to DC and to control voltages magnitude so that the charge output is regulated at all times.
- c. Control Unit to control the SCR in response to the charging requirements of the battery load and to monitor and maintain the output voltage of the Battery Charger.
- d. Filter Section to smooth the rectifier output and to remove the charging ripple at the battery terminals.

3. Design Criteria

- a. The charger shall be designed for use in a 40 degrees F. ambient temperature without exceeding the allowable temperature rating of any of

the components including their class of insulation. All components shall be rated for continuous duty at the worst possible charging condition for that particular component. All sensitive devices shall be protected for:

1. All self-generated transients.
 2. Normal external applied transients.
 3. Turning the charger "On" or "Off" at any charging rate with the battery disconnected.
 4. Disconnecting the battery while charging at any charge rate.
- b. The AC input shall be 480 VAC, three phase, three wire, 60Hz.
- c. The DC ampere output of 125 VDC at 150 amperes.
- d. The DC voltage output shall be:
1. Float adjustment range: Minus 11.5 percent to plus 7.7 percent of the nominal voltage.
 2. Equalize adjustment range: Minus 4.6 percent to plus 15.4 percent of the nominal voltage.
- e. The DC output voltage shall be regulated to plus or minus 5 percent from no load to full load with the AC line variations of plus or minus 10 percent voltage and plus or minus 5 percent frequency.
- f. The current shall be limited so that it does not exceed 140 percent of rated current.
- g. The efficiency shall be at least 90 percent at full load at rated AC voltage.

4. Cabinet

- a. The cabinet shall be NEMA 1 construction, fabricated from at least 11-gauge steel. Large floor mounted units shall be suitably braced and reinforced to form a rigid structure or have a 3/16 inch angle iron frame work suitably constructed so as to rigidly contain the unit. The sheet metal wrap covering the structure shall be at least 11-gauge steel. Equipment in cabinet shall be arranged so that access required to all circuit breakers, meters, relays, switches, etc., shall be from the front. Internal components and connections shall be easily accessible and/or removable through a hinged front door that opens approximately 180 degrees for easy

serviceability. Absolutely no access is to be required to be from the back or sides of the cabinet.

- b. The cabinet shall be furnished completely wired and ready for installation. Provision shall be made for the incoming and outgoing cables that will enter the side of the cabinet. Wiring shall be color-coded, SIS high temperature, flame retardant, cross-linked polyethylene insulated wire. Test point identification and circuit symbol labeling of internal components shall be provided.
- c. The cabinet shall be so designed as to provide adequate ventilation. All air inlet or discharge louvers or grilles shall be provided with replaceable filters, supported by a metallic frame. The external surface temperature of the cabinet shall not rise above 110 degrees F for an ambient temperature of 85 degrees F. Top of the cabinet is to be provided with a dust cover.
- d. Operating controls, meters, and pilot lights shall be identified with black laminated plastic nameplates. On the front of the cabinet, provide nameplate indicating the input voltage and phase.
- e. The battery charger and all internal equipment will be installed in an atmosphere containing industrial fumes, non-metallic dust and excessive moisture. Therefore, all accessory parts, protective coats of paint, seals, etc., to be used in or on this equipment shall be selected as to eliminate the harmful effects resulting from excessive dampness and a corrosive atmosphere.
- f. All surfaces shall be thoroughly cleaned, treated with an approved rust inhibitor and then painted with two coats of acid resisting enamel paint ANSI 61 in compliance with ANSI Z55.1. The underside of all equipment not readily accessible for repainting, shall be painted with three coats of bituminous paint.

5. Accessories

- a. The battery charger shall be equipped with the following:
 - 1. AC power "On" front panel, indicating light.
 - 2. AC input circuit breaker, front panel mounted.
 - 3. DC output circuit breaker, front panel mounted.
 - 4. AC and DC surge suppressers, metal-oxide varistor (MOV) type.
 - 5. DC output ammeter (0-500A Scale, unless otherwise shown on the Contract Drawings) and DC output voltmeter (0-150 VDC, Scale unless otherwise shown on Contract Drawings), front panel mounted, three 1/2-inch case, 1 percent accuracy.
 - 6. Auto-Equalize timer, Zero to 72-hour, with front panel indicating lights.

7. Float and Equalize adjustment potentiometers, front panel mounted and lockable.
 8. Current limit adjustment potentiometer, internally mounted with easily accessible adjustment.
 9. DC output blocking diode to prevent battery from discharging back through the filter and rectifier when charger is "Off" due to AC power failure or charger malfunction.
 10. DC output protection diode to prevent damage to battery charger and battery due to reversed polarity connections.
 11. DC ground detection with front panel indicating lights and ground test and lamp test switch.
- b. Forced load sharing to permit connecting two battery charges in parallel to a common battery bank and the load to be shared equally by the two battery chargers. If either charger is shutdown or becomes inoperative, the other will assume the total load up to the point where its current limit circuit operates. It shall be possible to operate each charger independently with an override switch.
 - c. Filtered Battery Eliminator Battery chargers shall operate as DC power supplies without the battery connected. Filtered battery eliminators will reduce the output ripple voltage to 100 millivolts rms or less.
 - d. Input lightning arrestors to provide additional input protection against lightning induced transients.
 - e. Alarm relays with front panel indicating lights for the following alarm conditions:
 1. AC power failure
 2. DC ground detection
 3. High DC voltage
 4. Low DC voltage
 5. Charger failure
 6. DC current limit
 7. Battery discharging
 8. Common alarm that provides an alarm indication via relay contacts when any one of the alarm circuits being monitored goes into its alarm state. A form "C" Double-Pole, Double-Throw (DPDT) contact shall be provided for connection to a remote alarm system.
 9. Provide separate alarm contacts for positive ground and negative ground for connection to a remote alarm system.
 10. DC "Zero-Center" ammeter for battery load monitoring to indicate the direction and amount of the battery current. Indication on the meter is to the right of the center when the charger is charging the battery and to the left when the battery discharging or furnishing current to the load.

2.03 SHOP TESTS

- A. The battery charger shall be inspected and tested at the place of manufacture in the presence of the Engineer. The battery charger shall be tested under a simulated service condition to assure the accuracy of the wiring and the functioning of the equipment.
- B. Should the test reveal any defects, promptly correct such defects and rerun the tests until the entire assembly is satisfactory in all respects.

2.04 MANUALS

- A. Each manual shall contain the following:
 - 1. Calibration data, curves, wiring diagrams and other pertinent information on every component furnished.
 - 2. Operation Procedures, both manual and automatic.
 - 3. Recommended preventive maintenance schedules.
 - 4. Recommended spare parts list.
 - 5. All information that is necessary for proper installation, service, repair and maintenance of all material, equipment and components furnished under this Section.