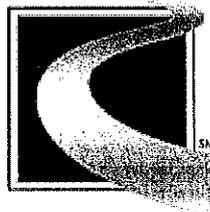


***MARYLAND TRANSPORTATION AUTHORITY***  
***Baltimore, Maryland***

***Invitation for Bids***

**FORT McHENRY TUNNEL**



Maryland  
Transportation  
Authority

**CONTRACT NO. FT 949-000-002**

**Renovation of Electrical Switchgear**

**Baltimore City**

**April 2009**

**FORT McHENRY TUNNEL**



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## 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 acknowledgment pages.
- 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). Don't leave any items blank.
- When tabulating your final price, make sure all your calculations are correct.
- Minority Business Enterprise Attachments A and B must be completed and submitted with your bid. If either of these attachments is missing your bid is non-responsive. Attachments C and D **should not** be submitted at time of bid.  
**For additional information on how to complete the MBE Attachments, please see the insert named "Important Information regarding MBE Utilization and Bidding Requirements" located in the IFB.**
- 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](http://www.eMarylandMarketplace.com)

# IMPORTANT INFORMATION REGARDING MBE UTILIZATION AND BIDDING REQUIREMENTS

The Maryland Transportation Authority (the "Authority") has been forced to reject many recent bids/proposals due to bid submissions that were not in strict compliance with the stipulated MBE rules and regulations. The following checklist has been developed to highlight certain critical components of the MBE program requirements. This listing is not all-inclusive and the bidder **must** comply with all MBE rules and regulations listed throughout this entire proposal book.

Please read all of the instruction provided on Attachment A, B, C & D in its entirety before completing the forms.

Attachment A (Certified MBE Utilization and Fair Solicitation Affidavit) & Attachment B (MBE Participation Schedule) must be included with the submittal of the bid or offer. If the bidder or offeror fails to submit these forms with the bid/offer as required, the Procurement Officer **shall deem the bid non-responsive** or shall determine that the **offer is not reasonably susceptible** of being selected for award. MBE Prime Contractors must achieve the established MBE goal with other certified MBE contractors. A Prime MBE Contractor **can not** count itself as an MBE to obtain the goal.

## ATTACHMENT A

When filling out Attachment A, make sure you complete the following:

- If the Prime Contractor can achieve the established overall goal and sub goals, you must check the appropriate box.
- If after making good faith efforts, you determine you can not achieve the established overall goal or subgoals, you must request a waiver by checking the appropriate box.
- If you do not request the waiver at time of bid and you **are not** meeting the established goal(s), your bid/offer will be considered **non-responsive or not reasonably susceptible of being selected for award.**
- Attachment A must be signed and dated.

## ATTACHMENT B Part 2

When filling out Attachment B, make sure you have included the following:

- Prime Contractor's name, address and phone number.
- Project description.
- Project number/Solicitation Number.
- List the minority firm name(Column 1), certification number and MBE Classification (Column 2), Total sub contract dollar amount (Column 3) and NAICS Codes of the services to be performed or products to be supplied (Column 4)
- Clarify for each sub-contractor if it will provide services, is a supplier or will supply and install (Column 5)
- It is the Contractor's responsibility to ensure that the proposed subcontractors are certified to perform the proposed work. All Contractors are to submit an approvable MBE plan at time of bid. Approvable means, the subcontractors are certified in the applicable NAICS Codes through MDOT and can perform the proposed services for the required participation goal. Contractors pending MBE certification at time of bid are **not** eligible for participation. If you submit a firm that is not certified to perform the proposed services and your contract falls short of the established MBE goal, your firm will be considered **non-responsive or not reasonably susceptible of being selected for award.**
- Prime Contractors are strongly encouraged to check the MDOT database at [www.mbe.md.state.md.us](http://www.mbe.md.state.md.us) to see if the subcontractor is certified to perform the services and to make sure the subcontractor has not graduated from the listed NAICS codes. If you have questions after checking the data base, you may contact the Authority MBE Office at 410-537-1048 for further assistance.

If you are using a supplier, the 60% rule applies. Please refer to the MBE Manual for the description of the 60% rule.

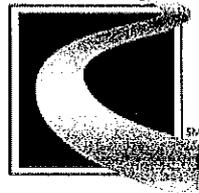
Please provide details on how you arrived at the 60% on Attachment B (Column 5) (i.e. – \$150,000.00 X 60% = \$90,000.00).

- If you are requesting a third tier relationship, you must state that request on the Attachment B form (Column 1). Please note: 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. Specifics as to why a Third Tier contracting agreement must be included.

- Attachment B must be signed and dated.
- If you are the apparent low bidder, you will receive a letter from the Authority requesting your MBE Attachment C (Outreach Efforts Compliance Statement) and Attachment D (Subcontractor Project Participation Affidavit). You will have ten (10) working days to submit the attachments to the Authority. If you requested a waiver at time of bid, all of the back up documentation that complies with COMAR 21.11.03.11, must be submitted within the ten working days with Attachments C & D.
- If the apparent low bidder fails to return the required documentation within the allotted ten (10) days, the Procurement Officer may determine that the apparent low bidder is not responsible and therefore not eligible for contract award.

**MARYLAND TRANSPORTATION AUTHORITY**  
**Baltimore, Maryland**

***Invitation for Bids***



Maryland  
Transportation  
Authority

Contract No. FT 949-000-002

**Renovation of Electrical Switchgear**

**Baltimore City**

**April 2009**

**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 **9:00 am**, on **May 5, 2009**, in the Conference Room, at the Maryland Transportation Authority, 300 Authority Drive, 1<sup>st</sup> floor, Baltimore, Maryland 21222. 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.

**001**



**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).
- (b) Temporary Barrier.
  - (1) Concrete Barrier.
  - (2) Traffic Barrier W Beam and Water Filled 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**

CONTRACT NO. FT-949-000-002

2 of 2

<b>WORK ZONE DEVICES</b>	<b>IMPLEMENTATION SCHEDULE TO CONFORM TO NCHRP REPORT 350 CRITERIA</b>
<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) (b) Temporary Barriers (1) Concrete Barrier (2) Traffic Barrier W Beam and Water Filled 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>



**CONTRACT PROVISIONS  
OCCUPYING WETLANDS**

CONTRACT NO. FT-949-000-002

1 of 1

**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.



**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 Administration 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 Administration employees and all other persons who work on Administration highways and rights-of-way. All workers shall wear, at a minimum, Class 2 ANSI/ISEA 107/2004 apparel.

- (a) For Administration employees, this apparel shall have a fluorescent yellow-green background material color and be the outermost garment worn.
- (b) Retro-reflective material color for Administration 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-Administration employees, this apparel shall be either fluorescent orange-red or fluorescent yellow-green background material color and be the outermost garment worn.
- (d) Retro-reflective material color for non-Administration 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.



**CONTRACT PROVISIONS**  
**HIGH VISIBILITY SAFETY APPAREL POLICY**

CONTRACT NO. FT 949-000-002  
2 of 2

**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 Administration highways and rights-of-way.
- (b) Highways – All roads owned by the Maryland Department of Transportation and maintained by the Administration.
- (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.



**SP 1-1 PROJECT DESCRIPTION**

**CONTRACT NO.:** FT 949-000-002

**TITLE:** Renovation of Electrical Switchgear

**FACILITY:** Fort McHenry Tunnel ("FMT")

**LOCATION:** Baltimore City

**ADVERTISED:** April 21, 2009

**PRE-BID MEETING:** May 5, 2009 at 9:00 a.m. in the Conference Room at the Maryland Transportation Authority, 300 Authority Drive, 1<sup>st</sup> Floor, Engineering Building, Baltimore, MD 21222

**PROJECT CONTACT:** Project Manager: David Dabkowski (410) 537-7852  
Contract Administration: Ms. Maggie Johnson (410) 537-7807

**BIDS DUE:** **12 Noon, May 21, 2009**, in the Bid Box on the 1<sup>st</sup> floor of the Maryland Transportation Authority, Engineering Building, 300 Authority Drive, Baltimore, MD 21222

**CLASSIFICATION:** Class – E (\$2,500,001–\$5,000,000)

**CONTRACT TIME:** Three Hundred Fifteen (315) Calendar Days

**LIQUIDATED DAMAGES:** **\$250.00 per Calendar Day**

**MINIMUM MBE GOALS:** Overall 20%  
Women owned businesses 8%  
African-American owned businesses 8%

**BID DOCUMENTS:** **\$25.00** - 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, Maryland 21222.



### **SP 1-1 DESCRIPTION**

This project is located at the Fort McHenry Tunnel of the Maryland Transportation Authority. The Maryland Transportation Authority ("Authority") desires to renovate electrical switchgear at both West and East Vent Buildings.

The proposed renovation includes replacing existing circuit breakers with retrofit circuit breakers, kirk-key type system equipment, ground-fault protection equipment, medium voltage transformer fans, and data communications network. The Contractor shall properly dispose of the all materials they remove. Renovation will also include a detailed overcurrent protective device coordination Study, coordination of work and outages with the Authority, and provide temporary provisions for critical loads. Necessary bore closures for nighttime tunnel washing may affect work schedule. All work and materials necessary to provide complete and functioning systems shall be included.

Outages or interruptions requiring tunnel bore closures shall be scheduled in accordance with the Authority's Maintenance of Traffic ("MOT") standard requirements (SP 104).

The FMT is comprised of four separate tunnel bores, namely:

- Bores 1 and 2, normally for Southbound traffic.
- Bores 3 and 4, normally for Northbound traffic.

The work to be performed under this contract is located at:

East Vent Buildings, 2301 South Clinton Street, Baltimore, Md. 21224; and  
West Vent Buildings 2028 West McComas Street, Baltimore, Md. 21230.

### **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 Materials" dated July 2008, revisions thereof, or additions thereto, and the Special Provisions included in this Invitation for Bids.

### **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 David Dabkowski at (410) 537-7852. Parties interested in visiting the site should contact the following:

Fort McHenry Tunnel – Mr. David Roehmer, Facility Administrator at (410) 537-1310



#### **SP 1-4 - PROMPT PAYMENT TO SUBCONTRACTORS**

The prime Contractor is responsible for making timely payments to all Subcontractors and Suppliers and provide 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 Director of Construction of the dispute. The Director 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 Director of Construction if this payment is not made. Upon receipt of notification, the Director of Construction will schedule a meeting with the Contractor and 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**

Refer to Section 104 in "Maintenance of Traffic" for lane closures and other work hour restrictions.

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.

Except for the above restrictions, the Contractor will be permitted to work 24 hours a day, 7 days a week. However, no lane or bridge closures will be permitted during high winds (greater than 25 mph), rain, snow or other precipitation event, when ice or snow is on the roadway or the potential for fog, as determined by the Authority.

## **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, released 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 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/offeror is unable to achieve the specified overall Contract goal or subgoals for each certified MBE classification, the bidder/offeror 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 109 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 Assessments and Taxation website at [www.dat.state.md.us](http://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.

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

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.



**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.



**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.



**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 he 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 Administrations 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  
Chief of Engineering Procurement  
Maryland Transportation Authority  
300 Authority Drive  
Baltimore, Maryland 21222



**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 RESPOND TO 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 PROCEED WITH CORRECTIONS TO UNSATISFACTORY MAINTENANCE 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 RESPOND TO unsatisfactory maintenance 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 8  
PROSECUTION AND PROGRESS**

**GP 8.09 - LIQUIDATED DAMAGES**

**Delete:** Section GP 8.09 in its entirety

**Insert:** Time is an essential element of the Contract and it is important that the work be vigorously prosecuted until completion.

For every calendar day that the Contract remains uncompleted after the expiration of the Contract time specified herein, or amended by extra work authorization, change orders or supplemental agreements, the Contractor will be liable for Liquidated Damages. The amount of Liquidated Damages shall be as specified in Contract Time and Bonding. This amount shall be deducted from any money due the Contractor, not as a penalty, but as Liquidated Damages. Damages in excess of any retained percentage shall be paid to the Authority by the Contractor.

Refer to Contract time and Bonding sheet contained elsewhere herein. See Table of Contents.



**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 10 percent per annum beginning on the 31<sup>st</sup> day.



## TC 4 CONTROL OF WORK

### 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 its 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 22" 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:**

- (c) 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 [ddabkowski@mdta.state.md.us](mailto:ddabkowski@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 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: David Dabkowski

**ADD:**

- (d) 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. The Contract number.
2. The 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:**

- (e) 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 five characters must be the first five characters of the contract number. For example, for contract MA435-000-006, the first five characters of the file name must be MA435.
  2. The sixth character must be a dash.
  3. The seventh 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 tenth character must be a dash.
  5. The eleventh through thirteenth characters must be the submittal number, e.g., 001.
  6. In the event of a re-submittal, the 14<sup>th</sup> 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. MA435-SUB-001-Conduit.pdf
  - ii. MA435-SUB-001R2-Conduit.pdf
  - iii. MA434-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:**

- (f) 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 estimate 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 pro-rata 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 estimate 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  
304 Authority Drive  
Baltimore, Maryland 21222

**TERMS AND CONDITIONS**  
**TC SECTION 7**  
**PAYMENT**

- 29 **DELETE:** TC-7.02 PAYMENT ALLOWANCES FOR STORED MATERIALS in its entirety.

**INSERT:** The following.

**TC-7.02 PAYMENT ALLOWANCES FOR STORED MATERIALS.**

When the Contractor requests payment allowance for materials, the following terms and conditions shall apply:

- (a) For superstructure members delivered on the project site, an allowance of 100 percent of the material cost plus freight charges as invoiced may be made provided the cost does not exceed 90 percent of the Contract price of the applicable Contract item. The allowance will be based upon validated invoices or bills for material including freight charges, and a copy thereof shall be made a part of the documented records for the project.
- (b) For reinforcement steel, piling, pipe, traffic barrier, signs and sign assemblies, and other nonperishable material in storage on the project, but excluding aggregates, cement, seed, plants, fertilizer or other perishable items, an allowance of 100 percent of the invoiced cost of the material plus freight charges to the Contractor may be made provided the cost does not exceed 90 percent of the Contract price of the applicable Contract item. Such material shall be delivered and stock-piled at the project site, and have been tested by the Administration and found to have conformed to the Specifications or have been accepted under an approved certification program prior to the allowance.
- (c) No allowance will be made for fuels, form lumber, falsework, temporary structures or other materials of any kind which will not become an integral part of the finished construction.

No payment for stored material will be made if it is anticipated that the material will be incorporated into the work within thirty (30) days of the written request.

Only end product manufactured material or fully fabricated products that are awaiting installation or incorporation into the finished work are eligible for prepayment. Components, elements, or ingredients of a finished product are not eligible for prepayment.

- (d) Material for which an allowance is requested shall be stored in an approved manner in areas within the State of Maryland where damage is not likely to occur. If any of the stored materials are lost or become damaged in any manner, the Contractor shall be responsible for repairing or replacing the damaged materials. The value of the lost or damaged material will be deducted from the Contractor's subsequent



## SPECIAL PROVISIONS

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estimates until replacement has been accomplished. The request for allowances for any materials stored on private property within the State of Maryland shall be accompanied by a release from the owner and/or tenant of such property agreeing to permit the removal of the materials from the property without cost to the State of Maryland.

The material shall be clearly marked with the Administration's Contract number on individual units. If the material is normally shipped to the project in bundles or other forms of packaging, the Administration's Contract number shall be clearly marked or affixed to the package. When the material is not stored at the actual project site, the material shall be physically separated by fencing or equivalent barrier from other materials stored at the same site. The material shall be accessible to the Administration at all times.

When it is considered impractical to store materials on the actual project, the Engineer may approve storage areas in the vicinity of the actual project which will be considered at the project site.

When storage of the materials within the State of Maryland is not practical, approval shall be obtained from the District Engineer for storage elsewhere. Storage of materials outside the State of Maryland will be subject to the conditions set forth in this provision and limited to materials exceeding Twenty-Five Thousand Dollars (\$25,000.00), which are designed and fabricated exclusively for use on a specific project.

- (e) Material for which payment has been made, either wholly or partially, shall not be removed from the approved location until such time that it is to be incorporated into the work unless authorized by the Engineer.
- (f) The Contractor shall submit a written request for payment to the District Engineer at least two (2) weeks prior to the estimate cutoff date established by the District Engineer. The following items shall accompany the written request for payment:
  - (1) Consent of surety specifying the material type and the item(s) in which the material is to be used.
  - (2) Validated invoices with the signature of an officer of the company supplying the material showing actual cost.
  - (3) A notarized statement from the Contractor attesting that the invoices as submitted do not include charges or fees for placing, handling, erecting or any other charges or markups other than the actual material cost, sales tax(es), if applicable, and freight charges.
  - (4) Bills of lading showing delivery of the material. The request for allowances for any materials stored on property outside the State of Maryland shall be accompanied by a release from the owner or tenant of such property agreeing to permit verification by the Inspector that the material is stored at the approved location, and to permit the removal of the materials from the property without cost to the State of Maryland.



- (5) Inspection test reports, certifications and/or a written statement from the Inspector attesting to the inspection and approval of the material.

Upon receipt of the above by the District Engineer and verification by the Inspector that the material is stored at the approved location, the District Engineer will authorize payment.

- (6) A statement explaining why the material can not be stored on the project, if the Contractor is requesting to store material at a location other than the project site. The statement shall include the methods of storage, separation, and identification to be used by the Contractor. The Contractor shall provide a method of inventory control and withdrawal satisfactory to the Administration which shall be used by the Contractor to monitor materials not stored on the project.

- (7) A breakdown of the Contract line item bid unit price showing the relationship of the cost of the stored material to the costs of all other materials, labor, and components of the work included in the Contract line item unit price bid by the Contractor.

Upon receipt of the above by the District Engineer and verification by the Inspector that the material is stored at the approved location, the District Engineer will authorize payment.

The Contractor shall pay the material provider the amount shown on the invoice within ten (10) calendar days of receipt of payment from the Administration. Evidence of payment shall be provided to the Administration. Failure to make invoice payments as specified will be cause to deduct the monies from future estimates and/or deny future stored materials payment requests.

Copies of all pertinent data shall be made by the Contractor and distributed to the Inspector for retention as part of the documented records for the project.

### **TC-7.03 FORCE ACCOUNT WORK.**

#### **(e) Subcontracting.**

35 **ADD:** The following to the end of the paragraph.

"or five hundred dollars (\$500) which ever sum is greater."

**DELETE:** TC-7.05 PROGRESS PAYMENTS Subsection (a) (3) Variable Retainage

**INSERT:** The following.

- (3) **VARIABLE RETAINAGE.** The Contract will be subject to a variable retainage based upon the Authority's performance evaluations of the Contractor.



## SPECIAL PROVISIONS

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Those qualifying may have retainage reduced upon request of the Contractor with consent of surety. This request must be processed through the Construction Manager. If at any time during the performance of the project, the evaluation of the Contractor changes, retainage reduction may be reconsidered.

Contractors with "A" evaluations for the last two years may be reduced from 5 percent to 2.0 percent upon request after 15 percent project completion. Project completion percentage will be based upon actual work completed (excluding monies paid for stored materials). An interim evaluation of the current project must be completed and must be an "A". Contractors with "A" evaluations for the last two years may petition to have all retainage at that point released upon completion of a significant milestone. Retainage will continue at 2.0 percent until the next milestone of completion of the Contract.

Contractors with "B" evaluations or any combination of "A" and "B" evaluations for the last two years may be reduced from 5 percent to 2.5 percent at 50 percent project completion and remain at that level until released upon final payment. Project completion percentage will be based upon actual work completed (excluding monies paid for stored materials). An interim evaluation of the current project shall be completed and shall be an "A" or "B".

Contractors with "C" evaluations or any combination of "C" and "D" evaluations for the last two years will begin and remain at 5 percent for the life of the project. An interim evaluation of the current project shall be completed and shall be a "C" or better rating.

Contractors with a "D" evaluation for the last two years will begin at 5 percent. Project performance will be evaluated monthly. Should the contractor performance remain at the "D" level, to protect the State's interest 10 percent of the progress payment will be withheld until performance improves to a "C".

**New Bidders.** Contractors who have not been previously rated by the Authority may be eligible for a reduction in retainage. To be eligible, their past performance on highway and bridge work shall be documented by the government agency with whom they had a contract and their performance shall be documented on Authority forms.

All other Contractors who do not fit into the above criteria would require a 5 percent retainage throughout the life of the Contract.



**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.



**CATEGORY 100  
PRELIMINARY**

**SECTION 103 — ENGINEERS OFFICE**

**103.03 CONSTRUCTION.**

143 **DELETE:** 103.03.06 Microcomputer System for all Offices in its entirety.

**INSERT:** The following.

**103.03.06 Microcomputer System for all Offices.**

**(a) Desktop Unit.**

- (1) IBM compatible with an Intel Pentium 4 or AMD processor.
- (2) Minimum microprocessor speed of 3.0 GHz.
- (3) Minimum hard drive storage of 80 GB (gigabyte).
- (4) Minimum of 2.0 GB RAM (Random Access Memory).
- (5) Enhanced 101 key keyboard with wrist rest.
- (6) Super Video Graphics Accelerator (“SVGA”) with minimum 64MB memory.
- (7) Modem 56K BPS, ITU V.92 compliant – required for remote dial-in to the computer to provide MCMS system administration
- (8) Full Duplex Sound Card (Sound Blaster Pro & Windows Compatible)
- (9) Audio Speakers
- (10) Mouse with mouse pad.
- (11) One CDRW/DVDRW combo drive. Min Speed = 48X
- (12) One Parallel Port, One Serial Port, Two USB Ports

**(b) Operating System.** Minimum Microsoft® Windows XP.

**(c) Video Monitor.** Color Super VGA monitor conforming to Energy Star requirements with a minimum screen size of 17-inch flat panel.

**(d) Printer.** HP Compatible Laser Jet Printer with minimum resolution of 1200 DPI (dots per in.) and a minimum of 8 MB of RAM. Officejets and Bubblejets will not be accepted. Printer shall have a minimum print speed of 10 PPM (pages per minute) network capable.

**(e) Software.**



- (1) Microsoft® Office 2000/XP Professional for Windows™ or later.
  - (2) Antivirus software shall be installed and configured to perform an automatic update when the microcomputer system connects to the Internet.
- (f) **Internet Access.** The microcomputer system shall be provided with unlimited DSL/Broadband or better Internet access approved by the Engineer.
- (g) **Accessories.**
- (1) Uninterruptible power supply (“UPS”).
  - (2) Standard computer workstation with minimum desk space of 60 x 30 in. and a swivel type office chair, padded with arm rests.
  - (3) 8-1/2 x 11 in. xerographic paper to be supplied as needed.
  - (4) Toner or ink as needed for printer.
  - (5) Maintenance agreement to provide for possible down time.
  - (6) Physical security system to deter theft of computer components.
  - (7) Blank recordable CD-R media for re-writable CD-ROM drive to be supplied as needed.
  - (8) One – USB 2.0 Flash Drive (1GB of Memory)
- (h) **Notes.**
- (1) The microcomputer system shall be completely set up ready for use on or before the day the Engineer’s Office is to be occupied.
  - (2) All software stated above shall be supplied on original disks with manuals and be retained in the construction field office for the duration of the Contract.
  - (3) If for any reason the system fails to operate, the system shall be replaced or repaired within forty-eight (48) hours.
  - (4) When the microcomputer system is no longer required, the Construction Management software system including original user/operator guide manuals, program disks, and all data files will be removed by the Engineer and delivered to the District Engineer and become the property of the Administration. The remaining microcomputer system shall remain the property of the Contractor.



**CATEGORY 100  
 PRELIMINARY**

**SECTION 104 — MAINTENANCE OF TRAFFIC**

**104.01 TRAFFIC CONTROL PLAN (TCP).**

**104.01.01 DESCRIPTION.**

149 **DELETE:** The fourth paragraph sentence “Refer to contract Documents for Work Restrictions.” in its entirety.

**INSERT:** The following.

**Project Description.** This project affects Fort McHenry Tunnel’s power to lighting and air handing systems and will require coordinated bore closures. The Maryland Transportation Authority (“Authority”) will be responsible for providing traffic control for bore closures only. The following sections summarize work restrictions and lane closure information. The contractor shall coordinate with the Authority personnel, which information could be found in this section.

It is necessary for this project’s contractor to coordinate with ALL contractors and Authority maintenance teams working in the area of the toll plaza and tunnels.

**Agency Contacts.**

CONTACT	TITLE	PHONE NUMBER
Dave Roehmer	Administrator, MdTA	(410) 537-1310
Michael Darago	Maintenance Supervisor, MdTA	(410) 537-1269
Jeff Robson	Utility Coordinator, MdTA	(410) 537-1274
Roxane Y. Mukai	Traffic Manager, MdTA	(410) 537-7848
David Dabkowski	Design Engineer, MdTA	(410) 537-7852
Carrie DeBoy	IT Operations, MdTA	(410) 537-1352

**Work Restrictions.** On Monday of each week, the Contractor shall provide the Engineer with a complete list of anticipated lane and shoulder closures for the following two weeks, allowing the Authority a minimum of fourteen (14) calendar days or ten (10) working days notification. The Engineer shall then notify the affected facilities, the Engineering Division’s Traffic Section and other appropriate offices. No lane closures shall be made without prior written approval of the Engineer in the form of an Authority lane/shoulder closure permit. The Authority is not responsible for lost workdays resulting from the Contractor failing to submit schedules or providing notification of maintenance of traffic requirements in a timely manner. Other



contractors may be actively working in or around the vicinity of this project. The Contractor shall cooperate with and coordinate work activities with contractors in adjoining or overlapping work areas.

The Contractor is responsible for obtaining lane/shoulder closure or other Permits from all affected agencies that require permits for work on their right of way, including those listed in this Special Provision. The Contractor shall make contact with the representative from the affected agency, through the Project Engineer and provide a copy of all coordination correspondence to the Authority. Sufficient time shall be allowed for review and approval of the permit application.

**ALLOWABLE LANE CLOSURE SCHEDULES**  
**FORT MCHENRY TUNNEL**

April 1 through September 30:

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
9:00 AM – 2:00 PM	Monday – Thursday	Single Lane Closure
7:00 PM – 5:00 AM	Monday – Thursday	Single Lane Closure
9:00 AM – 12:00 Noon	Friday	Single Lane Closure
9:00 PM – 9:00 AM	Friday & Saturday	Single Lane Closure
9:00 PM – 5:00 AM	Sunday	Single Lane Closure
10:00 PM – 5:00 AM	Monday – Thursday	Double Lane Closure*

October 1 through March 31:

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
9:00 AM – 3:00 PM	Monday – Thursday	Single Lane Closure
7:00 PM – 5:00 AM	Monday – Thursday	Single Lane Closure
9:00 AM – 12:00 Noon	Friday	Single Lane Closure
7:00 PM – 9:00 AM	Friday & Saturday	Single Lane Closure
7:00 PM – 5:00 AM	Sunday	Single Lane Closure
10:00 PM – 5:00 AM	Sunday– Thursday	Double Lane Closure *

\* Double lane closures on Sundays, in areas with only three lanes, must be coordinate with and approved by the Administrator.



**ALLOWABLE LANE CLOSURE SCHEDULES**  
**FORT MCHENRY TUNNEL**  
**(Tunnel Bore Closure)**

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
8:00 PM – 5:00 AM	Monday – Thursday	North or Southbound

Maintenance of Traffic for Fort McHenry Tunnel Bore Closures are furnished and installed by the Fort McHenry Tunnel Maintenance staff. Only one bore/tube in each direction may be closed at any given time.

Maximum time for dual bore closures (full roadway closure) in the same direction of travel is less than 20 minutes. Authority will provide a 20-minute traffic drag.

No lane or shoulder closures are permitted 2 hours before, during or 2 hours after major traffic generating events in downtown Baltimore or during stadium events.

No lane closures are permitted on Holidays, or the day preceding and following the Holidays indicated below:

- New Years Day
- Good Friday
- Easter Sunday
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Day

If a holiday happens to fall on a Thursday, Friday or Monday, no closures will be permitted during that weekend. No lane closures are permitted two days prior to and following the Thanksgiving and Christmas Day holidays.



Work is not permitted on the holidays, or work day preceding and following holidays indicated below with an "X":

- New Year's Day, January 1
- Martin Luther King's Birthday, the third Monday in January
- President's Day, the third Monday in February
- Good Friday
- Easter Weekend
- Memorial Day, the last Monday in May
- Independence Day, July 4
- Labor Day, the first Monday in September
- Columbus Day, the second Monday in October
- Veteran's Day, November 11
- Thanksgiving Day, the fourth Thursday in November
- Christmas Day, December 25

The Engineer reserves the right to modify or expand the methods of traffic control or working hours as specified in the Contract Documents. Any request from the Contractor to modify the work restrictions shall require written approval from the Engineer at least 72 hours prior to implementing the change. The Contractor shall submit a copy of the original work restrictions with the written request.

The Contractor will not be permitted to use any portions of the existing roadway or interfere with or impede the free flow of traffic in any manner during prohibited hours.

As directed by the Engineer, temporary lane and shoulder closures will not be permitted during periods of falling precipitation, in heavy fog or otherwise poor visibility, or in the event of emergencies such as serious traffic accidents or unusually severe traffic congestion. In the event that a temporary lane or shoulder must be reopened as directed by the Engineer or authorized Authority staff, the Contractor shall evacuate all equipment, materials and personnel from the lane within thirty (30) minutes.

149 **ADD:** The following after the last paragraph, "Any monetary savings...and the Administration."

When closing or opening a lane on freeways, expressways, and roadways with posted speed  $\geq$  55 mph, a work vehicle shall be closely followed by a protection vehicle (PV) during installation and removal of temporary traffic control devices. The PV shall consist of a work vehicle with approved flashing lights, a truck-mounted attenuator (TMA) with support structure designed for attaching the system to the work vehicle, and arrow panel (arrow mode for multilane roadways and caution mode on two-lane, two-way roadways) The work vehicle size and method of attachment shall be as



specified in the TMA manufacture's specification as tested under NCHRP Test Level 3.

When a temporary lane or shoulder closure is in effect, work shall begin within one hour after the lane is closed. Any delay greater than one hour with no work in progress shall require the Contractor to remove the lane closure at no additional cost to the Administration. The Contractor's Traffic Manager shall attend Pre-Construction and Pre-Paving Meetings and shall discuss traffic control and the Traffic Control Plan including procedures to be implemented for lane closures.

All closures shall be in conformance with the approved TCP and under the direction of the Contractor's Certified Traffic Manager and the Engineer.

Workers and equipment, including temporary traffic control devices needed for setting up a lane closure or restriction, are prohibited in the lane or shoulder to be closed or restricted before the time permitted in the Contract work restrictions unless otherwise noted below or as approved by the Engineer.

Temporary traffic control devices to be used for lane/shoulder closure may be placed on the shoulder of the roadway by workers no earlier than 15 minutes prior to actual time lane/shoulder closure or restriction is permitted. Temporary traffic signs may be displayed to traffic at this time.

Workers shall not enter a lane open to traffic. Workers may be present on shoulders to prepare for lane closure setup no earlier than 15 minutes prior to actual time lane/shoulder closure or restriction is permitted.

All temporary lane or shoulder closures shall be restored at the end of the closure period and no travel lane shall be reduced to less than 11 ft. Prior to opening the closed lane or shoulder, the Contractor shall clear the lane or shoulder of all material, equipment, and debris.

Failure to restore full traffic capacity within the time specified will result in a deduction being assessed on the next progress estimate in conformance with the following. This is in addition to the requirements specified in TC-4.02.

ELAPSED TIME, MINUTES	DEDUCTION
1 - 5	\$ <u>75.00</u>
Over 5	\$ <u>75.00</u> per Minute (In addition to the Original 5 minutes)



**104.02.04 MEASUREMENT AND PAYMENT**

**104.02.04.02** When specified in the Contract Documents, Maintenance of Traffic will be measured and paid for in lump sum.

LINE ITEM 104 MAINTENANCE OF TRAFFIC LUMP SUM

**INSERT:** The following:

Maintenance of Traffic will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for all labor (including Traffic Manager), material and equipment (for which a bid item has not been established), and any incidentals necessary to complete the work.

The cost shall include all required equipment and set ups shown on the maintenance of traffic standards, as well as removal of all traffic control set-ups.

**104.02.04.02** When there is no item in the Contract Documents, maintenance of traffic will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.



**CATEGORY 100  
PRELIMINARY**

**SHA SECTION 109 — CRITICAL PATH METHOD PROJECT SCHEDULE  
TYPE A**

**109.01 DESCRIPTION.** This work shall consist of the Contractor planning, scheduling, and constructing the project by using a Critical Path Method Project Schedule (“CPM”). The CPM shall be used for coordinating and monitoring all the work specified in the Contract Documents including all activities of subcontractors, vendors, suppliers, utilities, railroads, the Administration, and all other parties associated with the construction of the Contract. All work including, but not limited to submittals, major procurement, delivery, and construction activities shall be included. All activities, including bid items, quantified in the Contract Documents shall be included in the CPM. The CPM shall be based upon the entirety of the Contract Documents. The software utilized for the CPM shall generate files that are compatible with Primavera Project Planner.

**Float.** The CPM utilizes float. Float is defined as the amount of time between when an activity “can start or finish” and when an activity “must start or finish”. Float is a shared commodity for the use of the Administration and the Contractor and is not for the exclusive use or benefit of either party. The parties have the full use of the float until it is depleted.

**Scheduling Representative.** The Contractor shall designate a scheduling representative, prior to submission of the Initial Critical Path Method Project Schedule (“ICPM”). The scheduling representative is the person primarily responsible for development and maintenance of the Contractor’s CPM schedule. The scheduling representative shall represent the Contractor in all matters regarding the schedule and shall attend all schedule related meetings. Replacement of the scheduling representative by the Contractor will require written approval from the Administration.

The Contractor shall submit the qualifications of the designated scheduling representative to the Administration for approval. This approval is required before the ICPM will be accepted. The designated scheduling representative shall have at least three (3) years of verifiable experience for preparing and maintaining CPM project schedules on Contracts of the same or similar size and complexity.

**Initial Critical Path Method Project Schedule (“ICPM”).** The ICPM shall consist of:

- (a) A time scaled diagram. The ICPM time scaled diagram shall have a scale and format that is acceptable to the Engineer. The activities shall be labeled with the activity identification clearly shown for each activity. All relationships between activities shall be shown.
- (b) Tabular reports with activities sorted as follows:



- (1) Activity ID. This report shall include predecessors and successors for each activity with leads and lags shown.
- (2) Activity ID. This report shall include resources. This report shall clearly define the resources assigned to each activity.
- (3) Early Start, Total Float.
- (4) Total Float, Early Start.
- (5) Project Area (if applicable).
- (6) Project Phase (if applicable).
- (7) Responsibility, e.g., Contractor, specific subcontractor, specific supplier, the Administration, etc.

The header of each tabular report shall include the project name, Contract number, data date, run date and number, and report type.

The body of each report shall include the activity identification, activity description, original and remaining duration, early/late start and finish dates, percent complete, actual start/finish dates, total float, and calendar designation for every activity.

- (c) Written Narrative (“WN”). The WN shall comply with the requirements described hereinafter.
- (d) Printed Calendars. The printed calendars shall include a listing, description, and calendar form tabulation of all calendars used in the ICPM. The calendars shall contain the total number of anticipated work days required to complete all the work required in the Contract. The calendars shall delineate the holidays and anticipated nonwork days or periods. An explanation of the Contractor’s basis for determining each nonwork day or period shall be included in the WN.
- (e) Data disc containing all of the information contained in the CPM. The format shall be compatible with Primavera Project Planner software.

All construction activities shall have durations not exceeding ten (10) working days, unless otherwise approved by the Engineer. Activities required for review and approval of the working drawings and materials by the Administration shall be given a duration of not less than thirty (30) calendar days. The Contractor may submit a short list of highly critical approval activities to the Engineer. The Engineer will make every effort to expedite the approval of these submittals; however, this will not alter the requirements to include thirty (30) calendar days for all approvals in the ICPM. Activities for curing, pre-load, etc. shall be scheduled in calendar days. Durations for procurement activities will be evaluated on a case by case basis.



The latest calculated early finish date in the ICPM shall equal the Contract calendar date for completion specified in the Contract Documents. If the Contractor submits an earlier completion date than specified in the Contract Documents, the Administration, upon approval of the ICPM, will issue a change order to adjust the Contract time to the completion date shown on the ICPM.

The Contractor shall resource load all construction activities in its schedule with the material, equipment, and manpower planned to be utilized by the Contractor and its subcontractor in accomplishing each activity. Resource loading of the CPM shall be fully explained in the WN.

The Engineer reserves the right to specify the number of activities and to require at any time additional breakdowns of the activities.

The Contractor shall utilize activity codes to categorize activities by at least the following: project area; project phase; and responsibility, e.g. Contractor or specific subcontractors.

The Contractor shall provide a WN as part of the ICPM. This WN shall explain the sequence of work, the critical path, interim completion dates, project phasing, nonwork days or periods, maintenance of traffic, and labor and equipment resources. In addition, the Contractor shall explain how it has provided for; permit requirements, environmental requirements, coordination with other public Contractors, milestone dates (for the Contract or other related contracts), coordination with other entities, coordination with all utility companies, special nonwork days or periods, and weather in its ICPM. The WN shall be used to explain the specific scope of each activity and the basis used to determine the original duration of each activity, i.e., production rates and anticipated quantities. All activities quantified in the Contract Documents shall be addressed in the WN. The Contractor shall utilize the WN to explain the following:

- (a) Relationships between activities not obviously identified.
- (b) Equipment usage and limitations.
- (c) Manpower usage and limitations.
- (d) Use of additional shifts and overtime.
- (e) Activity codes, abbreviations, and activity identification system.
- (f) All calendars utilized in the CPM.
- (g) Date or time constraints.
- (h) All abbreviations in the ICPM.
- (i) Use of calendars.



(j) Scheduling of weather and temperature sensitive activities.

The Contractor shall complete and submit the proposed ICPM within thirty (30) calendar days after receiving the Notice of Award and submit five (5) sets of all information required to the Engineer for review and acceptance. No work shall begin until the Engineer has accepted the ICPM. Upon issuance of the Notice to Proceed, the start date utilized in the ICPM shall be adjusted to comply with the Notice to Proceed.

The Engineer will complete the review of the Contractor's ICPM within thirty (30) calendar days after the submittal. If required, the Engineer will convene a Joint Review Conference at which time the Engineer and Contractor may make corrections and adjustments to the proposed ICPM. If a revision is necessary due to the Engineer's review or the Joint Review Conference, the proposed revision shall be submitted by the Contractor within seven (7) calendar days after the Contractor receives the Engineer's review comments or within seven (7) calendar days after the date of the Joint Review Conference whichever is the latest. Revisions shall conform to the requirements for the ICPM. The Engineer will respond to the revised ICPM within seven (7) calendar days after the revised ICPM is received.

Any delay in starting work caused by the acceptance of the ICPM by the Engineer will not be considered as a basis for any adjustment in the Contract amount or time.

When the Engineer notifies the Contractor that the ICPM has been accepted, that document will become the CPM of record. The Contractor shall be responsible for implementing and executing the work specified in the Contract in strict conformance with the CPM of record. The CPM of record shall be the Contractor's work plan for completing the entire Contract as specified in the Contract Documents.

Failure of the Contractor to adhere to the CPM of record will be cause for the Administration to deny any and all requests for additional compensation or extensions of the Contract duration and may result in the Engineer withholding pay estimates.

**CPM Updates.** Monthly updates of the CPM of record are required. CPM update submissions shall contain the activity data as specified in (a) through (e) of the ICPM. The update shall be used to describe the progress of the project to date. The WN shall include a description of the work performed during the update periods, current critical path, the amount of float on the critical path, any delays or disruptions experienced by the Contractor during the period of the update, any change in manpower or equipment, and any potential delays or disruptions.

The Contractor's scheduling representative and the Engineer shall meet to review, mutually agree to, and sign-off on the information required to update (actual start and finish dates, remaining durations and percentages complete) the schedule. The Contractor shall use an update form acceptable to the Engineer. The data date for each update shall be seven (7) days prior to the cut-off date of the pay estimate for that month. The update shall be submitted by the Contractor within seven (7) calendar days from the data date. Failure to timely submit the update, may result in the Engineer withholding pay estimates. Upon acceptance by the Engineer,



the update shall become the CPM of record for the period between its data date and the data date of the next approved update or revision.

Updates shall not include any revision to the CPM, unless prior approval by the Engineer is received for the insertion of minor revisions.

**Revisions to the Schedule of Record.** Revisions are defined as one or more of the following:

- (a) A change in the original duration of an activity.
- (b) A change in the logic of the schedule.
- (c) A change in the calendars or to the calendar to which an activity is assigned.
- (d) A change to resources.
- (e) A change to any actual date, previously established.
- (f) The deletion or addition of an activity.
- (g) A change to, addition of, or deletion of a date or time constraint.
- (h) A change to, addition of, or deletion of an activity code.
- (i) A change to an activity description.
- (j) Any change other than updating an activity.

When the Contractor proposes to make a revision to the CPM, the Contractor shall verbally discuss the proposed revision with the Engineer. If the revision is minor in nature, the Engineer may allow the Contractor to include the revision on the next Update of the CPM. If the Engineer determines that the revision is not minor in nature, the Contractor shall submit the proposed revision to the Engineer for review and approval prior to deviating from the approved CPM.

When the Contractor is required to make a revision to the CPM due to changes in the Contract initiated by the Engineer, the Contractor shall immediately contact the Engineer to discuss the changes. If the revision is minor in nature, the Engineer may allow the Contractor to include the revision on the next Update of the CPM. If the Engineer determines that the revision is not minor in nature, the Contractor shall submit the proposed revision to the Engineer for review and approval prior to deviating from the approved CPM.

The Engineer may allow the Contractor to deviate from the approved CPM for specific mitigating activities.



The proposed revision shall be submitted to the Engineer in the same format and with the same requirements used for the ICPM. The proposed revision shall be made to the CPM of record at the time the revision is made, i.e. the revision shall include all update information and revisions previously approved and the additional progress to the date of the revision. The WN accompanying the proposed revision shall describe the reason for the revision, the resulting critical path, and all particulars of the revision. These shall include, but not be limited to, changes in the method or manner of the work, changes in specifications, changes in resources, addition or deletion of work, increased or decreased quantities, defective work, and acceleration of the work.

The Engineer will review and respond to the Contractor's proposed revision within fourteen (14) calendar days after its receipt. Resubmittal by the Contractor, if required, shall be made within seven (7) calendar days after receipt of the Engineer's review comments. The Administration reserves the right to reject any proposed revision which adversely impacts the Administration, utilities, or other concerned parties.

**Extensions of Contract Time or Incentive/Disincentive Date.** All requests for an extension of Contract time shall be made in writing and are subject to the notice and timeliness of submission provisions as provided for elsewhere in the Contract. Any written request for an extension of Contract time or change in an incentive/disincentive date will be evaluated by the Engineer's analysis of the CPM of record and a proposed revision submitted by the Contractor. The request shall include a WN of the events which would require an extension of the Contract time or incentive/disincentive date.

Only delays to activities which affect the Contract completion date or incentive/disincentive date will be considered for an extension of Contract time. The extension of the specified Contract completion date or incentive/disincentive date will be based upon the number of calendar days the Contract completion date or incentive/disincentive date is impacted as determined by the Engineer's analysis.

When the Contractor fails to submit an acceptable Update or Revision within the time limits prescribed above, the Engineer may withhold pay estimates for all work until an acceptable Update or Revision is submitted.

**109.02 MATERIALS.** Not Applicable.

**109.03 CONSTRUCTION.** Not Applicable.

**109.04 MEASUREMENT AND PAYMENT.** The accepted Initial Critical Path Method Project Schedule, Critical Path Method Project Schedule Revisions, and all accepted Critical Path Method Project Schedule Updates will be paid for at the Contract lump sum price for the Type A CPM Project Schedule item. Fifty percent of the lump sum price will be paid upon acceptance of the Initial Critical Path Method Project Schedule (except when the price bid exceeds half of one percent of the total Contract price bid). The balance will be paid as a monthly prorated sum based upon the specified Contract duration. This monthly payment will



be made on the next progress payment following the Administration's acceptance of the required monthly Critical Path Method Project Schedule updates.

When the price bid for the Type A CPM Project Schedule exceeds half of one percent of the total Contract price, the total progress payments for the Critical Path Method Project Schedule will be limited to half of one percent of the total Contract price. Any remaining balance (over half of one percent of the total Contract price bid) will be paid upon final Contract payment.

Item 102      Type A CPM      Lump Sum

## **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 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)
  - 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 1.



**SPECIAL PROVISIONS**

- (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.
- (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) 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 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.

Electrical work shall be supervised by an electrician licensed in the state of Maryland. Anytime electrical work is performed, the Contractor shall provide a full time licensed electrician on site for on site supervision.

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.

**820.01.03 Fire-stopping**

- (a) All penetrations into fire walls or core holes between floors and walls must be properly fire-stopped in accordance NEC requirements for fire stopping.
- (b) Penetrations into the surface of any firewall or presumed firewall should be only slightly larger than the 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 CONSTRUCTION**

#### **820.03.01 GENERAL**

**ADD:** The following.

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 820.04.

#### **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.

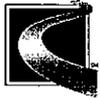
**820.03.06** All GFI protected outlets shall be tested with a suitable tester in the presence of the MDTA electrical inspector. The tester shall be a device that plugs into the outlet and indicates proper wiring of the outlet. A switch on the tester shall be utilized to introduce a ground fault that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



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SPECIAL PROVISIONS

**ATTACHMENT 820-A**

**SAMPLE FIBER OPTIC CABLE TEST REPORT**

(To be filled out after installation is complete)

<b>Job Name:</b>	<b>Fiber Cable:</b>
<b>Job ID:</b>	
<b>Location (A):</b>	<b>Location (B):</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: \_\_\_\_\_

**899 MISCELLANEOUS ELECTRICAL REPAIRS AND/OR CONSTRUCTION****899.01 DESCRIPTION**

A contingent allowance of One Hundred Fifty Thousand Dollars (\$150,000.00) has been included in the Proposal Form for miscellaneous electrical repairs and/or construction that may be deemed necessary by the Engineer during the construction period.

This work shall be performed only upon written direction of the Engineer. Upon the direction from the Engineer, the Contractor shall submit a written time and material cost for this task, for the Engineer's review prior to commencing any work. 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.

Item 825	MISCELLANEOUS ELECTRICAL REPAIRS AND/OR CONSTRUCTION	\$150,000.00
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**CATEGORY 900  
MATERIALS**

**SECTION 950 - TRAFFIC MATERIALS**

**950.03 REFLECTORIZATION OF SIGNS AND CHANNELIZING DEVICES.**

**DELETE:** 950.03 REFLECTORIZATION OF SIGNS AND CHANNELIZING DEVICES in its entirety.

**INSERT:** The following.

**REFLECTORIZATION 950.03 OF SIGNS AND CHANNELIZING DEVICES.** Unless otherwise specified in the Contract Documents, retroreflective sheeting for permanent signs shall conform to 950.03.01 and 950.03.03. Retroreflective sheeting for temporary signs and channelizing devices shall conform to 950.03.02 or 950.03.03, and 950.03.04.

**Per 950.03.01manent Signs Retroreflective Sheeting.** Retroreflective sheeting for permanent signs shall conform to ASTM D 4956-05, except as modified below:

<b>MINIMUM REFLECTIVE INTENSITY VALUES FOR RETROREFLECTIVE SHEETING</b> Minimum Coefficient of Retroreflection ( $R_A$ ) $cd/(lx \cdot m^2)$ Per ASTM E-810 (Average of 0 and 90 degree orientation)									
Observation Angle°	Entrance Angle°	White	Yellow	Fluor. Yellow	Fluor. Yellow-Green	Red	Green	Blue	Fluor. Orange
0.2	-4	570	425	340	455	114	57	26	170
0.2	30	215	160	130	170	43	21	10	64
0.5	-4	400	300	240	320	80	40	18	120
0.5	30	150	112	90	120	30	15	6.8	45
1	-4	120	90	72	96	24	12	5.4	36
1	30	45	34	27	36	9	4.5	2	14

**Temporary Traffic Signs ("TTS"). 950.03.02**

- (a) All rigid temporary traffic signs shall be fluorescent orange and conform to ASTM D 4956-05, Type VII or 950.03.01.
- (b) All temporary flexible rollup signs shall be fluorescent orange and conform to ASTM D 4956-05, Type VI.

**Black 950.03.03 Sheeting.** Black sheeting shall be nonreflective.



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**Drums 950.03.04 for Maintenance of Traffic.** All drums for maintenance of traffic shall have retroreflective white and fluorescent orange reboundable sheeting and conform to ASTM D 4956-05 Type VII.

04-05-07



## SECTION 16000 – GENERAL ELECTRICAL REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Renovation of electrical switchgear.
  - 2. Coordination of work and outages with the Authority.
  - 3. Temporary provisions for critical loads.

#### 1.3 QUALIFICATIONS

- A. Contractors bidding on this project must have a minimum of five (5) years of experience in projects of this nature involving retrofit of circuit breakers in existing switchgear in an active facility.

#### 1.4 SUBMITTALS

- A. Product Data: For each retrofit circuit breakers, kirk-key type system equipment, ground-fault protection equipment, and data communications network. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
- B. Shop Drawings: For each switchboard and related equipment.
  - 1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings.
  - 2. Detail enclosure types for types other than NEMA 250, Type 1.
  - 3. Detail bus configuration, current, and voltage ratings.
  - 4. Detail short-circuit current rating of switchboards and overcurrent protective devices.
  - 5. Include descriptive documentation of optional barriers specified for electrical insulation and isolation.



6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
  7. Include time-current coordination curves for each type and rating of overcurrent protective device included in switchboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.
  8. Include schematic and wiring diagrams for power, signal, and control wiring.
- C. Field Quality-Control Reports:
1. Test procedures used.
  2. Test results that comply with requirements.
  3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- D. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:
1. Routine maintenance requirements for switchboards and all installed components.
  2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
  3. Time-current coordination curves for each type and rating of overcurrent protective device included in switchboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.
- E. Overcurrent Protective Device Coordination Study:
1. Coordination-study input data, including completed computer program input data sheets.
  2. Study and Equipment Evaluation Reports.
  3. Coordination-Study Report.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers qualified as defined in NEMA PB 2.1 and trained in electrical safety as required by NFPA 70E.
- B. Source Limitations: Obtain retrofit circuit breakers from single manufacturer.
- C. Product Selection for Restricted Space: Retrofit breakers must fit in existing switchboard spaces. Comply with existing maximum dimensions available.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.



- E. Comply with NEMA PB 2.
- F. Comply with NFPA 70.
- G. Comply with UL 891.
- H. Overcurrent protective device coordination studies shall use computer programs that are distributed nationally and are in wide use. Software algorithms shall comply with requirements of standards and guides specified in this Section. Manual calculations are not acceptable.
- I. Coordination-Study Specialist Qualifications: An entity experienced in the application of computer software used for studies, having performed successful studies of similar magnitude on electrical distribution systems using similar devices.
- J. Comply with IEEE 242 for short-circuit currents and coordination time intervals.
- K. Comply with IEEE 399 for general study procedures.

#### 1.6 COORDINATION AND OUTAGES

- A. Coordinate all work with the Authority. All power interruptions shall require fourteen (14) days written notice to the Authority and may be denied when requests are counter to the requirements below.
- B. The Contractor is required to verify there are no loads on spare breakers.
- C. Each outage or interruption shall be limited in scope and duration to the minimal amount of impact to accomplish the planned work. The Contractor is required to conduct the work in such a way that power interruptions and outages are minimized in both scope and duration.
- D. Only one half of each double-ended substation at a time shall have work performed on it, with the exception of the complete substation shutdown required for replacement of the tie breaker and completion of kirk-key type system equipment, ground-fault protection equipment, and data communications network.
  - 1. When work requires shut down of a complete double ended substation, only the effected double ended substation shall be worked during the outage. No other work will be permitted until the substation is put back into service.
  - 2. When working on ½ of a double ended substation, other half sections may also be worked as long as not more than 1 exhaust and 1 supply fan for the affected side of the bore are impacted. This does not apply to a bore that is closed to traffic.
- E. Make temporary provisions for equipment as indicated in the plans. Outages for making temporary connections are also required to be scheduled with fourteen (14) days notice.



- F. Outages or interruptions requiring tunnel bore closures as indicated shall be scheduled in accordance with the Authority Maintenance of Traffic (“MOT”) standard requirements. Refer to the Authority “Allowable Lane Closure Schedules” for additional information. Where tunnel bore closures are required, The Authority will provide the required MOT.
- G. Contractor is responsible for contacting cellular companies with service equipment in the tunnels fed by the switchgear in regard to outages. Provide a copy of a FAX notice to the cellular carrier regarding planned outages.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURED RETROFIT CIRCUIT BREAKERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
  - 3. Siemens Energy & Automation, Inc.
  - 4. Square D; a brand of Schneider Electric.
- B. Nominal System Voltage: 480Y/277 V.

### 2.2 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Molded-Case Circuit Breaker (“MCCB”): Comply with UL 489, with interrupting capacity to meet available fault currents.
  - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
  - 2. Drawout electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replaceable electronic trip; and the following field-adjustable settings:
    - a. Instantaneous trip.
    - b. Long- and short-time pickup levels.
    - c. Long- and short-time time adjustments.
    - d. Ground-fault pickup level, time delay, and  $I^2t$  response.
  - 3. Molded-Case Circuit-Breaker (“MCCB”) Features and Accessories:
    - a. Standard frame sizes, trip ratings, and number of poles.



- b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor material.
- c. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
- d. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.

### 2.3 MEDIUM VOLTAGE TRANSFORMER FAN REPLACEMENT

- A. The forced-air cooling system for each transformer shall be replaced. Each of the four (4) forced-air fans at the base of each medium voltage transformer shall be replaced.
  - 1. Provide a fan of equal capacity (3/4HP) with voltage and phase to match existing fan.
  - 2. Replace the thermostat serving each transformer.
  - 3. Replace the control panel with relays serving each transformer.

### 2.4 DATA COMMUNICATIONS NETWORK

A complete data communications network shall be provided for each vent building to monitor each drawout breaker in each substation low voltage section. The contractor shall furnish and install the network cabling, power, data cabling from the trip units to the fiber modem, and related appurtenances.

- 1. Furnish and install complete fiber optic cable system between tunnel operations control panels (EIF-2 and WIF-2) and substations, and copper low voltage copper communications cable system in each low voltage substation section from the trip unit to the modem. Fiber shall be Corning Type 006K88-31130-29 or equal. Fiber shall be 6-count, 62.5 micrometer multimode type with 3.5 dB/km maximum attenuation, 200 MHz-km minimum bandwidth and 300m serial gigabit Ethernet distance. Fiber shall have plenum rated type insulation with markings 12 inches on center. The Contractor shall install the fiber and termination box in the space reserved for the fiber modem.
- 2. Provide fiber breakout termination box in the tunnel operations control panel and each substation low voltage section. Fiber breakout boxes shall be Corning SPH-01P single panel housing with CCH-CP12 connector panel or equal. Single Panel Housing shall be a single panel wall-mount housing accommodating one connector panel. The housing shall include a 6-slot, 0.4 inch splice holder for splice management, cross-connect or both for up to 12 fibers. Connector Panel shall be utilized for fiber interconnecting or cross connecting and suitable for mounting in the Single Panel Housing. The panel shall be designed to accommodate all industry-standard adapter types, suitable for use with 12-count, 62.5 micrometer multimode fiber.
- 3. The Contractor shall install the serial communications cable to all trip units in the substation with the end of the run landing at the space reserved for the fiber modem. Terminate all fiber and copper communication cables except those at modems.
- 4. Furnish and install 120V-15A receptacle for each of 28 modems located in the substations (W1-W12 and E1-E12), and associated wiring, conduit, and circuiting.



5. The Contractor shall provide a conduit connecting the adjoining substations (such as E1 & E2) suitable for a terminated fiber zip cord.
6. The Contractor shall provide all conduits, fiber, fiber zip cords and termination boxes.
7. The Contractor shall terminate and test all fiber.

Prime Contractor shall be required to subcontract Transdyn, Inc. for integrating the new substation multi-function trip units in to the existing DYNAC system for this project. Transdyn's work shall include, but not be limited to:

1. Transdyn assumes all work required by the Contractor will be completed at each vent building before Transdyn starts the commissioning.
2. Provide and install 28 IFS Serial Fiber modems to provide communications from each substation (W1W12 & E1-E12) back to EIF -2 and WIF-2 respectively.
3. Provide and install new terminal servers at WIF-2 and EIF 2.
4. Provide fiber jumpers for the link between the fiber break out boxes and the fiber modems at each substation.
5. Terminate the serial communications cable from the Trip Units in the substation to the respective fiber modem.
6. Verify communications.
7. Add the new Trip Units to the Dynac database and develop new graphics depicting the trip units.
8. Delete the points in the PLC code and DYNAC code for the existing switch gear signals. The existing signal wires will be abandoned in place.
9. Modify Transdyn's panel drawings to show the new signals and the removal of the old signals.
10. Providing a hardware submittal.
11. Providing acceptance testing.
12. Providing a one year warranty for all materials and services provided by Transdyn.

Transdyn's work shall be paid as a lump sum amount as line item 826 SCADA System Integration. The price bid on this item shall include all integration work necessary to complete the integration of the trip units into the SCADA system as indicated above.

The Contractor will be required to coordinate and schedule with the Authority delivery and installation of this work to the site. The Contractor will also be responsible for coordinating and working with the Transdyn Representative during the installation of the data network.

Contact information for Transdyn :

Mt. Peter Arness at 678-482-9508



TRANSDYN, INC.  
2855 Premiere Parkway  
Duluth, GA 30097  
Telephone (678) 473-6400  
Fax (678) 473-9003

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine switchboards before installation of retrofit circuit breakers.
- B. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. Install cradles and retrofit circuit breakers according to NEMA PB 2.1.
  - 1. Set field-adjustable switches and circuit-breaker trip ranges based on results of overcurrent protective device coordination study.
- B. Comply with NECA 1.
- C. Provide temporary circuit breakers and feeders for critical equipment as indicated. Remove temporary work when complete. Reconnect feeder conductors to new circuit breakers.
- D. Install kirk-key type system equipment, ground-fault protection equipment, and data communications network.
- E. Remove DC trip circuits back to source panel.

#### 3.3 IDENTIFICATION

- A. Switchboard Nameplates: Label each switchboard compartment with an engraved nameplate to identify load served.

#### 3.4 FIELD QUALITY CONTROL

- A. Perform tests and inspections.



1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Acceptance Testing Preparation:
1. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit.
  2. Test continuity of each circuit.
- C. Tests and Inspections:
1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. All retrofit circuit breakers of both the drawout and molded case type shall be tested after being installed in the existing switchgear but prior to energizing switchgear and connecting feeders. Certify compliance with test parameters.
  2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  3. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
  4. Phase rotation shall be checked and tested for all retrofit circuit breakers as well as temporary circuit breakers prior to general circuit breaker testing and feeder connection.
- D. Retrofit circuit breakers will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

### 3.5 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

### 3.6 DEMONSTRATION

- A. Train Owner's maintenance personnel for eight (8) hours to adjust, operate, and maintain switchboards, overcurrent protective devices, instrumentation, and accessories.

### 3.7 MEASUREMENT AND PAYMENT

Retrofitting 12 substations will be measured based on lump sum amounts listed below. Work will include examining/removing existing switchboards and breakers, installing



cradles, retrofit circuit breakers and kirk-key type system, replacing forced-air cooling fans for each transformer, and removing DC trip circuits back to source panel.

Furnishing and installing a complete data communications network that will help provide monitoring for each drawout breaker in each substation low voltage section, for East and West vent buildings and will be measured per lump sum. Data communications network will integrate with Transdyne work.

All pay items shall include all materials, labor, any mobilization and equipment necessary to furnish and install a complete, operational, and acceptable system as specified herein and as shown on the plans. Payment of items shall include all testing and guarantee required by the specifications and special provisions. Any requirements of the specifications, special provisions or plans not specifically detailed or mentioned in a payment item shall be considered incidental to the pay items below.

The Contractor's quality assurance and quality control responsibilities shall be incidental to the pay items below. Construction stake out and coordinations shall be incidental to the items listed below. Testing as specified in the Special Provisions and Specifications shall be incidental to the pay items listed below.

101	MOBILIZATION	LUMP SUM
102	TYPE A CPM SCHEDULE	LUMP SUM
103	ENGINEERS OFFICE TYPE C	LUMP SUM
104	MAINTENANCE OF TRAFFIC	LUMP SUM
801	RETROFIT 1,600A DRAW-OUT BREAKER	EACH
802	RETROFIT 800A DRAW-OUT BREAKER	EACH
803	RETROFIT 600A MOLDED CASE BREAKER	EACH
804	RETROFIT 400A MOLDED CASE BREAKER	EACH
805	RETROFIT 250A MOLDED CASE BREAKER	EACH
806	RETROFIT 100A MOLDED CASE BREAKER	EACH
807	RETROFIT SPACE ONLY	EACH
808	KIRK-KEY TYPE INTERLOCKS	LUMP SUM



809	GROUND-FAULT PROTECTION	LUMP SUM
810	FORCED-AIR FAN	EACH
811	THERMOSTAT AND CONTROLS	EACH
812	TESTING AND REPORT	LUMP SUM
813	REMOVE DC CIRCUIT	EACH
814	FIBER OPTIC CABLE - 6 FIBER MULTIMODE	FEET
815	COPPER SHIELDED TWISTED PAIR - 4 CONDUCTOR	FEET
816	FIBER OPTIC PATCH PANEL	EACH
817	3/4" EMT - FOR FIBER OPTIC	FEET
818	DUPLEX RECEPTACLE	EACH
819	3/4" EMT FOR POWER	FEET
820	#10 THHN WIRE	FEET
821	TESTING	LUMP SUM
822	DEMO EXISTING WIRING	FEET
823	TEMPORARY WORK (EAST AND WEST)	LUMP SUM
824	COORDINATION STUDY (EAST AND WEST)	LUMP SUM
825	MISCELLANEOUS ELECTRICAL REPAIRS AND/OR CONSTRUCTION	
	ALLOWANCES	
826	TRANSDYNE SUB CONSULTANT	
	ALLOWANCES	

END OF SECTION 16000