



REQUEST FOR QUOTATION

Contact person/Telephone
Larry Waxman/201-395-3451

Collective# 0000036206
Bid Due Date 01/29/2014
Bids must be received no later than 11:00 AM on the above Bid Due Date.

Deliver Goods/Services To:
Newark International Airport
Building 11 - Stockroom
Newark NJ 07114

Quantity	Description	Unit Price		Total
	<p>Aircraft rated handhole frames and lids FOR. NEWARK LIBERTY INTERNATIONAL AIRPORT.</p> <p>QUANTITY 87 EACH. FURNISH AND DELIVER.</p> <p>SEE ATTACHED SPECIFICATIONS: DIVISION 16 SECTION 16000, DRAWING #E968 AND ATTACHMENT "A".</p> <p>INCLUDE WITH YOUR BID RESPONSE TWO COPIES OF CATALOG CUTS/SPECIFICATIONS/SHOPDRAWINGS FOR PORT AUTHORITY REVIEW AND APPROVAL. SEE NOTE #1 BELOW BIDDERS TO PROVIDE INFORMATION WITH RESPONSE.</p> <p>QUOTE FOB DELIVERED PRICES. IN THE EVENT OF AN ORDER ADVISE DELIVERY IN DAYS _____ A.R.O.</p> <p>IN THE EVENT OF AN ORDER: Delivery contact Catherine Nigro Newark Liberty International Airport Brewster Road - Bldg. 80 Newark, NJ 07114</p>			
	PLEASE QUOTE FULLY DELIVERED PRICES	PAYMENT TERMS		Total Delivered Price

This Quotation is subject to the terms and conditions set forth on the back page hereof. Bidder is advised to read these before signing.

We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

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 of New York and New Jersey opens this proposal.

Signed _____ Date _____
Firm Name _____



REQUEST FOR QUOTATION

Bid Due Date
01/29/2014

Quantity	Description	Unit Price		Total	
	<p>TEL# 973-961-6109</p> <p>NOTE 1: ADVISE MANUFACTURER: _____, MAKE/MODEL/PART NUMBER: _____, PLANT LOCATION: _____.</p> <p>PLEASE FOLLOW RETURN TO BID INSTRUCTIONS. REPLY IF POSSIBLE ONLY ON PATH/PA REQUEST FOR QUOTATION FORM AS ATTACHING YOUR COMPANIES TERMS&CONDITIONS MAY CAUSE YOUR BID TO BE DEEMED NON RESPONSIVE AND OR DELAY AN AWARD ISSUED.</p> <p>QUESTIONS ONLY CONTACT: LARRY WAXMAN TEL: 201 395 3451 OR EMAIL: Lwaxman@panynj.gov</p>				
	<p>PLEASE QUOTE FULLY DELIVERED PRICES</p>	<p>PAYMENT TERMS</p>	<p>Total Delivered Price</p>		

This Quotation is subject to the terms and conditions set forth on the back page hereof. Bidder is advised to read these before signing.

We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

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 of New York and New Jersey opens this proposal.

Signed _____ Date _____
Firm Name _____



REQUEST FOR QUOTATION

Bid Due Date
01/29/2014

Quantity	Description	Unit Price		Total	
	<p>This is a Formal Bid Invitation Mail Sealed Bids to:</p> <p>The Port Authority of NY & NJ Attn: Bid Custodian Procurement Department 2 Montgomery Street, 3rd Floor Jersey City, NJ 07302</p> <p>by the date and time listed above, where it will be publicly opened and read.</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.</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 stated on this bid document.</p> <p>A valid photo id is required to gain access into the building, to attend the bid opening or hand deliver a bid.</p>				
	<p>RUNWAY handhole frameS & lidS AT EWR</p>				
	<p>PLEASE QUOTE FULLY DELIVERED PRICES</p>			<p>Total Delivered Price</p>	

PAYMENT TERMS

This Quotation is subject to the terms and conditions set forth on the back page hereof. Bidder is advised to read these before signing.

We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

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.

Signed _____

Firm Name _____

Telephone number _____ Date _____

Fax Number _____

Federal Taxpayer ID _____

**Bidder
Must
Sign
In
Two
Places**

The foregoing offer shall be irrevocable for 90 days after the date on which the Port Authority of New York and New Jersey opens this proposal.

Signed _____ Date _____

Firm Name _____



REQUEST FOR QUOTATION

Bid Due Date
01/29/2014

Quantity	Description	Unit Price		Total	
87	<p>The item covers the following services: A/c rated handhole frame & Lid</p> <p>A price preference of 10 % is available for NY/NJ Minority and Women Business Enterprises (M/WBE) or 5% for NY/NJ 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 _____.</p>				
PLEASE QUOTE FULLY DELIVERED PRICES		PAYMENT TERMS		Total Delivered Price	

This Quotation is subject to the terms and conditions set forth on the back page hereof. Bidder is advised to read these before signing.

We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

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 of New York and New Jersey opens this proposal.

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

**Bidder
 Must
 Sign
 In
 Two
 Places**

Signed _____ Date _____
 Firm Name _____

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 (201) 395-3405 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.

ATTACHMENT 'A'
BID # 36206

Delivery Requirements

- 100% of purchase item quantity is required on or before March 21, 2014

Deliver to Address:

Newark Liberty International Airport
Building 80, Brewster Road
Newark, NJ 07114
Delivery Contact: Catherine Nigro (973) 961-6109

Supplement to Terms and Conditions

A) If the vendor fails to perform in accordance with the terms (including timeliness of delivery) of this purchase order, the Authority may obtain the goods or services from another source and change the vendor the difference in price, if any, plus a reletting cost of \$100, plus any other damages to the Authority.

B) The Vendor's obligations for the delivery of the material within the time (or times) as quoted & provided for in this Purchase Order are of the essence of this Purchase Order. The Vendor guarantees that he can and will complete the delivery of the material within the time hereinbefore stipulated. Inasmuch as the damage and loss to the Authority which will result from delay in delivery of the material within the time herein stipulated will include items of loss whose amount will be incapable or very difficult or accurate estimation, the damages to the Authority for each calendar day or other time interval by which the Vendor does not complete the delivery of the material within the time or times above stipulated, shall be liquidated in the sum of the following amounts: Two percent (2%) of the Vendor's itemized bid price for each calendar week (or prorated portion thereof) by which the Vendor fails to deliver the material as scheduled.

BID# 36206

JOSEPH A. VIELANTE, P.E.
N.J. Professional Engineer # 0643789
Certificate of Authorization # 240260040

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
NEWARK			
LIBERTY			
INTERNATIONAL			
AIRPORT			
ELECTRICAL			

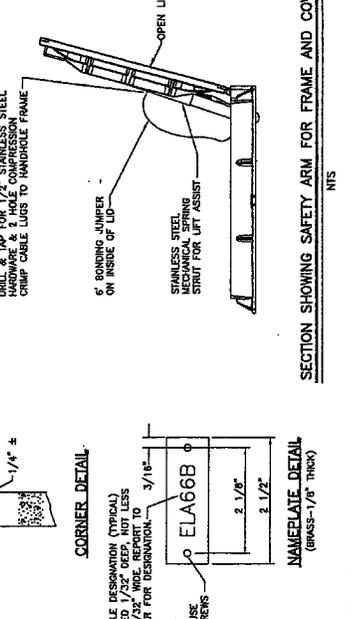
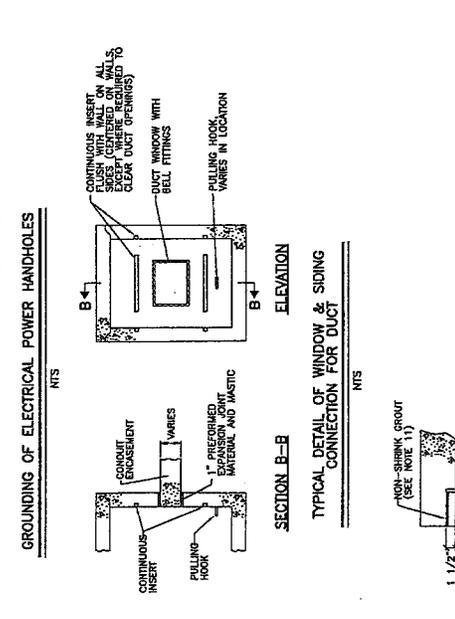
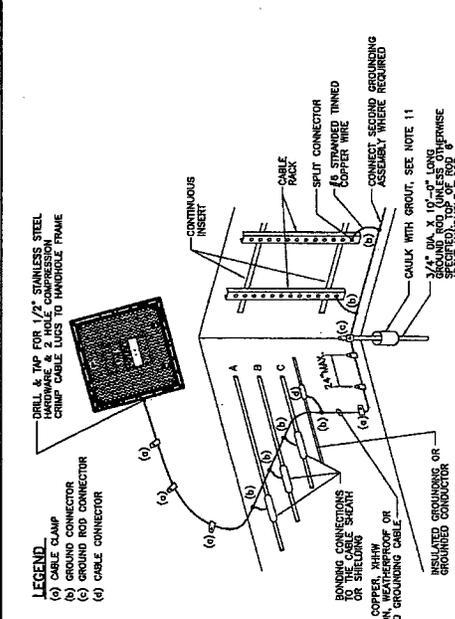
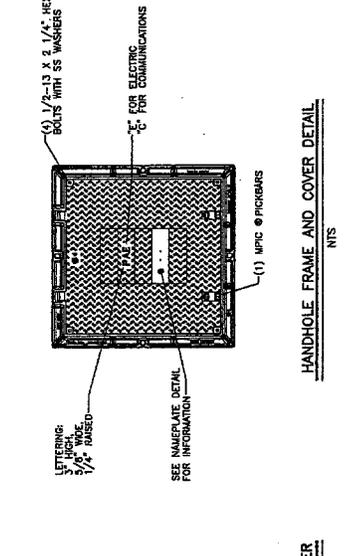
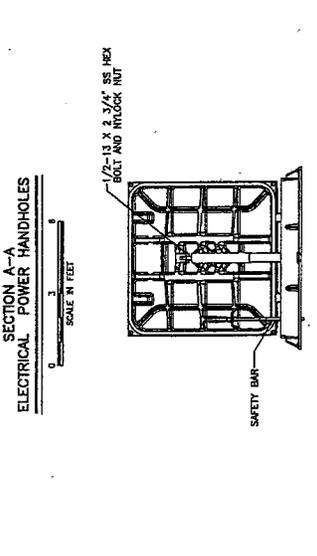
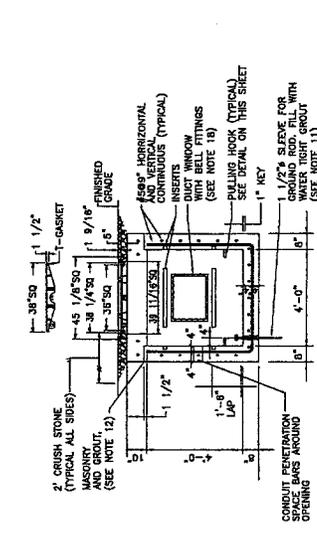
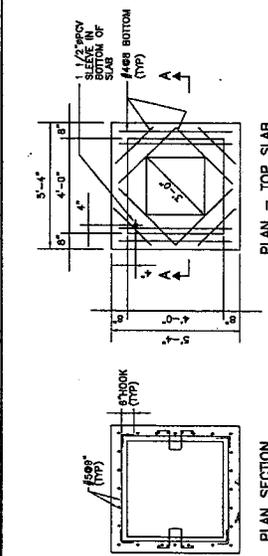
REHABILITATION OF RUNWAY 4L-22R AND
DELAY REDUCTION INITIATIVES

TYPICAL HANDHOLE
DETAILS

Designed by	J. BERENSON	Checked by	J. VIELANTE
Date	11/29/2013	Contract Number	EWR-154.172
Drawing Number	E968	Project	13200000

- NOTES:**
- FOR LEGEND, ABBREVIATIONS, AND ELECTRICAL GENERAL NOTES, SEE DWG NO. E001.
 - FRAME AND COVER SHALL BE CAST IN-PLACE BY SUBMITTANT ASSEMBLY (THINK FULCRUM SAFETY BAR, MECHANICAL SPRING STRUT) OR APPROVED EQUAL. FURNISH AND INSTALL A GROUND LUG ON FRAME INSIDE THE HANDHOLE.
 - MINIMUM SPlice LENGTHS REQUIRED FOR REINFORCING BARS:
 - BAR #4: 1'-8"; BAR #5: 1'-8"; BAR #6: 2'-0".
 - INSERTS SHALL BE HOT DIPPED GALVANIZED STEEL UNSTRUT, (GALVANIZED IN ACCORDANCE WITH ASTM A123 AND A153), STEEL P-3000, OR APPROVED EQUAL. FURNISH AND INSTALL WITH END CAPS OF SIMILAR MATERIAL AND FINISHED WITH POLISH COATED FILLER.
 - PULLING HOOK SHALL BE ASTM A36 STEEL, HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153. STEEL SHALL BE WELDED TO REINFORCING. WELDED AREA SHALL BE PREPARED AND FINISHED WITH POLISH COATED FILLER. FURNISH AND INSTALL WITH END CAPS OF SIMILAR MATERIAL AND FINISHED WITH POLISH COATED FILLER.
 - REINFORCING BARS SHALL BE ASTM A-815 GRADE 60.
 - FURNISH AND INSTALL GROUNDING ASSEMBLY AS SHOWN ON THE CONTRACT DRAWINGS.
 - PART ALL GROUND CONNECTIONS WITH CARBONILE BRITANNICUM 50 OR APPROVED EQUAL.
 - ALL CAST-IN-PLACE AND PRECAST CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 05100 AND SHALL BE CAST IN-PLACE AND FINISHED WITH POLISH COATED FILLER. MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI FOR CAST-IN-PLACE AND 5000 PSI FOR PRECAST AT 28 DAYS IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 05100. ALL CONCRETE SHALL BE FINISHED WITH POLISH COATED FILLER. ALL HANDHOLE AND HANDHOLE APPLICATIONS, IN ADDITION, WHERE SPECIFICALLY CALLED FOR ON THE PLANS, VERY HIGH EARLY STRENGTH CONCRETE SHALL HAVE A SIX HOUR DESIGN STRENGTH OF 10,000 PSI. THE CONTRACTOR SHALL PROVIDE THE REINFORCEMENT SHOWN ON THIS DRAWING IS THE MINIMUM THAT SHALL BE PROVIDED.
 - WHEN THE HEIGHT OF THE COLLAR THAT SUPPORTS THE HANDHOLE COVER IS LESS THAN 4 INCHES, A SINGLE COURSE OF SOLID CONCRETE MASONRY MAY BE USED TO SUPPORT THE COLLAR. IF THE COLLAR IS GREATER THAN 4 INCHES HIGH, THE COLLAR SHALL BE POURED IN PLACE CONCRETE.
 - AS SHOWN ON THIS DRAWING, THE FOLLOWING IS AN APPROVED EQUAL:
 - "MASTERSHOWN 605" AS MANUFACTURED BY MASTER BUILDERS
 - "TIVE STAR GROUT" AS MANUFACTURED BY TIVE STAR PRODUCTS, INC.
 - "EUCO NS GROUT" AS MANUFACTURED BY THE EUCO CHEMICAL COMPANY.

- WATERSTOP:**
- FOR CAST-IN-PLACE CONCRETE, WATERSTOP SHALL BE ONE OF THE FOLLOWING:
- "SWELLSAL JOINT" AS MANUFACTURED BY GEEFF CONSTRUCTION
 - "HYDROKOTE-CI-020" AS MANUFACTURED BY GREENSTREAK, ST. LOUIS, MO.
 - "NODIA ULTRA SEAL MC-2010M" AS MANUFACTURED BY MITSUBISHI CHEMICALS, INC., WALLER, TX.
- FOR PRECAST CONCRETE, WATERSTOP SHALL BE ONE OF THE FOLLOWING:
- "SWELLSAL JOINT" AS MANUFACTURED BY GEEFF CONSTRUCTION
 - "NODIA ULTRA SEAL MC-2010M" AS MANUFACTURED BY MITSUBISHI CHEMICALS, INC., WALLER, TX.
 - "TUPRESSAL GASKET TYPE U" AS MANUFACTURED BY 882 USA, INC., BRISTOL, CONNECTICUT
- IF AN ORGANIC SOIL LAYER IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATION FOR HANDHOLE, A MINIMUM OF 3 FEET OF OVER EXCAVATION OF THE SOIL LAYER WITH SPECIFICATION SECTION 02231 SHALL BE WITH 1-1/2" MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02231.
- THE SUBGRADE FOR THE HANDHOLE AS WELL AS CONTROLLED BACKFILLING OF THE EXCAVATION SHALL BE INSPECTED BY THE ENGINEER IN ACCORDANCE WITH THE CONTRACT DRAWINGS.
- CONCRETE SHALL BE TERMINATED WITH 600 BELL FLUSH WITH INSIDE WALL.
- RECORD ALL RECORDS OF HANDHOLES INSTALLED AND REFER TO THE ENGINEER. RECORDED POSITIONS SHALL BE IN THE FORM OF GPS COORDINATES OR SURVEY COORDINATES USING THE AIRPORT COORDINATE SYSTEM.
- USING ENGINEER APPROVED TEMPLATES AND PAINT, PAINT HANDHOLE/HANDHOLE GENERAL DIRECTION OF FLOW FOR DESIGNATIONS PAINTED ABOVE DUCTS, INCLUDE:
- ALL FOUR SIDE WALLS OF HANDHOLE SHALL CONTAIN DUCT WINDOW UTILIZING 1/2" DIA. DUCT WINDOW. ALL ANNUAL SPACE WITH FLOWABLE GROUT THROUGH DUCT WINDOW.
 - ALL SAFETY ARMS SHALL BE TESTED TO MAKE SURE HATCHES/ACCESS LIDS IS ENGAGED/LOCKED. HATCHES/ACCESS LIDS SHALL ALSO BE TESTED TO SEE THE TESTS SHALL BE CONDUCTED WITH THE HATCH/ACCESS LID OPEN WHILE APPLYING A 300 POUND HORIZONTAL FORCE AT THE OUTER MOST (HIGHEST) POINT ON THE HATCHES/ACCESS LIDS, CHECKING BOTH DIRECTIONS. HANDHOLE ACCESS LIDS THAT ALLOW MOMENT OVER 20 DEGREES FROM VERTICAL WILL BE REJECTED.



LEGEND:

- CABLE CLAMP
- GROUND CONNECTOR
- GROUND ROD CONNECTOR
- CABLE CONNECTOR

GROUNDING OF ELECTRICAL POWER HANDHOLES

CONTINUOUS INSERT

FLUSH WITH WALL ON ALL SIDES (SEE NOTE 11)

CLEAR DUCT OPENINGS

DIET WINDOW WITH BELL FITTINGS

PULLING HOOK VARIES IN LOCATION

DRILL & TAP FOR 1/2" STAINLESS STEEL HARDWARE & 1/2" INCH COMPRESSION NUT. SAFETY BAR TO HANDHOLE FRAME

6" BONDING JUMPER ON INSIDE OF LID

STAINLESS STEEL HARDWARE STRUT FOR LIFT ASSIST

HANDHOLE DESIGNATION (TYPICAL) ENGRAVED 1/32" DEEP, NOT LESS THAN 1/8" HIGH

DRILL FOR NAMEPLATE DETAIL FOR INFORMATION

NAMEPLATE DETAIL (BRASS-1/8" THICK)

BID# 36206

DIVISION 16

SECTION 16000

ELECTRICAL GENERAL REQUIREMENTS

PART 1. GENERAL

1.01 SUMMARY

Unless otherwise shown on the Contract Drawings, or unless otherwise specified in other Sections of these Specifications, the general requirements specified in this Section are applicable to all electrical work of this Contract. Additional requirements applicable to individual Sections of these Specifications are specified in those Sections, or are shown on the Contract Drawings.

1.02 REFERENCES

The following is a listing of publications referenced in this Section:

	<u>American National Standards Institute (ANSI)</u>
ANSI C 2	National Electrical Safety Code.
	<u>American Society of Testing and Materials (ASTM)</u>
ASTM D 178	Standard Specification for Rubber Insulation Matting.
	<u>National Fire Protection Association (NFPA)</u>
NFPA 70	National Electrical Code.
	<u>Occupational Safety and Health Administration (OSHA)</u>

1.03 QUALITY ASSURANCE

- A. Any entity performing Work shall have had experience on at least two projects involving quantities and complexities at least equal to those required under this Division or the applicable Section thereof.
- B. All workmen performing under this Division shall be skilled workers of the trade involved. Where specialty work, such as splicing or welding are required, submit proof of training, experience and work history for each workman, for review by the Engineer. Only approved workmen shall perform specialty work.
- C. All electrical work shall be performed under the supervision of an electrical contractor, licensed in the state (and the city as required) in which the work is to be performed. Submit a copy of the qualifying license for review by the Engineer.
- D. All calculations required by this and other various Sections of these Specifications, or as shown on the Contract Drawings, shall be certified and sealed by a Professional Engineer licensed in the state in which the Work is to be performed, and shall be submitted to the Engineer for review.

- E. Various Sections of these Specifications contain the requirement for the specific material or equipment to be furnished with an experience statement "satisfactorily used for purposes similar to those intended herein" or words of similar intent and a statement that specifies the required experience time. These statements shall mean that the manufacturer of the material or equipment being furnished for the Work specified in this Contract shall have manufactured similar material or equipment to that specified, for at least the time specified.
- F. In various Sections of this Division there is a statement that refers to the length of required experience that must be satisfied.
- G. Polyvinyl Chloride (PVC): PVC conduits, PVC-insulated power wiring, or items containing PVC, except PVC-insulated wiring for communications systems, remote control, signaling, and power limited circuits, shall not be installed in any indoor area. PVC-insulated wiring for communications systems, remote control, signaling, and power-limited circuits shall be furnished and installed in accordance with NFPA 70.
- H. Asbestos
Asbestos or items containing asbestos shall not be furnished or installed.
- I. Conformance Labels
All electrical materials and equipment for which there is a nationally recognized standard shall bear the conformance labeling of the third party inspection authority, such as Underwriters Laboratories Inc., Factory Mutual, ETL, or approved equal. Where the phrase "where there are established UL standards, shall bear the UL label", or words of similar intent appear in other Sections, the instructions for the conformance label above shall apply.

1.04 CODES AND STANDARDS

- A. The electrical installation shall conform to all requirements of ANSI C2, NFPA 70, and the codes and standards specified in other Sections, all local codes and the requirements of OSHA, which would be applicable if the Authority were a private corporation.
- B. Standards publications of technical organizations and regulatory agencies are referenced in other Sections, and unless stricter requirements are indicated, materials and equipment so specified shall be manufactured, tested and installed to conform, as a minimum, to the requirements of such reference standards and publications.
- C. Installations for aeronautical markers, lighting, guidance signs, and other work as shown on the Contract Drawings, shall comply with the standards of the Federal Aviation Administration (FAA), where applicable.
- D. In case of conflict between provisions of codes, laws and ordinances, the more stringent requirement shall apply.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver material in manufacturers' original unopened protective packaging.
- B. Store materials in original packaging in a manner to prevent soiling, physical damage, wetting or corrosion prior to installation.

- C. Handle in a manner to prevent damage to finished surfaces.
- D. Where possible maintain protective coverings until installation is complete and remove such covers as part of final cleanup.
- E. Touch up any damage to finishes to match adjacent surfaces to the satisfaction of the Engineer.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

1.07 SPECIAL TERMS

Throughout this and other Sections of this Division the term "Authority" is used. In PATH contracts, substitute the term "PATH" is deemed substituted for the term "Authority".

PART 2. PRODUCTS

2.01 MATERIAL AND EQUIPMENT TO BE FURNISHED

Equipment and materials furnished shall be new and unused, prior to this installation, first grade commercial quality and shall be essentially the standard cataloged products of a manufacturer regularly engaged in the manufacture of the products. Only those items specifically shown on the Contract Drawings as existing, relocated or Authority furnished shall be reused in this installation. Rebuilt or remanufactured equipment will not be permitted.

2.02 IDENTIFICATION

- A. All parts of equipment, such as switchboards, panel boards, safety switches, motor starters, circuit breakers, time clocks, contactors and similar items shall be identified by name, function or control with laminated plastic nameplates consisting of two black sheets with one white sheet bonded to and between the two outer sheets and having letters machine engraved in the face sheet to the depth of the white plastic. Nameplates shall not be smaller than 1 inch by 3 inches with characters not less than one-quarter inch. Where letter sizes are not specified, use one-inch high letters for panel boards, switchboards and motor control centers and one quarter inch high elsewhere. Nomenclature shall be according to a schedule approved by the Engineer.
- B. All device plates other than lighting switch plates, telephone and 120 volt, single phase, 15 or 20 ampere receptacles, shall have black or white (as directed) silk-screened lettering Helvetica Medium type face (or other type face as directed by the Engineer) designating:
 - 1. System.
 - 2. Voltage (where applicable).
 - 3. Number of phases (where applicable).
 - 4. Current rating (where applicable).
 - 5. Frequency (where applicable).

- C. Before placing orders for nameplates or silk-screened device plates, submit a typewritten list to the Engineer for review.
- D. The outside of the covers of all junction or pull boxes located above hung ceilings and the inside of the covers of all junction or pull boxes exposed shall be labeled with an indelible marker indicating the operating voltage and the system contained therein.
- E. All device plates of receptacles connected to a standby or emergency power distribution system shall be labeled with an orange plastic nameplate, engraved with the panel board and circuit number to which the receptacle is connected. Nameplate character engraved shall be not less than one-quarter inch in height.
- F. Unless otherwise shown on the Contract Drawings, all panel boards, switchboards, switchgear, circuit breakers, switches and transformers connected to a standby or emergency power distribution system shall be finished Federal Safety Orange in color.

2.03 RUBBER MATTING

- A. Provide continuous insulated rubber matting not less than 36 inches wide and not less than one quarter inch thick in one piece in front of:
 - 1. Substation transformers.
 - 2. Switchgear.
 - 3. Switchboards.
 - 4. Motor control centers.
 - 5. Panel boards.
 - 6. On each side and end of a standby or emergency generator set.
 - 7. Other locations as shown on the Contract Drawings.
- B. Matting shall conform to ASTM D 178, Type 2.

PART 3. EXECUTION

3.01 GENERAL

- A. Work of this Division shall include all labor, material and apparatus necessary for the completion of all electrical work as shown on the Contract Drawings and as hereinafter specified, left ready for satisfactory operation.
- B. Coordinate with Authority operations and construction by other trades.
 - 1. Coordinate with the Work of all trades as necessary to facilitate timely completion, avoid unnecessary cutting and patching and to ensure proper installation and operation of all equipment.
 - 2. Coordinate all components and aspects of the Work, in order to minimize power shutdowns to the power distribution systems. Should any part of the Work require an "off-hours" shutdown in excess of 8 hours, supply temporary services or feeders as required to maintain operation of the existing systems and equipment.

3. Furnish to appropriate trades, shop drawings, catalog cuts and instructions necessary for construction of concrete bases, concrete encasement, anchor bolts, and other construction required to accommodate installations under other Sections.
 4. Obtain all wiring diagrams and other instructions required for proper electrical connection of equipment installed or furnished under other Divisions of these Specifications and coordinate the installation, wiring and connections for equipment furnished under this Division, or other various Divisions.
- C. The arrangement of electrical equipment and conduit runs as shown on the Contract Drawings and described in the Specifications is schematic. Locate and install electrical work in coordination with other trades so that all electrical equipment and material is installed with working clearances in accordance with NFPA 70. Route conduit to avoid interference with existing installation and with work to be performed by other trades.
 - D. The location of equipment and motors shown on the Contract Drawings shall be subject to minor revisions due to field conditions or coordination with other trades without any increase in Contractor's compensation. Prior to roughing-in, verify the exact location of all electrical connections to equipment and motors from reviewed shop drawings and field verification.
 - E. Maintain records of all inspections, testing, overload and overcurrent settings throughout the construction and any corrective actions taken, and submit records to the Engineer for review.
 - F. All electrical work shall be subject to inspection by the Engineer. Correct any deficient work, as required for the approval of the Engineer.
 - G. Any equipment, materials, wiring or labor that are a necessary part of the electrical work and to its proper performance, although not specifically mentioned herein or shown on the Contract Drawings, shall be furnished and installed as if called for in detail, without additional cost to the Authority.

3.02 REMOVALS, RELOCATIONS, RECONNECTIONS, RESTORATIONS

- A. Relocate existing equipment and materials as shown on the Contract Drawings.
- B. Unless otherwise shown on the Contract Drawings, existing equipment and materials that are to be removed and not required to be relocated under this Contract, will become the property of the Contractor and shall be removed from the property of the Authority, and shall be properly disposed of. Disposal of equipment and materials shall comply with all local, state and Federal laws and regulations as if the Authority was a private corporation.
- C. Unless specifically shown on the Contract Drawings, salvaged equipment and materials shall not be reused in the installation.
- D. If existing electrical feeders, wiring, conduit, lighting fixtures or equipment interfere with the installation of new construction of any trade, the existing electrical feeder, wiring and conduit shall be rerouted or the equipment relocated in a manner approved by the Engineer to permit installation of the new construction. Where existing circuits or devices, or portions of the existing wiring system are to remain in service, but are interrupted by the construction, continue the existing wiring to maintain the remainder of the wiring system in operation.

- E. Notify the Engineer immediately of any damage caused by the Contractor to existing wiring, services or feeders that are to remain in service. Repair the damage in a workmanlike manner to restore to service, at no cost to the Authority.
- F. Before shutdown or discontinuation of service on any circuit, system or feeder, coordinate such activities with the Engineer in order to minimize shutdown periods. Provide a minimum of two weeks notice in writing to the Engineer before performing any shutdowns. The minimum period may be reduced with the express written permission of the Engineer.

3.03 LOCATION OF EQUIPMENT

- A. Unless otherwise shown on the Contract Drawings, the location of outlets or devices, from finished floor to center of plate or device, shall be as follows:
 - 1. Lighting switches: 48 inches.
 - 2. Thermal switches: 48 inches.
 - 3. Receptacles: 16 inches.
 - 4. Telephone outlets: 16 inches.
 - 5. Fire alarm stations: 48 inches.
 - 6. Fire alarm horn/light signals: 7 feet 6 inches.
 - 7. Clocks: 7 feet 8 inches.
- B. Unless otherwise shown on the Contract Drawings, the location of equipment, from finished floor to top of enclosures shall not exceed 6 feet, 6 inches, and shall not protrude more than 4 inches if higher than 27 inches.
 - 1. In exposed or public locations, panel boards and cabinets shall generally be flush mounted and all covers shall be identical in layout and size, and shall be installed to maintain a level and straight top and bottom alignment.
 - 2. In concealed locations, or in closets or electrical or mechanical rooms, or non-public locations, panel boards and cabinets shall generally be surface mounted and shall be installed to maintain a level and straight top alignment.

3.04 DISSIMILAR METALS

- A. Dissimilar metals shall mean those metals that are incompatible with one another in the presence of moisture, as determined from their relative positions in the Electrochemical Series, or from test data. Where dissimilar metals come in contact, paint the joint both inside and out with approved coating so as to exclude moisture from the joint, or provide a suitable insulating barrier separating the metals.
- B. Transitions in raceways, from one metal to a dissimilar metal shall only be made at boxes or other enclosures, except where shown on the Contract Drawings.

3.05 NAMEPLATES

Secure nameplates on equipment or walls with stainless steel or brass screws.

3.06 RUBBER MATS

- A. Install rubber mats in front of each panelboard, switchboard, motor control center, switchgear and substation transformers, and along each side and the end of each generator set, or as shown on the Contract Drawings.
- B. Rubber mats, when installed, shall lay flat without curling.

3.07 CUTTING AND PATCHING

- A. Perform all cutting and patching of existing construction required for installation of all materials and equipment as specified in this Division.
- B. Perform all patching to match existing adjacent construction to the satisfaction of the Engineer and using the best possible workmanship of the various trades involved.

3.08 FINAL FIELD TESTS

- A. The entire electrical installation shall be inspected prior to final acceptance testing, thoroughly cleaned, and damaged finishes touched up after final completion and prior to final acceptance testing being performed. Not less than 30 days prior to the testing, furnish a test plan, to the Engineer for review, outlining all aspects of the testing, including tests to be performed and the expected results.
- B. Perform the following field test in the presence of the Engineer to demonstrate the reliability of the electrical installation. Give the Engineer a minimum of one-week advance notice of such tests.
 - 1. Operate all electrical systems and equipment for a period of 24 hours, unless in the opinion of the Engineer, a different test period is required, to prove the operation and performance of a system and its equipment.
 - 2. Should the foregoing test reveal any defects, promptly correct such defects and re-run the tests until the entire installation conforms to the requirements of these Specifications and the Contract Drawings.
- C. Tests requiring certified reports and those requiring factory or field inspection shall be conducted and reported to the Engineer in conformance with standards herein specified.
- D. In addition to the tests outlined above, after completion of the electrical system and prior to occupancy:
 - 1. The following equipment and devices, as a minimum, shall be thermographically inspected utilizing a Hughes Aircraft Probeye infrared detector, or approved equal, with videotaping attachment.
 - a. High voltage cable splices and connections.
 - b. Switchboard.
 - c. Transformer.
 - d. Switchgear.
 - e. Panelboards.
 - f. Motor control centers.

- g. Automatic transfer switch and emergency power system connections.
 - h. Chiller motor and starter connections.
 - i. All 600 volt (nominal) cable connections rated 100 amperes (#3 AWG) or greater.
 - j. Other equipment as shown on the Contract Drawings.
2. The inspection shall be made by an independent inspection company such as Infrared Services, Inc, Montville, N.J., General Electric Apparatus Service Division, or approved equal. The inspection shall be made with all equipment, motors, lighting fixtures, and miscellaneous loads operating and with all equipment covers removed. Inspection reports complete with color photographs of the infrared scan and control photographs indicating the ambient temperature and any hot spots of each item inspected shall be submitted to the Engineer for approval. Any equipment, connections or devices indicated to be operating improperly performing equipment shall be replaced or repaired by the Contractor at no cost to the Authority. The cost of the inspections and necessary repairs shall be included in the Contract.
- E. Demonstrate to the Engineer equipment or systems installed or modified in this Contract.
- 1. After completion of all testing, and prior to placing equipment or systems in operation, demonstrate the features and operation of the equipment or systems to the Engineer, and all other staff or interested parties, as designed by the Engineer, so that operational and maintenance personnel are familiarized with the equipment and systems, as follows:
 - a. Switchboards and panelboards.
 - b. Transformer.
 - c. Switchgear.
 - d. Motor control centers.
 - e. Fire alarm and smoke detection systems.
 - f. Automatic transfer switches.
 - g. Standby/Emergency generator sets.
 - h. Other equipment as shown on the Contract Drawings.
 - 2. Provide the necessary accessories, test equipment, and personnel, for each demonstration.
 - 3. Complete all arrangements for the demonstrations through the Engineer.
 - 4. Upon the completion of each demonstration or instructional session, obtain "sign-off" from the Engineer. The "sign-off" shall state that the demonstration or instructions for use were provided, that they were complete and were given to the designated personnel.

END OF SECTION

SECTION 16000

ELECTRICAL GENERAL REQUIREMENTS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Shop Drawings

1. Substation and high-voltage transformers.
2. Switchgear.
3. Switchboards.
4. Motor control centers.
5. Emergency lighting battery systems.
6. Working drawings for the installation sequence of medium voltage cables, and other systems where shown on the Contract Drawings, including the reel designations for each leg of the installation. Drawings shall include the calculations for pulling tensions and sidewall pressure of all cable pulls, including identification of manhole locations with splices and manholes that will be "pulled-through" without splicing. Calculations shall be certified and sealed by a Professional Engineer licensed in the State in which the Work is to be performed.

B. Catalog Cuts

1. Conduit, and fittings.
2. Wire and cable.
3. Wiring devices.
4. Multi-outlet assemblies.
5. "Standard" outlet and junction boxes.
6. Medium voltage cable, splicing and termination kits.
7. Lightning arresters.
8. Capacitors.
9. Panel boards and cabinets.
10. General purpose transformers.
11. Circuit breakers.
12. Lighting fixtures.
13. Pulling devices and end seals.
14. Special pull and junction boxes.

15. Supporting devices.
- C. Certifications
Training, experience and work history for certified splicers and welders.
 - D. Design Calculations
Calculations where required by the Specifications or the Contract Drawings.
 - E. Maintenance Manuals
Operation and maintenance manuals, where required by the Specifications or the Contract Drawings.
 - F. Schedules
Nameplate designations.
 - G. Record Documents
One set of Shop Drawings revised, completed and brought up to date showing the permanent construction as actually made, in accordance with "Shop Drawings, Catalog Cuts and Samples" of Division 1, and showing the exact location of all equipment and conduit runs, as actually installed.
 - H. Site Inspection Reports
A final copy of the records and certified test reports for all tests, to the Engineer for review, for not less than the following:
 - 1. Primary cable and terminators insulation testing.
 - 2. Insulation testing of 600V (nominal) cables rated 100 amperes (#3 AWG) and above.
 - 3. Ground resistance test of each service ground.
 - 4. Ground fault circuit breaker and receptacle testing.
 - 5. Setting of all adjustable overcurrent devices.
 - 6. Setting or size of all overload elements installed, indicating the following:
 - a. Motor designation.
 - b. Nameplate horsepower, full load current, voltage and phases.
 - c. Operating current and voltage.
 - d. Overload element size or setting.
 - 7. Emergency power distribution equipment and system test results.

END OF APPENDIX "A"