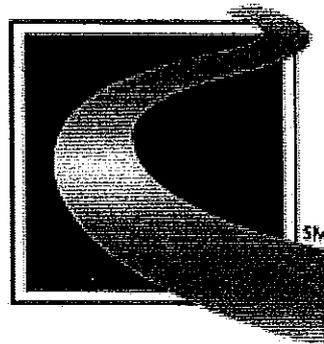


MARYLAND TRANSPORTATION AUTHORITY
Baltimore, Maryland

Invitation for Bids

FRANCIS SCOTT KEY BRIDGE



Maryland
Transportation
Authority

Contract No. KB 2424-000-002

MISCELLANEOUS REHABILITATION
OF ELECTRICAL GEAR

Baltimore County

May 2010



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NOTICE TO BIDDERS/OFFERORS
SMALL BUSINESS RESERVE PROCUREMENT

This is a Small Business Reserve Procurement as defined in **COMAR 21.11.01.06**, for which award will be limited to certified small business vendors. Only businesses that meet the statutory requirements set forth in State Finance and Procurement Article, §§14-501 —14-505, Annotated Code of Maryland, and that are registered with the Department of General Services Small Business Reserve Program are eligible for award of a contract.

For the purposes of a Small Business Reserve Procurement, a small business is a for-profit business, other than a broker, that meets the following criteria:

- * It is independently owned and operated;
- * It is not a subsidiary of another business;
- * It is not dominant in its field of operation;
- * Its **wholesale** operations did not employ more than 50 persons, and its gross sales did not exceed an average of \$4,000,000 in its most recently completed 3 fiscal years;*
- * Its **retail** operations did not employ more than 25 persons, and its gross sales did not exceed an average of \$3,000,000 in its most recently completed 3 fiscal years;*
- * Its **manufacturing operations** did not employ more than 100 persons, and its gross sales did not exceed an average of \$2,000,000 in its most recently completed 3 fiscal years;*
- * Its **service operations** did not employ more than 100 persons, and its gross sales did not exceed an average of \$10,000,000 in its most recently completed 3 fiscal years;*
- * Its **construction operations** did not employ more than 50 persons, and its gross sales did not exceed an average of \$7,000,000 in its most recently completed 3 fiscal years;* and
- * The **architectural and engineering** services of the business did not employ more than 100 persons and the gross sales of the business did not exceed an average of \$4,500,00 in its most recently completed 3 fiscal years.
- * If a business has not existed for 3 years, the employment and gross sales average or averages shall be the average for each year or part of a year during which the business has been in existence.

Further information on the certification process is available at www.dgs.state.md.us and click on the Small Business Reserve hyperlink.

NOTICE TO BIDDERS

Please review the checklist prior to submitting your bid on this Contract.

- When submitting your completed bid, do not separate the book. Submit the whole book including all addenda.
- Make sure that all addenda letters are attached outside of the front cover of the bid book.
- If the addendum has revised the Schedule of Prices, make sure that you have included the revised pages in your bid. Your price should reflect any and all changes.
- Prices must be written numerically and in words, unless approved substitute forms are used (Refer to GP-2.06). Do not leave any items blank.
- When tabulating your final price, make sure all your calculations are correct.
- The Bid/Proposal Affidavit must be completely filled out and signed by all the parties as indicated.
- If Escrow is being offered in a contract, the contractor must indicate whether or not they wish to utilize an Escrow Account for Retained Funds on the provided form.
- A bid bond must accompany all bids of One Hundred Thousand Dollars (\$100,000.00) or more. The bid bond document must be completely filled out and have an original Power of Attorney form attached.
- If the document is too large for the envelope that we have provided, you can place the document in another form of packaging that can be sealed and submitted. If the document is too large for the bid box, you should alert the receptionist.
- Make sure that your company's name, address, the contract number and the bid date appears on the front of the packaging.
- When submitting bid packages via US Mail, Federal Express, DHL, UPS or any other delivery service it is your responsibility to make sure that the bid reaches the bid box before the time deadline. It may be in your best interest to send the package 24 hours in advance of the deadline. Also, when sending packages this way, make sure that the labeling specifies that it is a bid submission.

Notice to Bidders/Offerors

EMaryland Marketplace Fee

In order to take advantage of Maryland State and Local government contracting opportunities, vendors/contractors are encouraged to register with eMaryland Marketplace. The free registration provides a means for businesses to receive e-mail notification of upcoming contracting opportunities in their specified areas of interest and expertise.

For registration requirements, visit:
www.eMarylandMarketplace.com.



NOTICE TO ALL HOLDERS OF THIS CONTRACT DOCUMENT

**NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP)
REPORT 350 IMPLEMENTATION SCHEDULE FOR DEVICES USED IN THE
MAINTENANCE OF TRAFFIC**

Except as otherwise specified in this Section, all items for the maintenance of traffic, including those listed under the following categories, shall be crashworthy in conformance with Level 3 or other Level as specified by the Engineer in conformance with the safety crash testing and performance criteria published in the National Cooperative Highway Research Program (NCHRP) Report 350, "Recommended Procedures for the Safety Performance Evaluation of Highway Features." When conformance with NCHRP Report 350 is required, the Contractor shall provide the Engineer with the manufacturers' certifications that the devices comply with the specified criteria.

Unless specifically waived by an attachment to these Contract Provisions, devices must be approved by the Office of Traffic and Safety.

Category 1 Devices

These devices are cones, tubular markers, flexible delineator posts, and drums, all without any accessories or attachments, which are used for channelization and delineation.

Category 2 Devices

These devices are Type I, II, and III barricades; portable sign supports with signs; intrusion alarms; and drums, vertical panels, and cones, all with accessories or attachments.

Category 3 Devices

- (a) Truck Mounted Attenuators (TMAs) and Trailer Truck Mounted Attenuators (TTMAs) .
- (b) Temporary Barrier.
 - (1) Concrete Barrier.
 - (2) Traffic Barrier W Beam and Water Filled Barrier.
 - (3) Steel/Aluminum Barrier.
- (c) Temporary End Treatments.

Category 4 Devices

These devices are area lighting supports, arrow panels, and portable variable message signs that are usually portable or trailer-mounted.

CONTRACT PROVISIONS
(NCHRP) REPORT 350 IMPLEMENTATION SCHEDULE

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WORK ZONE DEVICES	IMPLEMENTATION SCHEDULE TO CONFORM TO NCHRP REPORT 350 CRITERIA
<p>CATEGORY 1 Cones, tubular markers, flexible delineator posts, and drums (all without any accessories or attachments)</p>	<p>All devices shall conform to NCHRP Report 350 criteria.</p>
<p>CATEGORY 2 Type I, II, and III barricades; portable signs supports with signs; intrusion alarms; and drums, vertical panels, and cones (all with accessories or attachments)</p>	<p>All devices shall conform to NCHRP Report 350 criteria.</p>
<p>CATEGORY 3 (a) Truck Mounted Attenuators (TMA) Trailer truck Mounted Attenuators (TTMAs) (b) Temporary Barriers (1) Concrete Barrier (2) Traffic Barrier W Beam and Water Filled Barrier (3) Steel/Aluminum Barrier (c) Temporary End Treatments</p>	<p>All devices shall conform to NCHRP Report 350 criteria.</p>
<p>CATEGORY 4 Portable trailer mounted devices including area lighting supports, arrow panels, and changeable message signs</p>	<p>The Contractor may use devices that do not conform to NCHRP Report 350 criteria, until compliance dates are established. Use of these devices shall comply with the provisions of Part 6 of the MUTCD.</p>

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CONTRACT PROVISIONS
OCCUPYING WETLANDS

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OCCUPYING WETLANDS

The Contractor is hereby alerted to the importance of preserving wetland areas. The Administration, in conjunction with the various environmental agencies, has developed these Contract Documents so as to minimize or eliminate disturbance and damage to existing wetland areas. In order to accomplish this, the following must be rigidly adhered to:

- (a) Prior to performing any work on the project, the areas of wetland will be identified and marked as directed by the Administration. All personnel of the Contractor or sub-contractors shall be alerted to these designated areas.
- (b) The Contractor or sub-contractors shall not impact any wetland or waterway, whether it be permanently or temporarily unless otherwise stipulated in the permit application and approved as an authorized action by the appropriate regulatory agency. No fill shall be placed in these areas without a permit.
- (c) If a Contractor or sub-contractor has to impact a wetland or waterway that is not covered by an existing wetland permit, they shall immediately notify the Engineer. The Engineer will notify the Environmental Programs Division to determine the extent of any permit modification. At that time the Environmental Programs Division will request a permit modification or submit a permit application.
- (d) If the Contractor impacts any wetland or waterway for which they do not have a wetland permit, they shall be responsible for restoring the wetland areas and possibly mitigating the wetland impacts to the full satisfaction of the environmental agencies, which could include monetary compensation.
- (e) The cost of restoration and mitigation of the impacted areas shall be at no additional cost to the Administration.

The importance of not abusing the wetland areas cannot be overemphasized. Abuse of wetland areas could jeopardize the operation of the total Contract and could be cause for a shut-down. If a shut-down occurs because of the Contractor's failure to secure the required permits (i.e. the Contractor's method of work includes impacts not approved by previously acquired permits), the Contractor's negligence or operations, all costs and damages to the Contractor and to the State will be at no additional cost to the Administration. Noncompliance with these requirements will not be considered for an extension of Contract time.



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CONTRACT PROVISIONS
HIGH VISIBILITY SAFETY APPAREL POLICY

Contract No. KB 2424-000-002

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NOTICE TO ALL HOLDERS OF THIS CONTRACT DOCUMENT
HIGH VISIBILITY SAFETY APPAREL POLICY

BACKGROUND. Research indicates that high visibility garments have a significant impact on the safety of employees who work on highways and rights-of-way. In addition, high visibility garments may help to prevent injuries and accidents and to make highway workers more visible to the motoring public, which ultimately improves traffic safety.

STATEMENT OF POLICY.

- (a) The High Visibility Safety Apparel Policy provides a standardized apparel program.
- (b) The program seeks to improve the visibility of all persons who work on Authority highways and rights-of-way.
- (c) All apparel shall contain the appropriate class identification label.
- (d) Compliance with this policy is retroactive and becomes effective immediately. All affected employees shall receive high visibility apparel awareness training.

APPLICABILITY. This policy applies to all Authority employees and all other persons who work on Authority highways and rights-of-way. All workers shall wear, at a minimum, Class 2 ANSI/ISEA 107/2004 apparel.

- (a) For Authority employees, this apparel shall be either fluorescent orange-red or fluorescent yellow-green background material color and be the outermost garment worn.
- (b) Retro-reflective material color for Authority employee apparel shall be silver or white and be visible at a minimum distance of 1,000 feet. The retro-reflective safety apparel shall be designed to clearly recognize and differentiate the wearer from the surrounding work environment. The retro-reflective material may be contrasted by fluorescent orange background material not exceeding one and one half inches on either side of the retro-reflective material.
- (c) For non-Authority employees, this apparel shall be either fluorescent orange-red or fluorescent yellow-green background material color and be the outermost garment worn.

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CONTRACT PROVISIONS
HIGH VISIBILITY SAFETY APPAREL POLICY

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- (d) Retro-reflective material color for non-Authority employee apparel shall either be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and be visible at a minimum distance of 1,000 feet. The retro-reflective safety apparel shall be designed to clearly recognize and differentiate the wearer from the surrounding work environment.

REFERENCES.

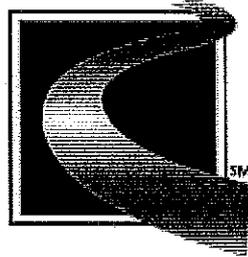
- (a) ANSI/ISEA 107/2004 standard – American National Safety Institute/International Safety Equipment Association
- (b) MUTCD 2003 – Manual for Uniform Traffic Control Devices - Sections 6D.03B and 6E.02
- (c) Visibility Research – The VCTR 1989 report concludes that fluorescent colors, when compared with non-fluorescent colors, enhance the daytime conspicuity of worker clothing.

DEFINITIONS.

- (a) Apparel – The outermost high-visibility garment worn by employees who work on Authority highways and rights-of-way.
- (b) Highways – All roads owned by the Maryland Department of Transportation and maintained by the Authority.
- (c) High Visibility – The ability for workers to be distinguishable as human forms to be seen, day and night, at distances that allow equipment operators and motorists to see, recognize, and respond.

MARYLAND TRANSPORTATION AUTHORITY
Baltimore, Maryland
Invitation for Bids

Francis Scott Key Bridge



**Maryland
Transportation
Authority**

Contract No. KB 2424-000-002

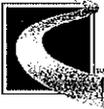
**Miscellaneous Rehabilitation of Electrical Gear
At Administration and Maintenance Building**

Baltimore County

May 2010

NOTICE TO BIDDERS

A "Pre-Bidding Session" for the purpose of answering or obtaining answers to questions of parties interested in constructing the work relative to Right-of-Way, Utilities, Design, and Construction Details will be conducted at 10:00am on May 20, 2010, in the Conference Room, ^{1st} Floor of Francis Scott Key Bridge Engineering Building at 300 Authority Drive in Dundalk, Maryland. While attendance at the Pre-Bid conference is not mandatory, this is the offeror's opportunity to raise questions and/or issues of concern regarding the project.



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SPECIAL PROVISIONS

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SP 1-1 PROJECT DESCRIPTION

CONTRACT NO.: KB 2424-000-002

TITLE: Miscellaneous Rehabilitation of Electrical Gear

FACILITY: Francis Scott Key Bridge Administration & Maintenance Buildings

LOCATION: Baltimore County

ADVERTISED: May 4, 2010

PRE-BID MEETING: **May 20, 2010 at 10:00 a.m** in the Conference Room at the Maryland Transportation Authority, 300 Authority Drive, 1st Floor, Engineering Building, Baltimore, MD 21222

PROJECT CONTACT: Project Manager: Mr. Kataw Say (410) 537-7853
Contract Administration: Ms. Maggie Johnson (410) 537-7807

BIDS DUE: **12:00 Noon, June 10, 2010** in the Bid Box on the 1st floor of the Maryland Transportation Authority, Engineering Building, 300 Authority Drive, Baltimore, MD 21222

CLASSIFICATION: Class B (\$ 100,001 – \$ 500,000)

CONTRACT TIME: One Hundred Twenty (120) Calendar Days

LIQUIDATED DAMAGES: **\$ 800.00 per Calendar Day**

MINIMUM MBE GOALS: Overall 0 %
Women owned businesses 0 %
African-American owned businesses 0 %

SMALL BUSINESS RESERVE PROCUREMENT

BID DOCUMENTS: **\$ 50.00** - Bid documents can be purchased between 7:30 a.m and 3:30 p.m., Mondays, Wednesdays, Thursdays and Fridays and between 10:00 a.m. and 4:00 p.m on Tuesdays at the Ticket Office located at the Francis Scott Key Bridge, Maryland Transportation Authority, Administration Building, 303 Authority Drive, Baltimore, MD 21222.



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SP 1-1 DESCRIPTION

The work to be performed under this contract is located at Francis Scott Key Bridge Administration and Maintenance facilities in Baltimore County.

The project involves electrical work which consists of removing and replacing existing circuit breakers and reconfiguring an emergency circuit, including replacing a transformer, at the Administration and Maintenance buildings. This work includes all work to remove and replace existing breakers, transformer, wiring, conduit, flexible conduit and make all final connections. All work and materials necessary to provide complete and functioning systems shall be included.

FPE (Federal Pacific Electric) no longer manufactures acceptable circuit breakers for the existing panelboards. The contractor will be responsible for replacing the circuit breakers with circuit breakers that are compatible with the existing panelboards from existing manufacturers, in accordance with the specifications and drawings.

The Maryland Transportation Authority operates 24 hours a day, seven days a week. So, scheduling the work involves working at times that will have the least impact, and also means working on Live or Hot 480 VAC panelboards for the Emergency panelboards circuit breaker replacement. The Emergency circuit, backed up by UPS, will also be Hot during the Main switchboard circuit breaker replacements, running on the emergency generator. The Main switchboard circuit breakers and remaining circuit breakers to be replaced, as described in the specifications and drawings, will be de-energized or Dead. De-energizing the Main switchboard will require coordination with Baltimore Gas and Electric (BGE).

There is an automatic transfer switch for the generator which will need to be configured so that switching is not automatic, nor able to back feed into the Main switchboard, yet keep the Emergency circuit operating during the Main switchboard circuit breaker replacements.

Personnel safety is the priority. The Maryland Transportation Authority shall require strict adherence to OSHA and NFPA 70E requirements. Close coordination with the Maryland Transportation Authority Master Electrician is imperative, and required.

Overall Project construction would be expected to take **One Hundred Twenty (120) days** from the Notice to Proceed including materials submission & approval and lead time. It is expected that actual on site work would be comprised of several night and weekend work periods.

SP 1-2 SPECIFICATIONS

All work on this project shall conform to the Maryland Department of Transportation, State Highway Administration's Specifications entitled, "Standard Specifications for Construction and



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Materials" dated July 2008, revisions thereof, or additions thereto, and the Special Provisions included in this Invitation for Bids. In addition all terms and conditions of the Standard Specifications for Construction and Materials date July 2008, revisions thereof, or additions thereto shall apply to this IFB unless specified herein.

SP 1-3 ORIGINAL FACILITY PLANS AND SITE VISITS

The original facility plans are on file at the Engineering/Finance Building of the Francis Scott Key Bridge and will be made available for inspection to prospective bidders. Parties interested in viewing the plans should contact Mr. Kataw Say, at (410) 537-7853. Parties interested in visiting the site should contact Mr. Kip McKenzie at (410) 537-7673.

SP 1-4 PROMPT PAYMENT TO SUBCONTRACTORS

The prime Contractor is responsible for making timely payments to all Subcontractors and Suppliers and provides written certification as required in Section 17-106 of the State Finance and Procurement Article of the Annotated Code of Maryland, as amended.

This contract requires the Contractor to make payment to all Subcontractors within ten (10) days of receiving payment from the Authority.

Each month, the construction Project Engineer will review the current pay items with the prime Contractor and all involved Subcontractors to ensure that all work satisfactorily completed within specifications is included in the monthly progress payment. For payment purposes, the same quantity totals used to compute the payment to the prime Contractor will be the basis for payment to the Subcontractor.

If the Subcontractor does not receive payment within the required ten (10) days, the Subcontractor shall notify the Project Engineer in writing of the amount in dispute including the item numbers and payment quantity for each. The Project Engineer will then notify the Chief of Construction of the dispute. The Chief of Construction or his representative will verbally contact the prime Contractor within 48 hours to ascertain whether or not a performance dispute exists which necessitates non-payment to the Subcontractor. If a performance dispute exists, the prime Contractor must demonstrate that there is a valid basis to withhold payment from the Subcontractor. If the prime Contractor withholds payment from a Subcontractor, the prime Contractor shall provide to the Subcontractor written notice of the withholding of payment. The notice shall detail the reasons for withholding payment as well as the amount. A copy of the notice shall be provided to the Surety and the Authority. If no valid dispute exists, the prime Contractor will be directed to make immediate payment to the Subcontractor. The Subcontractor will be responsible for notifying the Chief of Construction if this payment is not made. Upon receipt of notification, the Chief of Construction will schedule a meeting with the Contractor and



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Subcontractor to verify and discuss the non-payment issue. This meeting will be held at the Authority's offices within two (2) working days of the Authority's contact with the Subcontractor.

If it is determined that the prime Contractor has withheld payment to the Subcontractor without cause, further progress payments to the prime Contractor will be withheld until the Subcontractor is paid. In addition, the Authority may order a suspension of work or other administrative actions as it sees fit.

If an action is taken as stated above the Contractor shall notify the Authority's Project Engineer when payment is made. After the Authority's Project Engineer verifies that payment has been made to the Subcontractor the Authority shall release withheld progress payments.

Nothing in this Special Provision shall be construed to prevent the Subcontractor from pursuing a claim with the surety under the prime Contractor's payment bond at any time.

SP 1-5 WORK HOURS

This work impacts two buildings. The FSK Administration building and the FSK Maintenance building. The FSK Administration building is a 24 hour per day 365 day per year operational facility with critical police and toll operations taking place. The maintenance building is typically open from 6AM through 5PM M-F except state holidays. This work will require power outages of various scope and duration.

ALL power outages shall be scheduled at least 2 weeks in advance. Emergency power to panels EDP, EDP#1, EDP#2, and EDP #3 in the FSK administration building shall not be interrupted. Short outages may be tolerated during the transition from normal power to generator feed. However, breaker replacement in panel EDP shall be done with the bus bars hot, shall be completed within two hours, and must be performed on a normal (non-holiday) weekend between the hours of 8AM and 12N. Breaker replacement in the main switchboard in the FSK Administration building shall be completed performed on a normal (non-holiday) weekend between the hours of 8AM and 4PM, including main circuit breaker replacement and all other breakers within the main switchboard.

All work on the remaining panels within the FSK administration building shall be performed on non-holiday weekends (Saturday and Sunday) between the hours of 7AM and 7PM. All work in the FSK maintenance building shall be performed during non-business hours. No work may be performed when a snow removal operation is in progress. No work may be performed when a major traffic incident or major forecasted weather event (Hurricane, high winds, and major storm) occurs.

At the end of each work shift all circuits must be operational.



The Contractor shall cooperate with any other Contractors that are on site during the term of the project, as stated in GP-5.06 of the Standard Specifications.

SP 1-6 INSURANCE

TC-5.01 INSURANCE

Section TC 5.01 of the Standard Specifications is supplemented as follows:

1. The Contractor shall not commence work under this contract until it has obtained all of the minimum amounts of insurance required by these Special Provisions and the insurance has been approved by the Engineer. The Contractor shall furnish to the Maryland Transportation Authority ("Authority") duly executed certification of all required insurance on forms satisfactory to the Authority. The certificates of insurance shall state that it is in force and cannot be cancelled, release or non-renewed except upon thirty (30) days prior written notice, registered mail to the Authority. All Contractors' insurance policies, with the exception of the Worker's Compensation and Employer's Liability, shall be endorsed to provide as additional insureds the Maryland Transportation Authority and the State of Maryland.
2. The Contractor shall purchase and maintain such insurance as is specified herein which will provide the Authority, its members, employees and agents, as well as the Contractor from claims which may arise out of or as a result of the Contractor's operations under this contract, whether such operations be by the Contractor, by any subcontractor, by anyone directly or indirectly employed by any of them or by anyone whose acts any of them may be liable. This insurance shall be maintained in full force until the Contract has been accepted by the Authority and final payment is made.
3. The Authority requires the following minimum levels of insurance coverage for this contract:

a) Worker's Compensation and Employer's Liability

The Contractor shall, at all times, maintain and keep in force such insurance as will protect him from claims under the Worker's Compensation Act of the State of Maryland and maintain and keep Employer's Liability Insurance at a limit of One Hundred Thousand Dollars (\$100,000.00). The Contractor shall also maintain United States Long Shore and Harbors Act coverage, if such exposure exists.

b) Comprehensive General Liability Insurance

The Contractor shall maintain Comprehensive General Liability Insurance in the amount of at least One Million Dollars (\$1,000,000.00) Combined Single Limit for



Bodily Injury Liability and Property Damage Liability Insurance per occurrence and in the aggregate. Such insurance shall specifically include the Comprehensive General

Liability Broad Form Endorsement and indicate explosion, collapse, and underground damage coverage.

c) Comprehensive Automobile Liability Insurance

The Contractor shall maintain Comprehensive Automobile Liability Insurance (including all automotive equipment owned, operated, rented, or leased), in the amount of at least Five Hundred Thousand Dollars (\$500,000.00) Combined Single Limit for bodily injury and property damage.

d) Additional Insurance

The Contractor shall also procure and keep in effect:

Excess liability (umbrella coverage) in excess of and applicable to the coverage in the Comprehensive General Public Liability and Property Damage Insurance, "X, C, U" and Comprehensive Automobile Insurance in the amount of at least Two Million Dollars (\$2,000,000.00) for each occurrence.

4. Accident Notification - The Contractor shall send a written report to the Engineer and to the Maryland Transportation Authority within twenty-four (24) hours of any accident or other event arising in any manner from the performance of the Contract which results in or might result in personal injury or property damage.
5. Failure to comply with these Special Provisions may lead to termination for default or convenience.
6. There will be no special payment for the insurance as required by this contract and all costs incidental thereto shall be included in the Lump Sum for "Mobilization", (refer to Section 108), or if the Contract does not include such an item, the insurance costs are to be included in pay items for the Proposal.

**SP 1-7 FOR INFORMATION PURPOSES ONLY.
MINORITY BUSINESS ENTERPRISE REGULATIONS GOVERNING
CONSTRUCTION CONTRACTS IN EXCESS OF \$50,000
EFFECTIVE JULY 1, 2001**

GP – 7.29 of the General Provisions is supplemented as follows:



MBE participation goal for this contract is as indicated in these Special Provisions.

The Contractor shall:

1. Identify specific work categories appropriate for subcontracting;
2. At least ten (10) days before bid opening, solicit Minority Business Enterprises, through written notice that:
 - a) Describe the categories of work; and
 - b) Provide information regarding the type of work being solicited and specific instructions on how to submit a bid.
3. Attempt to make personal contact with Minority Business firms;
4. Assist Minority Business Enterprises to fulfill bonding requirements or to obtain a waiver of these requirements; and
5. Upon acceptance of a bid, provide the Maryland Transportation Authority ("Authority") with a list of Minority Businesses with whom the Contractor negotiated, including price quotes from Minority and Non-minority firms.

Third Tier Subcontracting:

Third Tier MBE/DBE Subcontracting will be approved by the Authority only when the Authority is satisfied that there is no way except by Third Tier contracting that an MBE/DBE goal can be achieved. The Contractor's written request must be submitted prior to Contract award and contain specifics as to why a Third Tier contracting agreement is being requested.

Waivers:

If for any reason the bidder/offerer is unable to achieve the specified overall contract goal or subgoals for each certified MBE classification, the bidder/offerer must request, in writing, on Attachment A, (Certified MBE Utilization and Fair Solicitation Affidavit), a waiver at the time of bid.

Strict adherence regarding documentation of the rationale for the waiver request and documentation of "Good Faith Efforts" of the Contractor are required for consideration of any waiver. For additional information on waivers, please see **COMAR 21.11.03.11**

Criminal Fraud Provisions:



All Contractors are reminded that Criminal Fraud Provision and Administrative Sanctions may be imposed for failure to achieve and maintain established MBE/DBE goals.

SP 1-8 PROGRESS SCHEDULE REQUIREMENTS

Refer to Section 110 of the Standard Specifications.

SP 1-9 CORPORATE REGISTRATION

A foreign corporation is any corporation not incorporated under the laws of the State of Maryland. All foreign corporations, prior to performing any services for the Authority, must register with the Maryland State Department of Assessment and Taxation in compliance with Subtitle 2, Title 7, of the Corporations and Associations Article of the Annotated Code of Maryland. Compliance is required of the successful vendor as well as the proposed subcontractors.

To accomplish the required registration, a foreign corporation must request and complete "Qualification Application Forms" which can be obtained from the Department of Assessment and Taxation, State Office Building, Room 803, 301 West Preston Street, Baltimore, Maryland 21201. Forms can be obtained via the Maryland Department of Assessment and Taxation web site at www.dat.state.md.us.

The Contractor will be responsible for documenting compliance with the aforesaid. This documentation will be required prior to the execution of a contract with the successful bidder.

SP 1-10 CONTRACTOR'S EMPLOYEE IDENTIFICATION

The Contractor shall provide to the Authority, a list containing the following for Contractor and all sub-contractors that would be working at the site. This shall include trucking companies who would come to the site on a repetitive basis for supply or removal of materials:

- Name of Company
- Name and title of contact person
- Address of the Company
- Phone number
- Facsimile number
- E-Mail address of contact person (if any)

All Contractor's employees, including employees of subcontractors, on this project, present at the site, shall be in possession of a valid employee identification card provided by the Employer, which shall contain a photograph and identify the employee by name and job title. The employee must produce the said identification if required by the Engineer or the Authority Police.



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When working in or around the Authority's buildings, said employees identification shall be displayed at all time.

While working in the Tunnels or on one of the major bridges of the Authority, Contractor's personnel shall have an ID decal displayed on their hardhat. These decals will be provided by the Authority. All of the Contractors' vehicles shall have a parking decal, attached to the rear view mirror. These parking decals will also be provided by the Authority and a distribution list will be maintained. At the time of project completion these decals shall be returned to the Authority.

Requests for hardhat and rearview mirror decals shall be made to the Construction Section before the beginning of construction and should include the number required of each type of decal.

All costs associated with identification cards will not be paid for separately and shall be incorporated under other items of payment in the Contract.

SP 1-11 ESTIMATED QUANTITIES

All construction items and quantities in these Special Provisions are provided in the Contract for use when and as directed by the Engineer. The quantities for these items are established for the purpose of obtaining a bid price. The quantities for these items may be increased or decreased without any adjustment to the Contract Unit Price for the item(s) or they may be deleted entirely from the Contract by the Engineer without negotiation. The Contractor will not be allowed to submit a claim against the Authority for any adjustment to the Contract Unit Price should the item(s) be increased, decreased, or eliminated.



**GENERAL PROVISIONS
GP SECTION 1
DEFINITIONS AND TERMS**

GP-1.03 ORGANIZATIONAL DEFINITIONS

Revise the definitions of Administration to read as follows:

Administration – The word “Administration” shall mean “Maryland Transportation Authority”.

Except for Office of Materials and Technology all references to the Maryland State Highway Administration’s offices and positions shall mean the Authority’s corresponding offices and positions.

For Erosion Sediment Control (ESC) (SHA SECTION 308):

MdTA Point of Contact as the ESC Quality Assurance Inspector for the Office of Engineering and Construction is Mr. Timothy Plume @ 443-790-8975 and Tplume@mdta.state.md.us. As specified in Section 308.01.03 Quality Assurance Ratings, the project scores will be reported on corresponding MdTA Form 00C61 (SHA Form No. 00C61)

The Maryland Department of Environment (MDE) Water Management Administration (WMA) requires the Contractor shall provide notification to both agencies (MDE & MdTA) seven days before commencing any land disturbing activities, and they are required to hold an ESC Pre-construction meeting. The Engineer will notify Mr. Plume; the MDE (WMA) ESC Inspector at (410)-537-3510; the Contractor’s certified Erosion and Sediment Control Manager (ESCM) and superintendent for attendance at the Pre-Construction ESC Meeting. This is required by the permitting agency,



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**GENERAL PROVISIONS
GP SECTION 1
DEFINITIONS AND TERMS**

GP-1.05 DEFINITIONS

Add the following definitions:

Highway Standards - The official Book of Standards for Highway and Incidental Structures, edited by the State Highway Administration, with the latest incorporated revisions issued on or before the date of advertisement on the Contract.



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**GENERAL PROVISIONS
GP SECTION 2
BIDDING REQUIREMENTS AND CONDITIONS**

GP-2.04 SITE INVESTIGATION

Revise the paragraph to read as follows:

The Contractor acknowledges that it has investigated and satisfied itself as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling, and storage of materials; availability of labor, water, electric power, roads; uncertainties of weather, river stages, tides, or similar physical conditions at the site; and confirmation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. The Contractor further acknowledges that it has satisfied itself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as the information is reasonably ascertainable from an inspection of the site, including all exploratory INFORMATION IN POSSESSION OF THE STATE, as well as from information presented by the drawings and Specifications made part of this contract. Any failure by the Contractor to acquaint itself with the available information may not relieve it from responsibility for estimating properly the difficulty or cost of successfully performing the work. The State assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the State.



**GENERAL PROVISIONS
GP SECTION 2
BIDDING REQUIREMENTS AND CONDITIONS**

GP-2.06 PREPARATION OF THE BID

GP9 **ADD:** After paragraph (a), the following.

The Contractor may elect to submit its bid on forms it has generated in the development of its bid. These may be submitted in lieu of the schedule of prices bid forms furnished by the Administration in the Invitation for Bids. These forms shall emulate the forms currently furnished by the Administration and, as a minimum, contain the following information.

- (1) State Contract No.;
- (2) State Item Nos.;
- (3) State's Proposed Quantities;
- (4) Description of Items;
- (5) Unit Price;
- (6) Total Cost of Each Item; and
- (7) Total Bid Amount.

The document shall be 8-1/2 x 11 inches, and oriented in a landscape format. The font size shall be no less than 10 point with horizontal lines dividing each item. Any addendum which revised items or quantities shall be noted on all affected schedule of prices sheets. Any special bid requirements that are noted in the schedule of prices shall also be listed on the form.

Should the Contractor elect to submit bids on the Contractor's own forms, the Contractor shall submit a sample of the form to the Administration at least two (2) weeks prior to the scheduled opening of bids. The use of Contractor generated forms shall be approved, in writing, prior to their use. If the Contractor's forms were previously approved in writing on another Administration project and have not changed, they need not be resubmitted for this project.

Sample forms shall be submitted to:

Ms. Linda McGill, CPPB
Chief of Engineering Procurement
Maryland Transportation Authority
300 Authority Drive
Baltimore, Maryland 21222



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**GENERAL PROVISIONS
GP SECTION 2
BIDDING REQUIREMENTS AND CONDITIONS**

GP-2.23 BID PROTESTS

Section GP 2.23 of the General Provisions is supplemented as follows:

The Board of Public Works does not have the jurisdiction to consider protests relating to this solicitation or an award of this contract under this solicitation.

All protests relating to this solicitation, the selection, and/or award must be filed in writing with the Authority's Procurement Officer, within the time limitations set forth in COMAR 21.10.07 and 21.10.02. Bid protests shall be filed not later than seven (7) days after the basis for protest is known, or should have been known, whichever is earlier. Oral protests will not be considered.

The specific details of the protest procedures shall be followed by aggrieved actual or prospective bidders or offerors are contained in COMAR 21.10.



**GENERAL PROVISIONS
GP SECTION 4
SCOPE OF WORK**

GP-4.10 WARRANTY OF CONSTRUCTION

GP-4.10 of the Standard Specifications is revised to read as follows:

Delete: The first paragraph in its entirety.

Insert: The following:

The Warranty as defined under paragraphs (a) through (g) in GP 4.10 "Warranty of Construction" shall apply to this Maryland Transportation Authority Contract unless specified elsewhere in this Invitation for Bids.



**GENERAL PROVISIONS
GP SECTION 5
CONTROL OF WORK**

GP-5.12 FAILURE TO MAINTAIN ENTIRE PROJECT

Delete Section GP-5.12 in its entirety

Insert: Revise the paragraph to read as follows:

Failure on the part of the Contractor, at any time, to comply with the provisions of GP 5.11 above, will result in the procurement officer's immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to COMPLETE CORRECTIONS SO AS TO CONFORM TO THE PROVISIONS OF GP 5.11 within four (4) hours of receipt of such notice, the procurement officer MAY NOTIFY THE CONTRACTOR TO SUSPEND ALL OTHER WORK ON THE CONTRACT UNTIL SUCH TIME AS THE UNSATISFACTORY MAINTENANCE IS CORRECTED. In the event that the Contractor fails to COMPLY WITH GP 5.11 within four (4) hours after receipt of such notice, the procurement officer will immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from monies due the Contractor ON THE NEXT MONTHLY ESTIMATE.



**GENERAL PROVISIONS
GP SECTION 9
PAYMENT**

GP-9.05 LATE PAYMENTS

ADD the following:

- (e) Payments will be made within thirty (30) days of the date when the Contract amount becomes due and payable or the date of receipt of a proper invoice, whichever is later. The State's failure to remit payment within forty-five (45) days from that date may entitle the Contractor to interest at the rate of 9 percent per annum beginning on the 31st day.



**TERMS AND CONDITIONS
TC SECTION 4
CONTROL OF WORK**

TC 4.01 – SHOP PLANS AND WORKING DRAWINGS

DELETE SECTION (a) IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING

ADD:

- (a) General. The Plans will be supplemented by working drawings, catalog cuts, schematics, material data, installation plans and manuals, user manuals, and other data necessary to demonstrate to the Engineer adequate control of the work, proper installation and handling, conformance to the specifications, and that the proposed materials and equipment is suitable for the intended use. All authorized alterations affecting the requirements and information given on the working drawings shall be in writing to the Engineer. Any deviations from the Specifications, Special Provisions, or Plans shall be clearly highlighted and explained. When reference is made to the working drawings, the interpretation shall be the working drawings as affected by all authorized alterations then in effect. When reference is made to the working drawings, the interpretation shall be that working drawings include working drawings, catalog cuts, schematics, material data, installation plans and manuals, user manuals, and other data necessary to demonstrate to the Engineer adequate control of the work, proper installation and handling, conformance to the specifications, and that the proposed material or equipment is suitable for the intended use.

Working drawings will show details of all structures, lines, grades, typical cross section of roadway, general cross sections, location and designation of all units and elements. Cabinet drawings shall be to-scale showing the location of all equipment proposed to be mounted within the cabinet. One-line diagrams and schematics shall be provided for equipment cabinets showing the interconnection of all devices located therein. Equipment layouts shall include rack-level elevation views as well as floor plans for all equipment racks. All working drawings, regardless if submitted as specified or submitted as equal substitutes, shall be furnished with complete, specific, detailed information from the manufacturer or supplier for the material or equipment the Contractor proposes to furnish, in which the requirements of the Specifications and Special Provisions shall be clearly shown to be met.

When any article is specified by trade name of manufacturer with or without the clause "or equal," it is intended to establish the quality of the article. If the Contractor proposes



to use material or equipment of another manufacturer as an “or equal” to the material or equipment specified, all working drawings shall conform to the following requirements, conditions, and procedures:

1. Substitution of equipment or materials other than those specified will be considered, providing, in the opinion of the Engineer, such equipment or material is equal to, or better than specified. The decision of the Engineer with respect to approval or disapproval of any material or equipment proposed to be substituted as an “or equal” is final. The Contractor shall have no claim of any sort by reason of such decision.
2. If the Contractor proposes to substitute materials or equipment as “or equal” to those specified, it shall be his responsibility to furnish, in addition to the information discussed above, a point by point comparison of the material or equipment specified under the Contract and that proposed to be substituted. The burden of responsibility in furnishing this information is with the Contractor.
3. If the substitute material or equipment requires any re-design or affects other aspects of the project, the Contractor shall be responsible to provide such re-design including details and to adjust elements as necessary to achieve the re-design at no additional cost to the Administration. Cost saving re-designs will be considered under the value engineering specifications.

If incomplete or irrelevant data is submitted as evidence of compliance with Specifications, Special Provisions, or Plans, the data will be returned and the request for approval of working drawings will be denied.

The Contractor shall provide, at no additional cost to the Administration, all required working drawings and shall have them adequately checked, after which they shall be submitted to the Engineer for review. The Engineer may reject working drawings and return them for revisions, in which case the Contractor shall submit revised working drawings as required. No items involving working drawings shall be incorporated into the work until working drawings have been accepted by the Engineer, however, acceptance shall not relieve the Contractor of any responsibility in connection with the working drawings.

The working drawings shall be prepared on sheets no smaller than 8.5” x 11” and no larger than 24” x 36”. The sheet size and scale of the drawings shall be appropriate for the work depicted.



All working drawings shall be submitted by the Contractor, no working drawings submitted directly by subcontractors, fabricators, suppliers, etc. shall be accepted. Acceptance of a material source or equipment source by the Engineer or Administration shall NOT constitute approval of the material or equipment nor approval of the materials or equipment as a substitute or an "equal" product.

ADD:

(b) The working drawings shall be submitted electronically as files (FAXES are NOT acceptable). Electronic submission may be made via email for small submissions. Email is the preferred submission method. The email submissions shall be made to the email addresses provided by the Administration upon notice to proceed of the project and shall include ksay@mdta.state.md.us. Where electronic submittals are larger than email can support (currently about 8MB), the submission may be made using one or more of the following alternatives:

1. Posted on a contractor supported FTP server, or other via another service that may be accessed by the administration as long as an email notice is made with the 'cover' sheet.
2. Copied onto a CD, DVD, or other supported data media and submitted to the Administration via standard mail. At least five (5) copies of the media shall be provided for in-house distribution. The address to mail such media transfers is:

Maryland Transportation Authority
Engineering Division
300 Authority Drive
Baltimore, MD 21222
ATTN: Kataw Say

ADD:

(c) Electronic Submittal Format. All electronic submittals shall be in a format readable by the Administration. The submittals shall be in Adobe portable document format (PDF) compatible with version 6.0 of Adobe Acrobat.

Each submittal shall be a single file. Multi-file submittals shall not be accepted.

The first page of each submittal shall be a cover page. The cover page must be in the 8.5 x 11" sheet format. The cover page must include:



1. Contract number.
2. Contract title.
3. Submittal Number. For each project (Contract), a sequential number starting with number 1 shall be used. Where a submittal is rejected, or otherwise requires resubmittal or replacement, the Submittal number shall be appended with an "R" followed by the revision number.
4. The Contractor's name, mailing address, contact phone number, contact email address.
5. The relevant line items in the contract that the submittal is associated with.
6. A brief description of the materials or data represented in the submittal package.
7. The date of the submittal.
8. The manufacturer's name, web site address, mailing address, and contact phone number, if applicable.
9. The vendor's or reseller's name, web site address, mailing address, and contact phone number if applicable.
10. The cover page must contain a 6" x 3" blank space where engineering stamps may be placed (electronically) without covering data in the page.

The electronic file must not be secured. The review process for electronic submittals will place electronic stamps and may include electronic comments in the electronic submittals by the Contractor. Any security or compatibility problems that prevent the use of the electronic stamps or electronic commenting will render the submittal unacceptable. The returned file may be secured to prevent accidental changes.

ADD:

- (d) File Naming Conventions and rules. It is necessary and required that file naming conventions and rules be followed to lend to organization and reduce confusion regarding the electronic submissions. Submittals that do not follow the file naming conventions described herein will be rejected without review. Strict adherence to the file naming rules is required. The file names for electronic submissions shall follow these rules:



1. The first six characters must be the first six characters of the contract number. For example, for contract KB2424-000-002, the first six characters of the file name must be KB2424.
2. The seventh character must be a dash.
3. The eighth through ninth characters shall be the text "SUB," which is short for submittal. Which is used to indicate that the file is a submittal from a Contractor.
4. The eleventh character must be a dash.
5. The twelve through thirteenth characters must be the submittal number, e.g., 001.
6. In the event of a re-submittal, the 15th character will be an R followed by the re-submittal number.
7. The remaining filename characters may be any short descriptive characters that may be useful to identify the nature of the submittal (fewer than 40 additional characters).
8. Examples of filenames:
 - i. KB2424-SUB-001-Conduit.pdf
 - ii. KB2424-SUB-001R2-Conduit.pdf
 - iii. KB2424-SUB-015-Fiber Optic Cable.pdf
9. After the submittal has been reviewed, the text 'SUB' will be replaced by the text 'TRN' by the administration and the electronic file with electronic stamps and possibly containing electronic comments will be returned to the contractor via email, CD, DVD, or similar electronic file transfer.

ADD:

- (e) Upon completion of the project, all electronic files that have been transmitted to the Contractor (TRN's) shall be transferred to CD's, DVD's or other media by the Contractor and provided to the Administration along with as-built data. Data provided shall include any original files in original format, used to generate the PDF submittals, these may include CADD, Visio, Word, Excel, MathCad, Access/DataBase, HTML, JPG/Pictures, Power point, or any other format that may have been used as the originating document. Provide three (3) copies of all media.



**TERMS AND CONDITIONS
TC SECTION 4
CONTROL OF WORK**

TC-4.02 FAILURE TO ADEQUATELY MAINTAIN PROJECT.

16 **ADD:** To the existing paragraph.

Additionally, an appropriate deduction will be made from the Contractor's next progress payment for each day or portion thereof that Maintenance of Traffic deficiencies exist, and will continue until the deficiencies are satisfactorily corrected and accepted by the Engineer. Any portion of a day will be assessed a full day deduction. The deduction will be equal to a prorata share of the lump sum price bid for Maintenance of Traffic or an amount prorated from the Engineer's estimate, whichever is more. The amount prorated will be the per diem amount established by using the working days (based upon calendar dates when required) divided into the total value of the bid item or the Engineer's estimate of that item, whichever is more.

The above noted deduction will be assessed on the next progress payment if:

The Contractor does not take action to correct the deficiencies and properly assume the responsibilities of maintaining the project (as determined by the Engineer) within four (4) hours of receiving a notice to comply with the required maintenance provisions.

The deduction will be equal to the daily prorated share of the lump sum price bid for Maintenance of Traffic or One Thousand Dollars (\$1,000.00) per day, whichever is more for each day or portion thereof that the deficiencies exist, and will continue until the deficiencies and proper assumption of the required maintenance provisions are satisfactorily corrected and accepted by the Engineer. The amount of monies deducted will be a permanent deduction and are not recoverable. Upon satisfactory correction of the deficiencies, payment of the Maintenance of Traffic lump sum item will resume.



TERMS AND CONDITIONS
TC SECTION 5
LEGAL RELATIONS AND PROGRESS

TC-5.01 INSURANCE.

17 **DELETE:** The first three paragraphs under TC-5.01 in their entireties.

INSERT: The following.

The requirement of GP-7.14 (Liability Insurance) to submit Certificate of Insurance prior to starting work is modified for Administration Contracts to require the certificate of insurance to be submitted prior to the execution of the Contract.

The Contractor shall maintain in full force and effect third party legal liability insurance necessary to cover claims arising from the Contractor's operations under this agreement which cause damage to the person or property of third parties. The insurance shall be under a standard commercial general liability ("CGL") form endorsed as necessary to comply with the above requirements; or other liability insurance form deemed acceptable by the State. The State of Maryland shall be listed as an additional named insured on the policy. The limit of liability shall be no less than One Million Dollars (\$1,000,000.00) per occurrence/ Two Million Dollars (\$2,000,000.00) general aggregate. The insurance shall be kept in full force and effect until all work has been satisfactorily completed and accepted. The policies shall be endorsed to provide thirty (30) days notice of cancellation or non-renewal to:

Director of Construction
Maryland Transportation Authority
300 Authority Drive
Baltimore, Maryland 21222



**TC SECTION 7
PAYMENT**

TC-7.06 FINAL ACCEPTANCE AND FINAL PAYMENT.

128 **DELETE:** (b) in its entirety.

INSERT: The following.

- (b) The Contractor shall then have a period of 30 days, dating from the date upon which he received the aforementioned tabulation from the Administration, in which:
- (1) To decide whether or not he will accept final payment upon such a basis, and
 - (2) To notify the Administration, in writing, of his decision. The Contractor may request an additional period up to 30 days in which to notify the Administration of his decision. In the event the Contractor notifies the Administration that he protests final payment on such a basis, that notification shall outline the reasons for said protest.



805 ELECTRICAL CONDUITS AND FITTINGS.

See Section 805 of the SHA's *Standard Specifications for Construction and Materials* in conjunction with the changes shown in this Section.

805.03 CONSTRUCTION

ADD: The following after paragraph 805.03.10:

805.03.11 Guardrail. Where guardrail is to be placed, reset, removed, or otherwise worked in any manner that tends to disturb the earth, place conduits and wiring only after such work is complete so as to avoid damage to the electrical work.

805.03.12 Buried Conduit. Fiber optic conduits shall have a Minimum cover of 24" and a maximum cover of 48 inches in all trenches. Fiber optic conduits shall be placed so that a distance of two (2) inches or more exists between the outside of the conduit and virgin undisturbed earth.

805.03.13 Pull Cord. Pull cord shall be placed in all conduit runs for future use.

805.03.14 Cable Tray. A conduit run in between a cable tray shall end between 3 and 6 inches from the cable tray. Ends of conduit shall have compression fittings and grommets.

805.03.15 Conduit Type. All outdoor conduits underground, except as stated elsewhere in the contract, shall be PVC schedule 80. All outdoor conduits above ground, within concrete or exposed conduits shall be galvanized steel. All indoor conduits shall be EMT with compression connectors and couplers. At the transition between below ground and above ground conduit runs, the elbow and all conduit within 24" below grade to grade level shall be galvanized rigid steel.

805.03.16 Bend Radius. All conduits shall have a bend radius greater than the manufacturers recommended minimum bend radius of the cables inside the conduit.

805.03.17 Conduit Ends. The Contractor shall seal all conduit ends with an approved compression fitting.

805.03.18 Conduit Support. Conduits shall be supported within 2 feet of the beginning, and on each side, of a 90 degree bend or offset. Conduits shall be supported within 3 feet of a conduit body, junction box, pull box, or cabinet. Each support shall be applied to the straight section of conduit and shall be firm fixed support. Loose supports are permitted ONLY at



manufactured expansion joints as necessary to allow for the proper operation of the expansion joint.

805.03.19 Conduit Color. Conduit used indoors (EMT) shall be color coded where exposed. When the following systems are contained in the conduit, the color specified shall be used. The conduit color shall be continuous for the entire length (except fitting and hangers which may be colored to match or remain standard silver color) of conduit and may be factory applied or applied via spray paint in the field. If field applied, overspray onto other non-conduit surfaces shall not be permitted.

- (a) Dedicated Security System conduit shall be Blue.
- (b) Dedicated Fire Alarm System conduit shall be Red.
- (c) Dedicated telephone/Data System, including fiber optic cables conduit shall be Yellow.
- (d) Dedicated low voltage signaling, SCADA, and related PLC I/O, shall be orange.
- (e) Dedicated radio system (police two way radio or other radio system) shall be green.
- (f) All other conduits shall be standard silver.

805.03.20 Conduit Entry and Fittings to Cabinets. A cabinet shall be box or enclosure that houses an electronic device. If the cabinet is located in a wet location as defined by the code, or located outside, or is exposed to rain then all conduit or fitting entries shall be made through the bottom of the cabinet. In such cases, conduits may enter the side or rear of the cabinet only if the entry point is below ALL enclosed electronic gear, exposed terminal strips, circuit breakers, heaters, non-water proof splices, or any other electrical connection or device that is not by itself water proof. If the cabinet is interior, conduits that rise above the cabinet and are at any point exposed to an exterior, or unheated space, or wet or rain exposed space, shall also enter the cabinet as if the cabinet were an exterior cabinet.

805.03.21 Conduit drains. Underground Conduit stub ups installed in exterior locations shall have a 1/4" round hole drilled 2" above grade, prior to installing wires or cables, to allow water to exit before filling the conduit enters the cabinet or building to which it is connected. All burrs and sharp edges shall be removed prior to pulling cable. The hole is not required where the conduit entry top the building or cabinet is at least 1' above the top of the nearest manhole, handhole, or other location that provides a lower drain point.



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805.04 MEASUREMENT AND PAYMENT

DELETE: The entire text of paragraph 805.04.

INSERT: The following.

This work will not be measured or paid separately, but shall be considered incidental to other work on the project.



820 - GENERAL ELECTRICAL WORK AND TESTING

SEE SECTION 820 OF THE SHA'S *STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS* IN CONJUNCTION WITH THE CHANGES SHOWN IN THIS SECTION.

820.01 DESCRIPTION

ADD: The following.

- (a) This work includes contacting, coordinating and cooperating with BG&E (or other local utility company) for the changes and additions to the electrical service.
- (b) The Plans show only diagrammatic locations of cables, conduits, and other underground utilities. They are approximate and do not show every detail. The Contractor shall provide working drawings, shop drawings, and catalog cuts, etc., which show final details of the installation.

820.01.01 Codes, Standards, Inspection, and Documentation

- (a) All work shall be performed in accordance with the codes and standards listed below. In addition, materials and construction methods shall meet the minimum requirements and recommendations of the listed codes, standards, and organizations. Unless otherwise stated, the latest edition, revision, or supplement, as of the date of advertisement, of the specified codes shall be used.
 - ANSI - American National Standards Institute
 - ASTM - American Society for Testing and Materials
 - IEEE - Institute of Electrical and Electronic Engineers
 - NEC - National Electrical Code (NFPA70)
 - NECA - National Electrical Contractors Association (NECA 1-2006)
 - NEMA - National Electrical Manufacturers Association
 - NESC - National Electrical Safety Code
 - NFPA - National Fire Protection Association
 - UL - Underwriters' Laboratories
 - TIA - Telecommunications Industry Association
- (b) All materials supplied by the contractor shall be new and UL listed, where such listing is possible. Submit catalog cuts for all materials in accordance with Shop Plans & Working Drawings in SPECIAL PROVISIONS (TC4.01).



- (c) The MDTA Chief Electrical Inspector or his appointed representative will inspect the entire installation. The Contractor shall contact the Electrical Inspector at least 48 hours before needed inspections. All trenches shall be inspected before backfilling. All equipment, conduits, etc. shall be inspected at rough in and prior to concealment. All work shall be inspected prior to power-up. Contact the Chief Electrical Inspector, Douglas Evans, at 410-977-2687 or devans3@mdta.state.md.us to arrange necessary inspections.
- (d) All rough-in work shall be documented via a digital camera prior to concealment. Camera shall be color, minimum of 5 mega pixels, and images shall be clear and readable to the naked eye. All color photos shall be time stamped with the date of the picture. Filename or other label shall identify project number and general location of the picture. All pictures shall be submitted on a CD or DVD at the conclusion of the project, however, electronic copies shall be made available at any time by request to the project engineer, inspector, and/or electrical inspector.
- (e) Special attention is directed to the fact that the Standard Specifications For Construction and Materials dated July 2008 and published by the Maryland Department of Transportation, State Highway Administration, also governs this work, and is referenced frequently herein as the "Specifications."
- (f) All work shall be performed in accordance with NECA 1-2006 (Standard for Good Workmanship in Electrical Construction) or latest revision.
- (g) Unless clearly specified otherwise, all voltages indicated are AC (alternating current), shall be at 60 Hz, and stated as RMS values.

820.01.02 Quality Assurance and Quality Control

The contractor shall inspect all materials furnished or installed under this contract and shall bring any damage, failure, or other problem to the attention of the project inspector prior to incorporation into the work. The contractor shall provide his own quality assurance and quality control for the work performed in the contract. The inspectors operating on behalf of the state are not a replacement for contractor's management and the contractor's own quality assurance and quality control.

Prior to final inspections/punch list development the contractor shall conduct his own inspections. The use of inspection checklists and quality control documents is required as evidence that inspections have been completed.



820.03 CONSTRUCTION

820.03.01 GENERAL

ADD: The following.

For the purpose of this specification, “direct supervision” shall mean that the qualified Master Electrician shall be at the job site at all times electrical work is performed. The Master Electrician shall be the single point of contact for inspection and quality control issues related to electrical work and shall be able to effectively manage the electrical work force.

The contractor must provide qualified labor to perform installation. Where licenses or certifications are available or required by local jurisdictions, state jurisdictions, or federal jurisdictions for certain skilled trades, such as electrical, mechanical, plumbing, welding, etc. The skilled trade workers shall have current versions of the appropriate license or certification prior to working the associated specialty and shall provide copies to the Project Engineer or Inspectors upon request.

Installation, splicing, terminating, and testing of fiber optic cable shall be performed by a trained and qualified fiber optic cable technician. Copies of certifications and experience shall be submitted to the Engineer prior to starting work.

ADD: The following just prior to paragraph 820.03.

820.03.04 Testing Fiber Optic Cables

Circuit tests shall be performed to verify that each fiber is connected to the proper circuit, and that it is continuous with no breaks, or damaged sections, in the fiber. All strands shall meet current EIA/TIA-568 specifications. Dark fibers and excessive attenuation due to breaks, bends, bad splices, defective connectors and bad installation practices shall not be accepted and shall be corrected. For fiber optic testing standards, see EIA-455-171 (FOTP-171), EIA 526-14.

- (a) All cables shall have ST connectors installed prior to testing. All testing, for purposes of acceptance of the system, shall be conducted on fully installed and assembled fiber optic cables.
- (b) Upon completion of testing, replace or repair any failed cable(s) with a new fiber or cable, and test the new cable to demonstrate acceptability.
- (c) Insertion loss testing shall be performed.
- (d) These tests shall be measured in dB.
- (e) These tests shall use 850 nm and 1300 nm light sources for multimode fiber and 1300 and 1550 nm for single mode fiber.



- (f) Test shall be documented for all wavelengths as noted above.
- (g) Test results shall be documented on paper and stored on a computer diskette and shall be turned over to the electrical inspector after testing is complete. Attachment 820-A to this Section shows a sample fiber optic test report.
- (h) An optical time domain reflectometer (OTDR) approved by the Engineer shall be used to conduct testing. The OTDR shall be calibrated to sheath (jacket) length, not optical length, by adjusting the unit's index of refraction. Properly trained technicians shall conduct tests.
- (i) All OTDR traces shall maximize both the vertical and horizontal scales to the greatest extent possible and still fit the entire trace on the screen.
- (j) A cable segment shall be deemed a failure if the total loss exceeds the calculated loss for that length of cable as indicated in Attachment 820-A. A cable segment shall fail if any individual splice loss is greater than 0.3dB, or if any mated connector pair loss is greater than 1.0dB, or if there is any point loss (over less than 1' of cable) of more than 1.0dB.
- (k) After the circuit test, a functional test shall be performed. This test shall consist of allowing the system to operate as normal for 30 consecutive days. Any failures shall be repaired by the Contractor at his own expense, and the test restarted.

820.03.05 All switches and breakers shall be operational and the operation of the devices they control verified. That is, the Contractor shall test switches and breakers in the presence of the MDTA electrical inspector to prove and assure that the device (or devices) specified is (are) controlled and no other device (or devices) is (are) controlled. All panel schedules shall be accurate and reflect the final installation.

820.03.06 All GFI protected outlets shall be tested with a suitable tester in the presence of the MDTA electrical inspector. The tester shall be a device that plugs into the outlet and indicates proper wiring of the outlet. A switch on the tester shall be utilized to introduce a ground fault that must trip the GFI device.

820.03.07 All Uninterruptible Power Supplies shall be tested by removal of power sources. Verify proper transfer to battery and backup time consistent with the manufacturers load vs time data for the particular model of UPS. Restore normal power and verify that batteries are charged and normal operation commences.

820.03.08 All PVC conduit fittings, except threaded fittings, shall be schedule 80 and glued and water tight. All GRSC fittings shall be tight fit.



820.03.09 All photo electric controls shall be tested by applying a temporary shade to simulate photometric changes intended to activate the controls. Such testing shall be performed by the contractor in the presence of the MDTA electrical inspector.

820.03.10 All three phase panels, loads, motors, generators, UPS's, and ATS's shall be checked for proper phase rotation and consistent phase termination between termination points. Ie: Phase A is the same Phase at all Phase A termination points and the phase rotation is the same at all points. Such testing shall be performed by the contractor and witnessed by the electrical inspector.

820.03.11 Flexible metal conduit (Greenfield) and liquid tight flexible metal conduit (seal tight), and liquid tight flexible non-metallic conduit may be used as follows. Flexible fabric innerduct and innerduct used for low-voltage and fiber optic systems is not covered by this requirement.

- (a) Lengths not exceeding 3' shall be used to connect transformers over 5KVA and motors.
- (b) Lengths not exceeding 6' may be used for the final connection of light fixtures used in ceilings.
- (c) Lengths not exceeding 6" may be used for the final connection devices that may be subject to minor vibration or minor movement perhaps from temperature expansion and contraction.
- (d) Other lengths as clearly specified on the plans or as approved by the Engineer.

820.03.12 Conduit/Cable labeling. Interior cable and raceways shall be permanently labeled at a minimum of every 50 feet, every 25 feet when view is obstructed, and within 5' of any wall or floor/ceiling penetration at all junction boxes, terminations, and within 12" of electrical panel. Label color shall be Safety Orange with Black Letters and shall follow ANSI (ASME) A13.1 for location and size.

820.03.13 Unless specifically shown otherwise on the plans, wiring derived from different system voltages shall be installed in separate conduits. Wiring of different voltages derived from the same system (i.e. Control wiring) may be permitted to be installed in the same conduit or junction box provided that all requirements of the NEC are maintained.

820.03.14 No wiring other than the primary voltage indicated shall be installed in electrical panels and Safety/Disconnect Switches. Exception may be granted for wiring that terminates on a device within the panelboard or safety/disconnect switch that is integral to the operation of that device. Enclosures for switches or overcurrent devices shall not be used as junction boxes, auxiliary gutters, or raceways for conductors feeding through or tapping off to other switches or overcurrent devices.

820.03.15 Branch Circuits: Any circuits supplying more than 50% non-linear loads shall have a dedicated neutral conductor.



820.03.16 Conduit or tubing 1” and larger shall be provided with a suitable insulating bushing.

820.03.17 Panel Board Labeling. All circuits installed or modified by the contractor in any way shall be properly labeled in the associated panel board panel schedule. This work shall include verifying that the existing load on the affected circuit(s) is also correctly identified. The label shall identify the type of load(s) served (e.g.: receptacles, lighting, appliances, motors, pumps, etc..) and the location (e.g.: room 103, sump pit#1, etc...). Where changes are minor (e.g. Two circuits or less being changed), the existing panel schedule may be modified as approved by the electrical Inspector. Larger changes shall require a new panel schedule typed, neat in appearance. The new schedule may copy the identifying labels of the old schedule provided that the contractor has not made any changes to those circuits. To clarify, replacing a panel board, moving circuits within a panel board, or similar changes shall be considered modifying the circuit and shall require testing to verify the connections of all such circuits and coordinating the panel schedule with the existing conditions.

820.03.18 Fire Stopping. All penetrations into fire walls or core holes between floors and walls must be properly fire-stopped in accordance NEC requirements for fire stopping. Penetrations into the surface of any firewall or presumed firewall should be only slightly larger than the conduit, cable or cables that will need to pass through it. This will make fire stopping easier and allow the wall to maintain a better over all structural integrity.

820.03.19 Construction Stakeout and Coordination

- (a) The Contractor shall coordinate this work with the work of other trades to avoid conflicts. Electrical cables and equipment damaged by the execution of work of other trades shall be completely removed and replaced with new.
- (b) The Contractor shall keep an up-to-date set of as-built red lined drawings on the job site. Submit as-built drawings upon completion of the work. The Contractor shall note the exact location of trenches at 100-foot intervals on the as-built drawings by station, and offset from the roadway. The Contractor shall show only the work that is part of the final project on as-built drawings.

820.03.20 Boxes and Cabinets. Unless specified otherwise, junction boxes, pull boxes, disconnect switches, cabinets, and other boxes installed outdoors and above ground shall be NEMA4X rated; except cabinets and boxes requiring ventilation which shall be NEMA3X rated.

820.03.21 Rodent stopping. All conduits that connect to exterior mounted cabinets shall be stuffed with copper mesh at the cabinet end point to deter rodent egress through the conduit. The copper mesh shall be installed after all wires and cables have been installed. The mesh shall be removable and the mesh and installation and removal technique shall not damage wires or cables.



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820.03.22 Conduit Fill. All conduit, new or existing, shall not exceed conduit fill requirements as specified in ANSI/NECA/BICSI-568-2006. Discrepancies shall be brought to the attention of the engineer prior to incorporation into the work.

820.03.23 Existing Conduits. Where existing empty conduits are used, the conduit shall be cleaned by pulling a mandrel of at least 80% conduit fill and a swab through the empty conduit. Any existing pull strings used (empty or partially used conduits) shall be replaced by pulling a new pull string with the new electrical or communications cables.

820.03.24 Bending Radius and Pulling Tension: Wires, Cables, Coaxial Cable, Fiber Optic Cables, and other communications and electrical cables shall be installed and handled in such a way so as not to exceed the manufacturers specified bending radius and pulling tension limits. Where the manufacturer provides installation and handling guidelines, such guidelines shall be followed.



ATTACHMENT 820-A SAMPLE FIBER OPTIC CABLE TEST REPORT

(To be filled out after installation is complete)

Job Name: Job ID:	Fiber Cable:
Location (A):	Location (B):

ANSI/EIA/TIA 568A: Cable Loss Factor (CLF); 1km=3280.83 feet

3.75 db/km (**0.00114 db/ft**) @ 850 nm for 62.5/125 μm MM

0.50 db/km (**0.00045 db/ft**) @ 1300 nm for 62.5/125 μm MM

0.50 db/km (**0.00015 db/ft**) @ 1310 nm and 1550 nm for OSP SM

1.0 db/km (**0.00030 db/ft**) @ 1310 nm and 1550 nm for ISP SM

0.5 Connector Loss (CL) = 0.75 db per pair of connectors

Splice Loss (SL) = 0.3 db each

To calculate ACCEPTABLE LOSS (db): Multiply cable length x (CLF) + (CL) + (SL) = DB margin: _____

Cable Length	Strand No	A to B	B to A	Fiber ID
Feet	1			Blue
850 NM MM	2			Orange
dB	3			Green
	4			Brown
	5			Slate
	6			White
	7			Red
	8			Black
	9			Yellow
	10			Violet
	11			Rose
	12			Aqua



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Cable Length	Strand No.	A to B	B to A	Fiber ID
Feet	1			Blue
1300 NM/MM	2			Orange
dB	3			Green
	4			Brown
	5			Slate
	6			White
	7			Red
	8			Black
	9			Yellow
	10			Violet
	11			Rose
	12			Aqua

Cable Length	Strand No.	A to B	B to A	Fiber ID
Feet	1			Blue
1550 NM/MM	2			Orange
dB	3			Green
	4			Brown
	5			Slate
	6			White
	7			Red
	8			Black
	9			Yellow
	10			Violet
	11			Rose
	12			Aqua

Technician: _____ Date: _____



SECTION 826 — REPLACE CIRCUIT BREAKERS

826.01 DESCRIPTION. This work shall consist of removing and replacing existing Federal Pacific Electric (FPE) circuit breakers.

826.02 MATERIALS.

Molded Case Circuit Breakers

826.02.01 Manufacturers: Subject to compliance with requirements, provide products by the following:

(a) Main Breakers & Molded Case Circuit Breakers

- Square D
- Cutler Hammer
- Siemens
- General Electric
- Westinghouse

(b) Manufacturer shall verify breakers as suitable replacements for the existing breakers in the existing panels.

826.03 CONSTRUCTION.

826.03.01 *The Contractor is responsible to visit the site and inspect the existing conditions before bid in order to ensure proper evaluation of working conditions and location of existing utilities.*

826.03.02 The new replacement circuit breakers shall fit in the existing breaker cubicle and shall have been fully tested in accordance with the latest edition of the National Electrical Code (NEC) and all local and state codes and regulations.

826.03.03 During construction, the Contractor shall coordinate and cooperate with MDTA electrician to minimize power interruption in scope, frequency and duration.

The existing generator may be used as a temporary power source during construction.

826.03.04 The Contractor shall label all wires prior to disconnection to ensure all wires are reconnected properly.



- 826.03.05** The Contractor shall submit for review a detailed Work Plan that will include sequence of events, time factors and overall “Loss of power” constraints in order to comply with the “Down-time” limits for the UPS and all Emergency Panel work.
- 826.03.06** The Contractor shall submit for review a detailed Safety Plan, for work in panels with live buss bars (EDP), which complies with OSHA regulations.
- 826.03.07** When working in the Emergency panel (EDP), the contractor may not take more than two (2) hours to complete the work. Emergency power to bus bars must remain live at all times. Power to panels EDP#1 and EDP#2 must not be interrupted. (EDP#1 and EDP#2 are subfeeds off the main lugs of EDP.)
- 826.03.08** Power to Uninterruptable Power Supply (UPS) shall not be interrupted for more than fifteen (15) minutes in any eight (8) hour period.
- 826.03.09** The circuit breakers shall be warranted to be free of defects in materials and workmanship for a period of twenty four (24) months from the date of completed installation and acceptance. Any property damaged shall be replaced or repaired as directed by the Engineer at no additional cost to the Authority.
- 826.03.10** *The Contractor shall be responsible to verify the proper fit of each breaker into the panel.*
- 826.03.11** Each existing breaker specified for removal shall be carefully removed. The new breaker shall be installed and the circuit reconnected. Reconditioned breakers are not acceptable.
- 826.03.12** Breakers removed shall become the property of the Contractor for proper disposal.
- 826.03.13** Each switchboard or panelboard unit shall be cleaned. Cleaning shall include but not limited to:
- (a) Vacuum out all loose debris and dust from panel board.
 - (b) Vacuum shall be equipped with HEPA filtration.
 - (c) Sand off any surface rust or scale. Spray paint interior portions (Non current carrying parts only) with cold galvanizing paint. Use matching grey enamel on panel board covers and exteriors.



- (d) Clean out any insect or rodent materials with an approved industrial cleaner.
- (e) Seal any conduits that connect to exterior loads. Use copper mesh and duct seal.
- (f) Inspect panelboard busses and insulation for defects and call to the attention of the agency.

826.03.14 At the end of the project, the Contractor shall post the warranty period along with the company's name and telephone number inside the panel(s).

826.04 MEASUREMENT AND PAYMENT. Replacement of existing breakers will be measured and paid for at the Contract unit price per each complete and in-place. Payment shall be full compensation for all materials, labor, equipment and all other incidentals necessary to complete this work. This work includes all work to remove and dispose of existing breakers and furnish install, make all final connections, and test each breaker. All panels must be completely reassembled. Payment of items shall include all testing and guarantee required by the specifications and special provisions. The Authority will make payment for the following items only upon completion of the installation and acceptance by the Authority.

The pay item(s) for this section include(s):

8001	Replacement for FP-50 1000A, 600VAC Main Switch	-- per each
8002	Replacement for NJL 3P, 400A, 480Y/277V, 30KAIC Circuit Breaker	-- per each
8003	Replacement for NJL 3P, 200A, 480Y/277V, 30KAIC Circuit Breaker	-- per each
8004	Replacement for NJL 3P, 175A, 480Y/277V, 30KAIC Circuit Breaker	-- per each
8005	Replacement for HEF 3P, 60A, 480Y/277V, 25KAIC Circuit Breaker	-- per each
8006	Replacement for HEF 3P, 50A, 480Y/277V, 25KAIC Circuit Breaker	-- per each
8007	Replacement for HEF 3P, 25A, 480Y/277V, 25KAIC Circuit Breaker	-- per each
8008	Replacement for HEF 3P, 20A, 480Y/277V, 25KAIC Circuit Breaker	-- per each
8009	Replacement for NE 3P, 30A, 480Y/277V, 18KAIC Circuit Breaker	-- per each
8010	Replacement for NE 3P, 40A, 480Y/277V, 18KAIC Circuit Breaker	-- per each
8011	Replacement for NE 3P, 100A, 480Y/277V, 18KAIC Circuit Breaker	-- per each
8012	Replacement for NE 3P, 45A, 480Y/277V, 18KAIC Circuit Breaker	-- per each
8013	Replacement for NE 3P, 50A, 480Y/277V, 18KAIC Circuit Breaker	-- per each
8014	Replacement for NJL 3P, 150A, 480Y/277V, 30KAIC Circuit Breaker	-- per each
8015	Replacement for HEF 1P, 20A, 480Y/277V Circuit Breaker	-- per each
8016	Replacement for HEF 3P, 100A, 480Y/277V Circuit Breaker	-- per each
8017	Replacement for HEF 1P, 40A, 480Y/277V Circuit Breaker	-- per each
8018	Replacement for HEF 3P, 15A, 480Y/277V Circuit Breaker	-- per each
8019	Replacement for HEF 3P, 25A, 480Y/277V Circuit Breaker	-- per each
8020	Replacement for HEF 3P, 90A, 480Y/277V Circuit Breaker	-- per each



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8021	Replacement for NJF 3P, 175A, 480Y/277V, 30KAIC Circuit Breaker	-- per each
8022	Replacement for HEF 3P, 20A, 480Y/277V Circuit Breaker	-- per each
8023	Replacement for HEF 3P, 30A, 480Y/277V Circuit Breaker	-- per each
8024	Replacement for NL 1P, 20A, 208Y/120V Circuit Breaker	-- per each
8025	Replacement for NL 2P, 30A, 208Y/120V Circuit Breaker	-- per each
8026	Replacement for NL 3P, 30A, 208Y/120V Circuit Breaker	-- per each
8027	Replacement for NE 1P, 20A, 208Y/120V Circuit Breaker	-- per each
8028	Replacement for NE 3P, 20A, 208Y/120V Circuit Breaker	-- per each
8029	Replacement for NE 3P, 30A, 208Y/120V Circuit Breaker	-- per each
8030	Replacement for NE 2P, 40A, 208Y/120V Circuit Breaker	-- per each
8031	Replacement for NE 2P, 20A, 208Y/120V Circuit Breaker	-- per each
8032	Replacement for NE 3P, 60A, 208Y/120V Circuit Breaker	-- per each
8033	Replacement for NE 1P, 15A, 208Y/120V Circuit Breaker	-- per each
8034	Replacement for NFJ 3P, 150A, 480Y/277V Circuit Breaker	-- per each
8035	Replacement for NE 3P, 35A, 480Y/277V Circuit Breaker	-- per each
8036	Replacement for NE 3P, 30A, 480Y/277V Circuit Breaker	-- per each
8037	Replacement for NE 2P, 30A, 208Y/120V Circuit Breaker	-- per each
8038	Replacement for HEJ 3P, 175A, 208Y/120V Circuit Breaker	-- per each
8039	Replacement for HEJ 3P, 200A, 208Y/120V Circuit Breaker	-- per each
8040	Replacement for HEJ 3P, 225A, 208Y/120V Circuit Breaker	-- per each
8041	Replacement for HEJ 3P, 150A, 208Y/120V Circuit Breaker	-- per each
8042	Replacement for NB 1P, 20A, 208Y/120V Circuit Breaker	-- per each
8043	Replacement for NB 1P, 15A, 208Y/120V Circuit Breaker	-- per each
8044	Replacement for NB 3P, 15A, 208Y/120V Circuit Breaker	-- per each
8045	Replacement for NB 2P, 20A, 208Y/120V Circuit Breaker	-- per each
8046	Replacement for NB 2P, 30A, 208Y/120V Circuit Breaker	-- per each
8047	Replacement for NB 3P, 20A, 208Y/120V Circuit Breaker	-- per each
8048	Replacement for NB 1P, 30A, 208Y/120V GFCI Circuit Breaker	-- per each
8049	Replacement for NB 2P, 50A, 208Y/120V Circuit Breaker	-- per each
8050	Replacement for NB 3P, 30A, 208Y/120V Circuit Breaker	-- per each
8051	Replacement for NB 3P, 40A, 208Y/120V Circuit Breaker	-- per each
8052	Replacement for NB 3P, 100A, 208Y/120V Circuit Breaker	-- per each
8053	Replacement for NB 3P, 60A, 208Y/120V Circuit Breaker	-- per each
8054	Replacement for NB 1P, 20A, 208Y/120V GFCI Circuit Breaker	-- per each
8055	Removal and Disposal of all FPE Breaker	--per lump sum



SECTION 827 – DRY TYPE TRANSFORMER

827.01 DESCRIPTION. This work shall consist of removing and replacing an existing Dry Type Transformer and replacing an existing 3 Pole 200A breaker with a 3 Pole 70A breaker as shown on plans.

827.02 MATERIALS.

Dry Type Transformer	
Molded Case Circuit Breaker	
Electrical Cable and Wire	950.06

827.02.01 Manufacturers: Subject to compliance with requirements, provide products by the following:

(a) Dry Type Transformer Specification: 45KVA, 3 Phase, 480 Delta Primary Voltage (2+, -4 2.3%), 208Y/120 Secondary Voltage, 60Hz, N3R Enclosure, Temp. Rise 150°C, K Factor 13.

- Hammond Power Solutions, Inc.
- General Electric
- Eaton's Electrical Group
- Square D Company

827.02.02 Manufacturers: Subject to compliance with requirements, provide products by the following:

(a) 3 Pole 70Amp Molded Case Circuit Breakers

- Square D
- Cutler Hammer
- Siemens
- General Electric
- Westinghouse

827.03 CONSTRUCTION

827.03.01 Power to Uninterruptable Power Supply (UPS) shall not be interrupted for more than fifteen (15) minutes in any eight (8) hour period. All outages must be scheduled for night or weekends during off-peak travel times with at least two (2) weeks notice.

827.03.02 Contractor shall install new 45KVA Dry Type Transformer at a temporary location to feed power to Uninterruptable Power Supply (UPS) before removing 30KVA Dry Type Transformer; Then relocate new Dry Type Transformer to the



final location as shown on plan (see drawing E-2). Turn over 30KVA Dry Type transformer to MDTA electrician. Place the 30KVA transformer in the storage location at the FSK Bridge identified by the MDTA electrician.

827.03.03 Contractor shall remove 3 Pole 200A breaker and turn over to MDTA electrician. Install new 3 Pole 70A breaker and provide appropriate lugs for existing #3/0 wire or approved adaptor. Disconnect and remove wire, FSS and FSS conduit, see details on drawing E-5.

827.03.04 Furnish and install 3#4 and 1#6 GND wire in 1-1/4" conduit and connect existing 80A Sub-panel to UPS panel. Furnish and install 2 pole 80A breaker and install in UPS panel as shown on plan (see drawing E-5).

827.03.05 Remove 3#1 and 1#6 GND wire. Furnish and install new 4#2/0 & 1#6 GND wire and connect new 45KVA Dry Type Transformer to 125A ECB in main electrical room, see drawing E-5.

827.03.06 Transformer shall be warranted for two (2) years from the date of completed installation and acceptance. Any property damaged shall be repaired or replaced as directed by the Engineer at no additional cost to the Authority.

827.04 **MEASUREMENT AND PAYMENT.** Replacement of existing transformer will not be measured but will be paid for at the Contract lump sum price. Payment shall be full compensation for all materials, labor, equipment and all other incidentals necessary to complete this work. This work includes, but is not limited to, all work to remove and replace existing breaker, transformer, wiring, conduit, flexible conduit and make all final connections. All work associated with the removal and disposal of the transformer will be paid under this pay item.

The pay item(s) for this section include(s):

8056 Remove 30KVA and Replace with 45KVA Dry Type Transformer -- per lump sum



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SECTION 899 - MISCELLANEOUS REHABILITATION OF ELECTRICAL GEAR AND/OR CONSTRUCTION

899.01 DESCRIPTION

A contingent allowance of \$15,000 has been included in the Proposal Form for miscellaneous rehabilitation of electrical gear and/or construction that may be deemed necessary by the Engineer during the contract term.

This work shall be performed only upon written direction of the Engineer. Upon the direction from the Engineer, the Contractor shall submit a detailed written time and material cost for this task, for the Engineer's review prior to commencing any work; a complete breakdown of labor, materials, equipment, overload profit and other details deemed necessary shall be provided. The Contractor shall allow two (2) weeks for the review and notice of approval or rejection of the proposal. If the proposal is rejected, the contractor shall have no claim for time, materials, or other costs associated with the preparation of the proposal. If the proposal is approved, the costs, if any, associated with preparation of the proposal shall be incidental to the proposal.

In lieu of a proposal, the Engineer may direct the Contractor to perform the work in accordance with the requirements of "Force Account Work" Section GP9.02 of the Specifications.

899.02 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

All work performed under this item will be paid for on the basis of approved price proposals and/or force account records submitted in accordance with section GP9.02 of the Specifications and with the authorization of the Engineer.

The Approved amounts shall be full compensation for all labor, equipment, materials, and incidentals complete and in place as directed by the Engineer. The agreed upon or documented costs, only, shall be paid from a lump sum amount as specified in the schedule of prices.

The pay item(s) for this section include(s):

8057 Miscellaneous Rehabilitation of Electrical Gear
 And/Or Construction -- \$15,000.00 (Fifteen Thousand Dollar)



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ADMINISTRATION BUILDING/ELECTRICAL ROOM:

PANEL EDP

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
FPE	30	3	1	2	3	40	FPE
			3	4			
			5	6			
FPE	100	3	7	8	3	30	FPE
			9	10			
			11	12			
FPE	45	3	13	14	3	45	FPE
			15	16			
			17	18			
FPE	50	3	19	20	3	50	FPE
			21	22			
			23	24			
SPACE			25	26	3	150	FPE
			27	28			
			29	30			

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 30 Bus Amps: 400 (A) AIC: 18K

PANEL L-2N

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	20	FPE
FPE	20	1	3	4	20	FPE
FPE	20	1	5	6	20	FPE
FPE	20	1	7	8	20	FPE
FPE	20	1	9	10	20	FPE
FPE	20	1	11	12	20	FPE
FPE	20	1	13	14	20	FPE
FPE	20	1	15	16	20	FPE
FPE	20	1	17	18	20	FPE
FPE	20	1	19	20	20	FPE
FPE	20	1	21	22	20	FPE
FPE	20	1	23	24	20	FPE

Service: 277/480 Vac 3 Phase 4 Wire AIC: 14K



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Circuits: 24 Bus Amps: 100 (A)

HVAC UNIT#2 Panel P-1N LEFT

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE
FPE	20	1	13	14	1	20	FPE
FPE	20	1	15	16	1	20	FPE
FPE	20	1	17	18	1	20	FPE
SPACE			19	20	3	100	FPE
SPACE			21	22			
SPACE			23	24			
SPACE			25	26			SPACE
SPACE			27	28			SPACE
SPACE			29	30			SPACE
SPACE			31	32			SPACE
SPACE			33	34			SPACE
SPACE			35	36			SPACE

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 36 Bus Amps: 100 (A) AIC: 14K



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HVAC UNIT#1 Panel P-1N RIGHT

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
SPACE			1	2	1	20	FPE
SPACE			3	4	1	20	FPE
SPACE			5	6			SPACE
FPE	15	3	7	8	3	15	FPE
			9	10			
			11	12			
FPE	25	3	13	14	3	15	FPE
			15	16			
			17	18			
FPE	25	3	19	20	3	25	FPE
			21	22			
			23	24			
FPE	40	1	25	26	3	90	FPE
SPACE			27	28			
SPACE			29	30			
SPACE			31	32			SPACE
SPACE			33	34			SPACE
SPACE			35	36			SPACE

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 36

Bus Amps: 225 (A)

AIC: 14K



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Panel P-3N

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	FPE
FPE	20	1	3	4	1	FPE
FPE	20	1	5	6	1	FPE
FPE	20	1	7	8	1	FPE
FPE	20	1	9	10	1	FPE
FPE	20	1	11	12	1	FPE
FPE	20	1	13	14	1	FPE
FPE	20	1	15	16	1	FPE
FPE	20	1	17	18	1	FPE
SPACE			19	20	1	FPE
SPACE			21	22		SPACE
SPACE			23	24		SPACE
Westlinghouse	30	1	25	26	1	Westlinghouse
Westlinghouse	30	1	27	28	1	Westlinghouse
Westlinghouse	30	1	29	30	1	Westlinghouse
Cutler-Hammer	30	1	31	32	1	Westlinghouse
Cutler-Hammer	30	1	33	34	1	Westlinghouse
SPACE			35	36		SPACE

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 36

Bus Amps: 100 (A)

AIC: 14K



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HVAC UNIT #3 Panel P-1E

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	3	1	2	1	20	FPE
			3	4	1	20	FPE
			5	6	1	20	FPE
FPE	30	3	7	8	3	20	FPE
			9	10			
			11	12			
Westinghouse	90	3	13	14	3	30	FPE
			15	16			
			17	18			
FPE	20	1	19	20	3	90	FPE
FPE	20	1	21	22			
SPACE			23	24			

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 24 Bus Amps: 100 (A) AIC: 14K

Panel P-2E

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE
FPE	20	1	13	14	3	30	FPE
FPE	30	2	15	16			
			17	18			
FPE	20	1	19	20	1	20	FPE
FPE	20	1	21	22	1	20	FPE
FPE	20	1	23	24	1	20	FPE

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 24 Bus Amps: 100 (A) AIC: 14K



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Panel P-2N

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	3	7	8	1	20	FPE
			9	10	2	20	FPE
			11	12			
FPE	20	3	13	14	3	30	FPE
			15	16			
FPE	30	3	17	18	3	30	FPE
			19	20			
FPE	30	3	21	22	3	30	FPE
			23	24			
FPE	40	2	25	26	3	60	FPE
			27	28			
SPACE			29	30			

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 30 Bus Amps: 100 (A) AIC: 14K

Panel L-4N

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE
FPE	20	1	13	14	1	20	FPE
FPE	20	1	15	16	1	20	FPE
FPE	20	1	17	18	1	20	FPE
FPE	20	1	19	20	1	15	FPE
FPE	15	1	21	22	1	20	FPE
FPE	20	1	23	24	1	20	FPE
SPACE			25	26	1	20	FPE
SPACE			27	28			SPACE
FPE	20	1	29	30			SPACE

Service: 120/208 Vac 3 Phase 4 Wire



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Circuits: 30

Bus Amps: 100 (A)

AIC: 14K

Panel L-2E

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE
FPE	20	1	13	14	1	20	FPE
FPE	20	1	15	16	1	20	FPE
FPE	20	1	17	18	1	20	FPE
SPACE			19	20			SPACE
SPACE			21	22			SPACE
SPACE			23	24			SPACE

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 24

Bus Amps: 100 (A)

AIC: 14K

Panel L-4E

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE
FPE	20	1	13	14	1	20	FPE
FPE	20	1	15	16	1	20	FPE
FPE	20	1	17	18	1	20	FPE
FPE	20	1	19	20	1	20	FPE
FPE	20	1	21	22	1	20	FPE
FPE	20	1	23	24	1	20	FPE

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 24

Bus Amps: 100 (A)

AIC: 14K



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P2N DISCONNECT

Breaker Type	Amps	Poles
--------------	------	-------

FPE	150	3
-----	-----	---

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 1 Bus Amps: 150 (A) AIC: 25K

L4E DISCONNECT

Breaker Type	Amps	Poles
--------------	------	-------

FPE	50	3
-----	----	---

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 1 Bus Amps: 50 (A) AIC: 35K

L2E DISCONNECT

Breaker Type	Amps	Poles
--------------	------	-------

FPE	35	3
-----	----	---

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 1 Bus Amps: 35 (A) AIC: 35K

L3E DISCONNECT

Breaker Type	Amps	Poles
--------------	------	-------

FPE	30	3
-----	----	---

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 1 Bus Amps: 30 (A) AIC: 35K



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Administration Building / 2nd Floor

Panel L-1N

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 12 Bus Amps: 100 (A) AIC: 14K

Panel L-3N

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE
FPE	20	1	13	14	1	20	FPE
FPE	20	1	15	16	1	20	FPE
FPE	20	1	17	18	1	20	FPE
FPE	20	1	19	20	1	20	FPE
FPE	20	1	21	22	1	20	FPE
FPE	20	1	23	24	1	20	FPE
FPE	20	1	25	26	1	20	FPE
FPE	20	1	27	28	1	20	FPE
FPE	20	1	29	30	1	20	FPE
FPE	20	1	31	32	2	30	FPE
SPACE			33	34			
SPACE			35	36			
SPACE			37	38	3	30	FPE
SPACE			39	40			
SPACE			41	42			SPACE

Service: 120/208 Vac 3 Phase 4 Wire



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Circuits: 42

Bus Amps: 100 (A)

AIC: 14K

Panel L-1E

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE
FPE	20	1	13	14	1	20	FPE
FPE	20	1	15	16	1	20	FPE
FPE	20	1	17	18	1	20	FPE
FPE	20	1	19	20	1	20	FPE
SPACE			21	22			SPACE
SPACE			23	24			SPACE

Service: 277/480 Vac 3 Phase 4 Wire

Circuits: 24

Bus Amps: 100 (A)

AIC: 14K

Panel L-3E

Breaker Type	Amps	Poles	CKT.	NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	20	FPE
FPE	20	1	3	4	1	20	FPE
FPE	20	1	5	6	1	20	FPE
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
SPACE			11	12	1	20	FPE

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 12

Bus Amps: 100 (A)

AIC: 14K



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MAINTENANCE BUILDING:

MGDP

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
FPE	200	3	1	2	3	175	FPE
			3	4			
			5	6			
FPE	100	3	7	8	3	175	FPE
			9	10			
			11	12			

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 12 Bus Amps: 400 (A) AIC: 42K

MECP

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
FPE	150	3	1	2	3	150	FPE
			3	4			
			5	6			
FPE	200	3	7	8	3	225	FPE
			9	10			
			11	12			

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 12 Bus Amps: 600 (A) AIC: 42K



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Panel G2

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
FPE	20	1	1	2	3	15	FPE
FPE	15	1	3	4			
FPE	15	3	5	6	2	20	FPE
			7	8			
			9	10			
FPE	20	1	11	12	1	20	FPE
FPE	20	1	13	14	2	30	FPE
FPE	20	1	15	16			
FPE	20	1	17	18			
FPE	20	1	19	20	1	20	FPE
FPE	20	1	21	22	1	20	FPE
FPE	20	1	23	24	1	15	FPE
FPE	20	1	25	26	2	20	FPE
FPE	20	1	27	28			
FPE	15	1	29	30	2	20	FPE
FPE	20	2	31	32			
			33	34			
FPE	20	2	35	36	3	20	FPE
			37	38			
FPE	20	2	39	40			
FPE	20	2	41	42			

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 42

Bus Amps: 225 (A)

AIC: 10K



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Panel E2

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type
FPE	20	1	1	2	1	FPE
FPE	20	1	3	4	1	FPE GFCI
FPE	20	1	5	6	1	FPE GFCI
FPE GFCI	30	1	7	8	1	FPE GFCI
FPE	20	1	9	10	1	FPE GFCI
FPE	20	2	11	12	2	FPE
			13	14		
FPE	20	2	15	16	2	FPE
			17	18		
FPE	20	2	19	20	2	FPE
			21	22		
FPE	20	1	23	24	1	FPE
FPE	20	2	25	26	1	FPE
			27	28	2	FPE
FPE	20	1	29	30		
FPE	20	1	31	32		
FPE	20	1	33	34	3	FPE
FPE	20	1	35	36		
FPE	20	3	37	38	3	FPE
			39	40		
			41	42		

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 42

Bus Amps: 225 (A)

AIC: 10K



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Panel E3 RIGHT

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
FPE	20	1	1	2	3	100	FPE
FPE	15	3	3	4			
			5	6			
FPE	15	3	7	8	3	15	FPE
			9	10			
FPE	15	3	11	12	3	15	FPE
			13	14			
FPE	15	3	15	16	3	15	FPE
			17	18			
FPE	15	3	19	20	3	15	FPE
			21	22			
FPE	15	3	23	24	3	15	FPE
			25	26			
FPE	15	3	27	28	3	15	FPE
			29	30			
FPE	50	2	31	32	3	15	FPE
			33	34			
FPE	15	1	35	36	1	20	FPE
			37	38			
FPE	15	1	39	40	1	15	FPE
FPE	15	1	41	42	1	15	FPE

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 42

Bus Amps: 225 (A)

AIC: 10K



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Panel E3 LEFT

Main Breaker: 200A

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type
FPE	20	1	1 2	1	20	FPE
FPE	20	1	3 4	1	20	FPE
FPE	20	1	5 6	1	20	FPE
FPE	20	1	7 8	2	50	FPE
FPE	20	1	9 10			
FPE	20	1	11 12	1	15	FPE
FPE	20	3	13 14	3	30	FPE
			15 16			
			17 18			
FPE	20	3	19 20	3	30	FPE
			21 22			
			23 24			
FPE	60	3	25 26	3	30	FPE
			27 28			
			29 30			

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 30 Bus Amps: 225 (A) AIC: 10K



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Panel G3

Breaker Type	Amps	Poles	CKT. NO.	Poles	Amps	Breaker Type	
FPE	20	1	1	2	3	20	FPE
FPE	20	1	3	4			
FPE	20	1	5	6			
FPE	20	1	7	8	1	20	FPE
FPE	20	1	9	10	1	20	FPE
FPE	20	1	11	12	1	20	FPE
FPE GFCI	20	1	13	14	1	20	FPE GFCI
FPE GFCI	20	1	15	16	1	20	FPE GFCI
FPE GFCI	20	1	17	18	1	20	FPE
FPE GFCI	20	1	19	20	1	20	FPE
FPE	20	1	21	22	1	20	FPE
FPE	20	1	23	24	1	20	FPE
FPE	20	1	25	26	1	20	FPE
FPE	20	1	27	28	1	20	FPE
FPE	20	1	29	30	1	20	FPE
FPE	15	3	31	32	1	15	FPE
			33	34	2	20	FPE
			35	36			
FPE	60	3	37	38	3	30	FPE
			39	40			
			41	42			

Service: 120/208 Vac 3 Phase 4 Wire

Circuits: 42

Bus Amps: 225 (A)

AIC: 10K



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	TYPE	AMP	P	QTY.
MAIN DISTRUBUTION SWITCHBOARD	FP-50	1000 A	3	1
	NJL	400A	3	2
	NJL	200A	3	1
	NJL	175A	3	3
	HEF	60A	3	1
	HEF	50A	3	1
	HEF	25A	3	1
	HEF	20A	3	1

Main Switch

Serial No. : W-371031-1
 Type: FP-50
 Frame: 1600
 Rated Max. Volt: 600 AC
 Rated Freq. Cy.: 60 Cycles
 Rated Cont. Current:800
 Rated Interrup. Current: 50000
 Serial Trip Device Type: TD-3
 Time Current Curve No.: 3987950
 Instruction Manual No.: 1N-810-9
 S.O. Number: 52-12005



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<u>PANEL</u>	<u>VOLTAGE</u>	<u>TYPE</u>	<u>CKT BKR TYPE</u>	<u>QTY</u>	<u>DESCRIPTION</u>
MDP	480Y/277V	CDP	FP-50	1	1000A Main, 600VAC
			NJL	2	3P 400A 480V 30KAIC
			NJL	1	3P 200A 480V 30KAIC
			NJL	3	3P 175A 480V 30KAIC
			HEF	1	3P 60A 480V 25KAIC
			HEF	1	3P 50A 480V 25KAIC
			HEF	1	3P 25A 480V 25KAIC
			HEF	1	3P 20A 480V 25KAIC
EDP	480Y/277V	CDP	HEF	2	3P 30A 480V 18KAIC
			HEF	1	3P 40A 480V 18KAIC
			HEF	1	3P 100A 480V 18KAIC
			HEF	2	3P 45A 480V 18KAIC
			HEF	2	3P 50A 480V 18KAIC
			NJL	1	3P 150A 480V 30KAIC
L2N	480Y/277V	NH1B	HEF	24	1P 20A 480V
P1N-L	480Y/277V	CDP	HEF	18	1P 20A 480V
			HEF	1	3P 100 480V
P1N-R	480Y/277V	CDP	HEF	2	1P 20A
			HEF	1	1P 40A
			HEF	3	3P 15A
			HEF	3	3P 25A
			HEF	1	3P 90A
P3N	480Y/277V	CDP	HEF	19	1P 20A
			WESTLING/CUTLER	10	1P 30A
P1E	480Y/277V	NH1B	HEF	5	1P 20A
			HEF	2	3P 20A
			HEF	2	3P 30A
			HEF	2	3P 90A
P2E	208Y/120V	NH1B	NL	19	1P 20A
			NL	1	2P 30A
			NL	1	3P 30A



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P2N	208Y/120V	NA1B	NE	7	1P 20A
			NE	2	3P 20A
			NE	3	3P 30A
			NE	1	2P 40A
			NE	1	2P 20A
			NE	1	3P 60A
P4N	208Y/120V	NA1B	NE	24	1P 20A
			NE	2	1P 15A
L2E	480Y/277V	NH1B	HEF	18	1P 20A
L4E	208Y/120V		NE	24	1P 20A
P2N DISC	480Y/277V		NFJ	1	3P 150A
L4E DISC	480Y/277V		NE	1	3P 50A
P2E DISC	480Y/277V		NE	1	3P 35A
L3E DISC	480Y/277V		NE	1	3P 30A
L1N	480Y/277V	NH1B	HEF	12	1P 20A
L3N	208Y/120V	NA1B	NE	31	1P 20A
			NE	1	2P 30A
			NE	1	3P 30A
L1E	480Y/277V	NH1B	HEF	20	1P 20A
L3E	208Y/120V	NA1B	NL	11	1P 20A
MGDP	208Y/120V	CDP	HEJ	2	3P 175A
			HEJ	1	3P 200A
			HEJ	1	3P 225A
MECP	208Y/120V	CDP	HEJ	2	3P 150A
			HEJ	1	3P 200A
			HEJ	1	3P 225A
G2	208Y/120V	NBLP	NB	14	1P 20A
			NB	3	1P 15A
			NB	3	3P 15A
			NB	7	2P 20A
			NB	1	2P 30A
			NB	1	3P 20A



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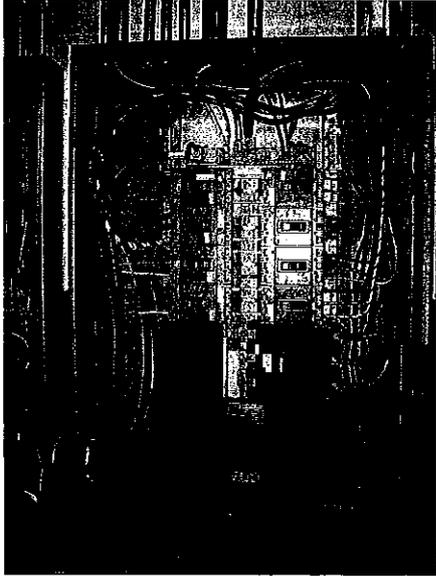
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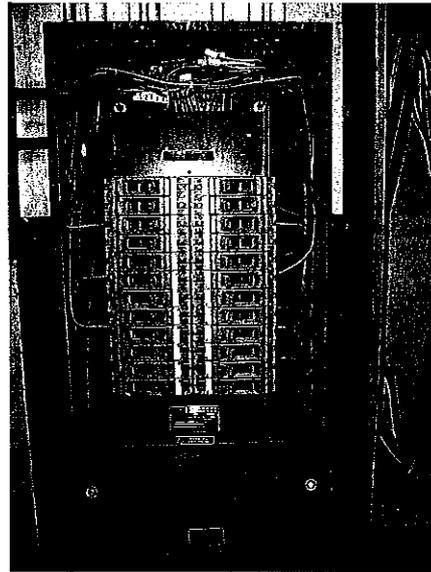
E2	208Y/120V	NBLP	NB	12	1P 20A
			NB	3	1P 20A GFCI
			NB	7	2P 20A
			NB	2	1P 30A GFCI
			NB	1	3P 20A
			NB	1	2P 50A
			NB	1	3P 30A
			NB	1	3P 40A
E3-R	208Y/120V	NBLP	NB	2	1P 20A
			NB	10	3P 15A
			NB	1	2P 50A
			NB	5	1P 15A
			NB	1	3P 100A
E3-L	208Y/120V	NBLP	NB	9	1P 20A
			NB	1	3P 20A
			NB	1	3P 60A
			NB	1	2P 50A
			NB	1	1P 15A
			NB	4	3P 30A
G3	208Y/120V	NBLP	NB	21	1P 20A
			NB	6	1P 20A GFCI
			NB	1	1P 15A
			NB	1	3P 15A
			NB	1	3P 60A
			NB	1	3P 20A
			NB	1	3P 30A
			NB	1	2P 20A



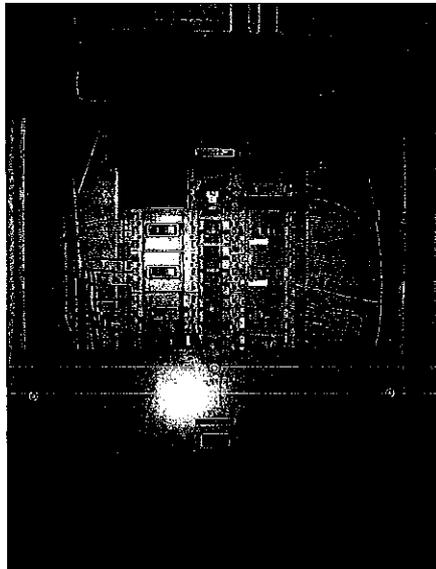
Administration Building / Electrical Room:



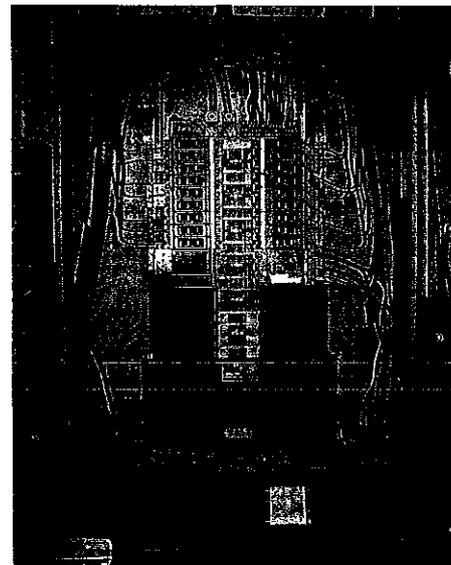
EDP Panel



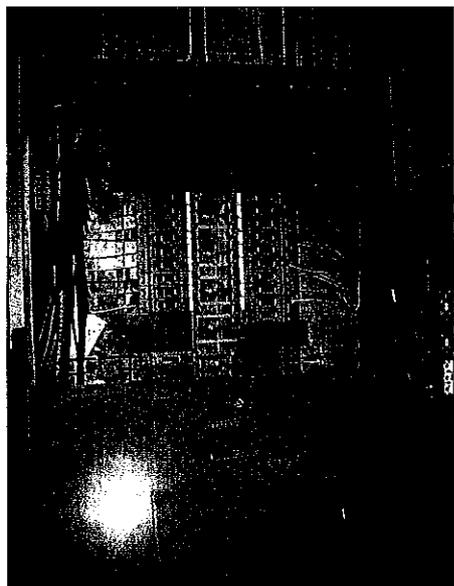
L2N Panel



HVAC UNIT#1 P-1N Right



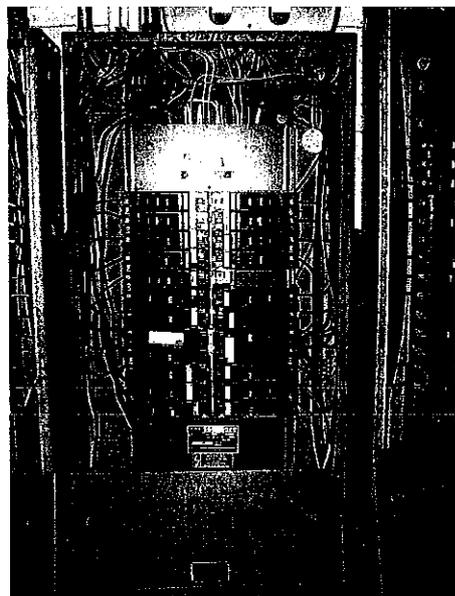
HVAC UNIT#1 P-1N Left



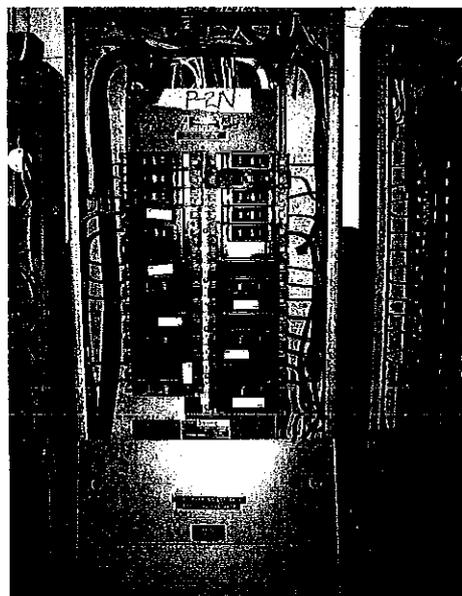
P-3N Panel



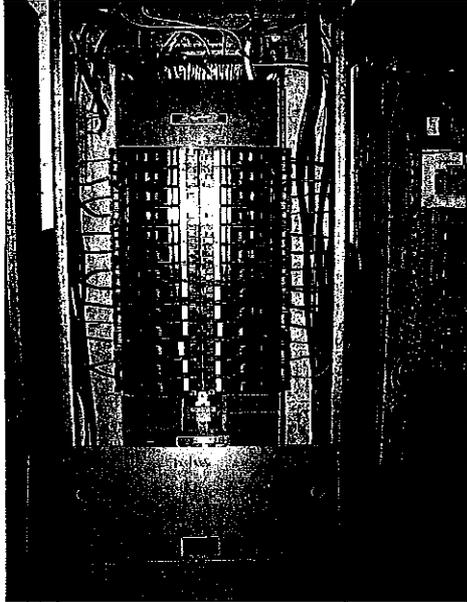
HVAC UNIT#3 P-1E Panel



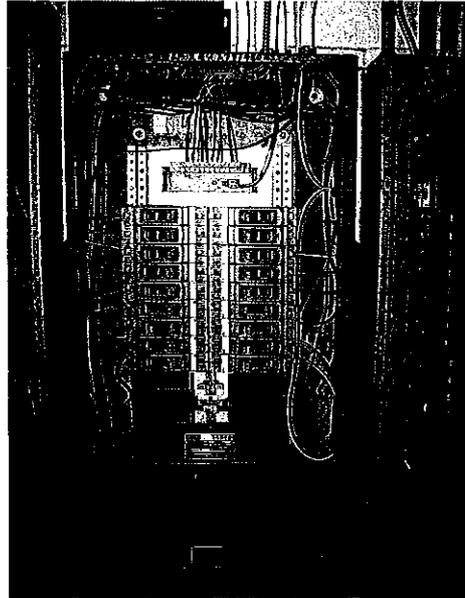
P-2E Panel



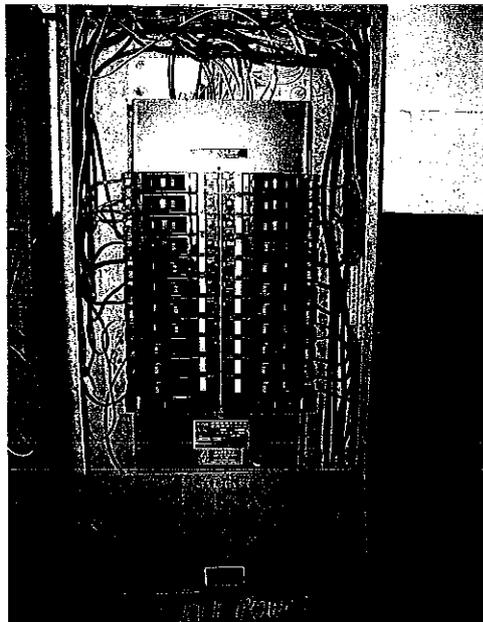
P-2N Panel



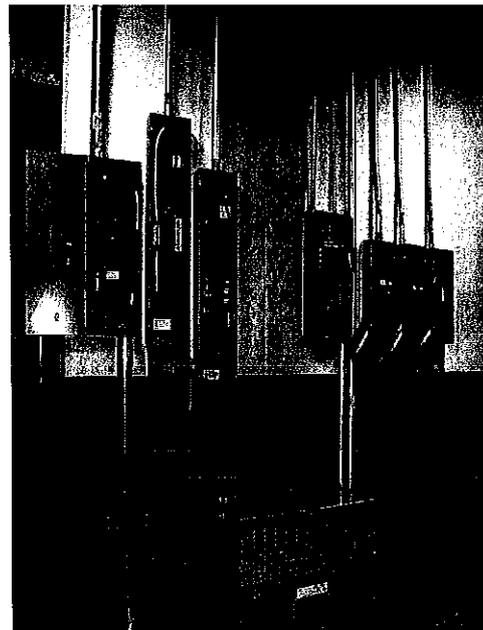
L-4N Panel



L-2E Panel



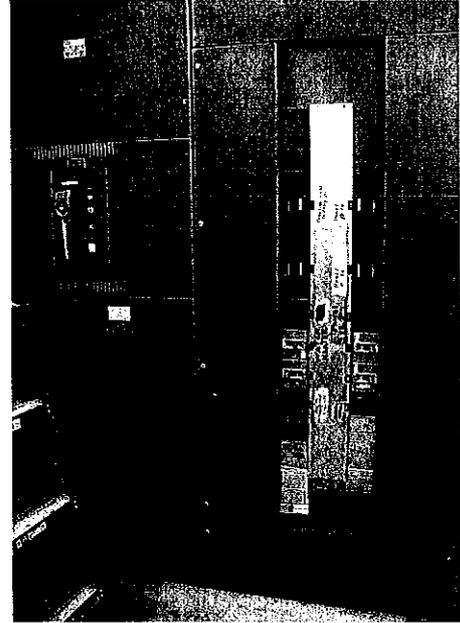
L-4E Panel



P2N, L4E, P2E, L3E Disconnect

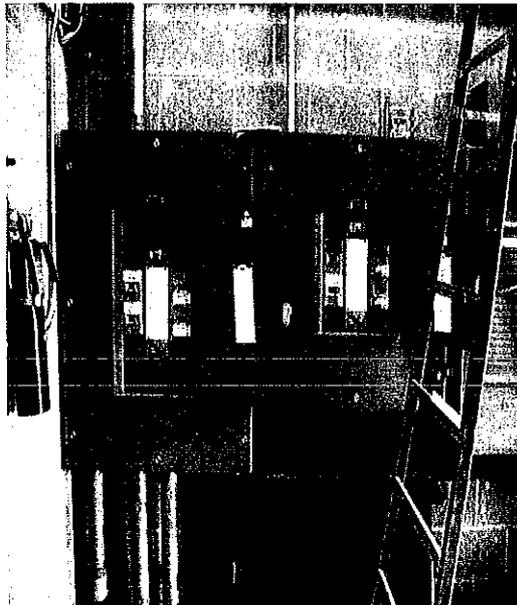


L1N, L-3N, L-1E, L-3E Panel

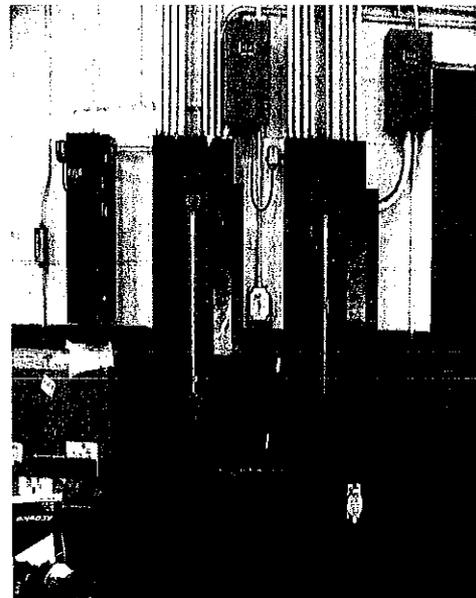


Main Distribution Switchboard

MAINTENANCE BUILDING:



MGDP, MECP Panel



G2, E2 Panel



Maryland
Transportation
Authority
SPECIAL PROVISIONS

Contract No. KB2424-000-002
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E3 Right, E3 Left Panel



G3 Panel