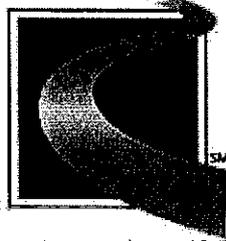


**BALTIMORE HARBOR TUNNEL
FORT MCHENRY TUNNEL
FRANCIS SCOTT KEY BRIDGE
GOVERNOR HARRY W. NICE MEMORIAL BRIDGE
INTER COUNTY CONNECTOR
JOHN F. KENNEDY MEMORIAL HIGHWAY
POINT BREEZE OFFICE COMPLEX
THOMAS J. HATEM MEMORIAL BRIDGE
WILLIAM PRESTON LANE JR. MEMORIAL BRIDGE**



**Maryland
Transportation
Authority**

CONTRACT NO. MA-2435-000-002

MISCELLANEOUS PAVING REPAIRS

**ANNE ARUNDEL COUNTY
BALTIMORE CITY
BALTIMORE COUNTY
CECIL COUNTY
CHARLES COUNTY
HARFORD COUNTY
HOWARD COUNTY
MONTGOMERY COUNTY
PRINCE GEORGE'S COUNTY
QUEEN ANNE'S COUNTY**

OCTOBER, 2010



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Maryland
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SPECIAL PROVISIONS

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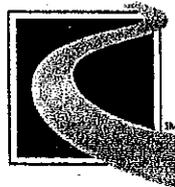
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MARYLAND TRANSPORTATION AUTHORITY

Baltimore, Maryland

Invitation for Bids

**BALTIMORE HARBOR TUNNEL
FORT MCHENRY TUNNEL
FRANCIS SCOTT KEY BRIDGE
GOVERNOR HARRY W. NICE MEMORIAL BRIDGE
INTER COUNTY CONNECTOR
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**Maryland
Transportation
Authority**

CONTRACT NO. MA-2435-000-002

MISCELLANEOUS PAVING REPAIRS

**ANNE ARUNDEL COUNTY
BALTIMORE CITY
BALTIMORE COUNTY
CECIL COUNTY
CHARLES COUNTY
HARFORD COUNTY
HOWARD COUNTY
MONTGOMERY COUNTY
PRINCE GEORGE'S COUNTY
QUEEN ANNE'S COUNTY**

OCTOBER, 2010

NOTICE TO BIDDERS

A "Pre-Bidding Session" for the purpose of answering or obtaining answers to questions of parties interested in constructing the work relative to Right-of-Way, Utilities, Design, and Construction Details will be conducted at 10:00am on November 3, 2010, in the Conference Room, 2nd Floor of Francis Scott Key Bridge Engineering Building at 300 Authority Drive in Dundalk, Maryland. While attendance at the Pre-Bid conference is not mandatory, this is the offeror's opportunity to raise questions and/or issues of concern regarding the project

IMPORTANT INFORMATION REGARDING MBE UTILIZATION AND BIDDING REQUIREMENTS

The Maryland Transportation Authority (MDTA) 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 bid/proposal book.

Please read all of the instructions 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 subgoals, 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

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), NAICS Codes of the services to be performed or products to be supplied (column 3) and total subcontract dollar amount (column 4).
- 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 SIC/NAIC Codes through MDOT and can perform the proposed work 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 work 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 to see if the subcontractor(s) is certified to perform the services and to make sure the subcontractor(s) has not graduated from the listed NAICS codes. If you have questions after checking the data base, you may contact the MDTA MBE Office at 410-537-7832 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 4) (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 (column 1). Please note: Third Tier MBE/DBE subcontracting will be approved by MdTA only when MdTA 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 MDTA 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 MDTA. 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 10 days, the Procurement Officer may determine that the apparent low bidder is not responsible and therefore not eligible for contract award.

Dual Certification Procurement Information

Effective on October 1, 2009, Minority Business Enterprise (MBE) firms may elect to be dually certification as woman-owned businesses and as members of an ethnic or racial category. For purposes of achieving any gender or ethnic/racial MBE participation subgoals in a particular contract, an MBE firm that has dual certification may participate in the contract either as a woman-owned business or as a business owned by a member of a racial or ethnic minority group, **but not both**.

WARNING – PLEASE READ:

- ◆ **A firm must be listed in the MDOT MBE/DBE Directory with the gender category in order to be used to meet the gender subgoal.**
- ◆ **A firm must be listed in the MDOT MBE/DBE Directory with an ethnic/racial category in order to be used to meet the ethnic/racial subgoal.**
- ◆ **A firm must be listed in the MDOT MBE/DBE Directory with both the gender and ethnic/racial categories in order for a contractor to have the option of selecting which of those categories it will use for the firm on a State contract.**
- ◆ **Contractors should designate whether the MBE firm will be used as a woman-owned business or as a business owned by a member of a racial/ethnic group before calculating the percentage of MBE participation goals and subgoals they intend to meet.**

Maryland's MBE/DBE Directory will reflect the dual certification status beginning October 1, 2009. You can access the MBE/DBE Directory at <http://mbe.mdot.state.md.us>. Firms with dual certification will now be listed as follows:

Example:

ABC Corporation, Inc.
123 Corporate Circle
Hanover, MD 21076
Female/African American
00-000

NOTICE TO BIDDERS

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

- When submitting your completed bid, do not separate the book. Submit the whole book including all addenda.
- Make sure that all addenda letters are attached outside of the front cover of the bid book.
- If the addendum has revised the Schedule of Prices, make sure that you have included the revised pages in your bid. Your price should reflect any and all changes.
- Prices must be written numerically and in words, unless approved substitute forms are used (Refer to GP-2.06). 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 \$100,000.00 or more. The bid bond document must be completely filled out and have an original Power of Attorney form attached.
- If the document is too large for the envelope that we have provided, you can place the document in another form of packaging that can be sealed and submitted. If the document is too large for the bid box, you should alert the receptionist.
- Make sure that your company's name, address, the contract number and the bid date appears on the front of the packaging.
- When submitting bid packages via US Mail, Federal Express, DHL, UPS or any other delivery service it is your responsibility to make sure that the bid reaches the bid box before the time deadline. It may be in your best interest to send the package 24 hours in advance of the deadline. Also, when sending packages this way, make sure that the labeling specifies that it is a bid submission.

Notice to Bidders/Offerors

EMaryland Marketplace Fee

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

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



NOTICE TO ALL HOLDERS OF THIS CONTRACT DOCUMENT

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

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

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

Category 1 Devices

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

Category 2 Devices

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

Category 3 Devices

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

Category 4 Devices

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



Maryland Department of Transportation
State Highway Administration

CONTRACT PROVISIONS

(NCHRP) REPORT 350 IMPLEMENTATION SCHEDULE

CONTRACT NO. MA-2435-000-002
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WORK ZONE DEVICES	IMPLEMENTATION SCHEDULE TO CONFORM TO NCHRP REPORT 350 CRITERIA
<p>CATEGORY 1 Cones, tubular markers, flexible delineator posts, and drums (all without any accessories or attachments)</p>	<p>All devices shall conform to NCHRP Report 350 criteria.</p>
<p>CATEGORY 2 Type I, II, and III barricades; portable signs supports with signs; intrusion alarms; and drums, vertical panels, and cones (all with accessories or attachments)</p>	<p>All devices shall conform to NCHRP Report 350 criteria.</p>
<p>CATEGORY 3 (a) Truck Mounted Attenuators (TMAs); Trailer Truck Mounted Attenuators (TTMAs) (b) Temporary Barriers (1) Concrete Barrier (2) Traffic Barrier W Beam and Water Filled Barrier (3) Steel/Aluminum Barrier (c) Temporary End Treatments</p>	<p>All devices shall conform to NCHRP Report 350 criteria.</p>
<p>CATEGORY 4 Portable trailer mounted devices including area lighting supports, arrow panels, and changeable message signs</p>	<p>The Contractor may use devices that do not conform to NCHRP Report 350 criteria, until compliance dates are established. Use of these devices shall comply with the provisions of Part 6 of the MUTCD.</p>



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



CONTRACT PROVISIONS
HIGH VISIBILITY SAFETY APPAREL POLICY

CONTRACT NO. MA-2435-000-002

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apparel shall be designed to clearly recognize and differentiate the wearer from the surrounding work environment.

REFERENCES.

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

DEFINITIONS.

- (a) Apparel – The outermost high-visibility garment worn by employees who work on 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.



Maryland
Transportation
Authority

**CONTRACT PROVISIONS
SPECIAL PROVISION**

CONTRACT NO. MA-2435-000-002

Page 1 of 5

**CONTRACT PROVISIONS
APPRENTICESHIP TRAINING FUND**

Effective October 1, 2009, State Law requires all contractors and subcontractors working on State prevailing wage projects with prevailing wage determinations to register (Apprenticeship Training Fund Site) with the Division of Labor and Industry Prevailing Wage Unit prior to the commencement of work and to make certain contributions toward improving and expanding apprenticeship programs in the State. In addition, registered apprenticeship programs and organizations that have registered apprenticeship programs that have been selected by contractors and subcontractors for contributions also are required to register with the Division of Labor and Industry Prevailing Wage Unit.

The following information concerning the requirements of the apprenticeship training fund program are being provided for informational purposes only. It is the contractor's responsibility to contact the Maryland Department of Labor, Licensing and Regulation (DLLR), prior to commencement of any work, to determine how these provisions are being implemented and enforced by DLLR.

Definitions. The following terms have the meanings indicated.

(a) Terms Defined.

- (1) "Approved apprenticeship program" means an apprenticeship program or an organization with an apprenticeship program which has been registered with, and approved by, the Maryland Apprenticeship and Training Council or the United States Department of Labor.
- (2) "Commissioner" means the Commissioner of Labor and Industry.
- (3) "Covered craft" means a classification of workers listed in the prevailing wage determination applicable to a prevailing wage project.
- (4) "Fund" means the State Apprenticeship Training Fund.
- (5) "Monthly Certified Verification Report" means the monthly report that details contractor and subcontractor contributions for that month available on the Division of Labor and Industry's website.
- (6) "Public body" means a unit of State government as defined in § 17-201(l), State Finance and Procurement Article, Annotated Code of Maryland.
- (7) "Unit" means the Division of Labor and Industry, Prevailing Wage Unit and the public body that awarded the procurement contract.



Maryland
Transportation
Authority

CONTRACT PROVISIONS
SPECIAL PROVISION

CONTRACT NO. MA-2435-000-002

Page 2 of 5

- (8) “Yearly Certified Verification Report” means the yearly report that details contractor and subcontractor contributions for the preceding year available on the Division of Labor and Industry’s website.

Contractor/Subcontractor Registration. Contractors and subcontractors awarded a procurement contract on a public work contract subject to the Maryland Prevailing Wage Law shall register on the Division of Labor and Industry’s website at www.dllr.state.md.us/labor prior to the commencement of work.

Contractor/Subcontractor Project Management. Upon registration under Contractor/Subcontractor Registration of this Chapter, contractors and subcontractors are required to provide information to the Division of Labor and Industry on its website at www.dllr.state.md.us/labor about each public work contract including the following:

- (a) The prevailing wage project number for each prevailing wage project the contractor or subcontractor is performing work on; and
- (b) The contract value for each prevailing wage project the contractor or subcontractor is performing work on.

Contractor/Subcontractor Notification to Subcontractors. Contractors and subcontractors who hire subcontractors on a public work contract subject to the Maryland Prevailing Wage Law shall provide all subcontractors with written notice of the following requirements:

- (a) Subcontractors are required to register on the Division of Labor and Industry’s website at www.dllr.state.md.us/labor prior to the commencement of work;
- (b) After registration, subcontractors are required to enter certain information about each prevailing wage project on the Division of Labor and Industry’s website; and
- (c) Subcontractors performing work on a prevailing wage project valued at \$100,000 or more are required to make payments to approved apprenticeship programs or to the Fund for workers in classifications listed on the prevailing wage determination, or both.

Contractors and subcontractors shall retain a copy of the written notice required in §A of this Regulation that was provided to all subcontractors for inspection and review by the Commissioner for three years.

Contributions to the Fund. *Currently not being enforced*

Contributions to Approved Apprenticeship Programs. *Currently not being enforced*
Contractor/Subcontractor Obligations Relating to Approved Apprenticeship Program.



Maryland
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**CONTRACT PROVISIONS
SPECIAL PROVISION**

CONTRACT NO. MA-2435-000-002

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- (a) Contractors and subcontractors are required to complete and to file on the Division of Labor and Industry's website at www.dllr.state.md.us/labor the Monthly Certified Verification Report which shall include the following:
- (1) A list of the contributions to each approved apprenticeship program during the last month;
 - (2) A statement signed by the contractor or subcontractor that the information is correct and that the contractor or subcontractor has complied with the requirements of Subtitle 6, Title 17, State Finance and Procurement Article, Annotated Code of Maryland.
- (b) Contractors and subcontractors are required to submit the Monthly Certified Verification Report by the 30th calendar day of each month for the previous month.
- (c) Contractors and subcontractors are required to complete and to file on the Division of Labor and Industry's website at www.dllr.state.md.us/labor the Yearly Certified Verification Report which shall include the following:
- (1) A summary of monthly contributions with total annual contributions; and
 - (2) A statement signed by the contractor or subcontractor that the information is correct and that the contractor or subcontractor has complied with the requirements of Subtitle 6, Title 17, State Finance and Procurement Article, Annotated Code of Maryland.
- (d) Contractors and subcontractors shall post a copy of their Yearly Certified Verification Report in a prominent and easily accessible place in the workplace near where work is performed.

Notification to Division of Labor of Changes to Designated Approved Apprenticeship Programs or Fund. Contractors and subcontractors shall provide the Commissioner with written notice of each approved apprenticeship program or the Fund to which it will make contributions. If a contractor or subcontractor changes their designation, it shall notify the Division of Labor and Industry 30 days prior to the change in designation.

Approved Apprenticeship Program Obligations. Upon notification from the Division of Labor and Industry that the approved apprenticeship program has been designated for contributions by a contractor or subcontractor, the approved apprenticeship program shall register on the Division of Labor and Industry's website at www.dllr.state.md.us/labor.

After registering under COMAR 09.12.43.03A of this Regulation, an approved apprenticeship program will receive a summary of contractor and subcontractor contributions from the Division of Labor and Industry on a monthly basis and shall comply with the following:



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- (a) Review and certify that the contribution amounts are correct;
- (b) Certify that all funds received are used solely for the purpose of improving or expanding apprenticeship training in the State; and
- (c) File a response within 30 days of receipt of the Division of Labor and Industry's summary.

Enforcement Procedures.

- (a) The Commissioner may investigate whether Subtitle 6 of Title 17 of the State Finance and Procurement Article, Annotated Code of Maryland, has been violated:
 - (1) On the Commissioner's own initiative;
 - (2) On receipt of a written complaint; or
 - (3) On referral from another State agency.
- (b) The Commissioner may require a contractor, subcontractor, or an approved apprenticeship program to produce records as part of its investigation.
- (c) The Commissioner may enter a place of business to:
 - (1) Interview individuals; or
 - (2) Review and copy records.
- (d) If after an investigation, the Commissioner determines that there is a violation of Subtitle 6, Title 17 of the State Finance and Procurement Article, Annotated Code of Maryland or a regulation adopted to carry out the title, the Commissioner shall issue a citation that shall:
 - (1) Describe in detail the nature of the alleged violation;
 - (2) Cite the provision of law or regulation that is alleged to have been violated; and
 - (3) State the penalty, if any.
- (e) Within a reasonable amount of time after the issuance of the citation, the Commissioner shall send a copy of the citation to the alleged violator by certified mail with notice of the opportunity to request a hearing.



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- (f) Within 15 days after the alleged violator receives the citation, the employer may submit a written request for a hearing on the citation and proposed penalty.
- (g) If a hearing is not requested within fifteen days, the citation, including any penalties, shall become a final order of the Commissioner.
- (h) If there is a request for a hearing, the Commissioner may delegate the hearing to the Office of Administrative Hearings in accordance with Title 10, Subtitle 2 of the State Government Article, Annotated Code of Maryland.
- (i) A proposed decision of an administrative law judge shall become a final order of the Commissioner unless, within 15 days of the issuance of the proposed decision:
 - (1) The Commissioner orders review of the proposed decision; and
 - (2) The alleged violator submits to the Commissioner a written request for review of the proposed decision.
- (j) After review of the proposed decision under Subsection I, with or without a hearing on the record, the Commissioner shall issue an order that affirms, modifies or vacates the proposed decision.



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**MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
(MUTCD) REQUIREMENTS**

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NOTICE TO ALL HOLDERS OF THIS CONTRACT DOCUMENT

**MANUAL ON UNIFORM TRAFFIC CONTROL
DEVICES (MUTCD) REQUIREMENTS**

On December 16, 2009 a final rule adopting the 2009 Edition of the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) was published in the Federal Register. States must adopt the 2009 National MUTCD, or a State Manual having similar standards, as their legal State standard for traffic control devices within two years.

Notwithstanding any reference to the standards presented in the 2006 MdMUTCD, all traffic control devices (temporary or permanent) utilized on Administration projects shall be in conformance with the requirements provided in the 2009 Edition of the FHWA's MUTCD for Streets and Highways.



SP 1-1 PROJECT DESCRIPTION

CONTRACT NO.: MA-2435-000-002

TITLE: Miscellaneous Paving Repairs

FACILITY: Baltimore Harbor Tunnel, Fort McHenry Tunnel, Francis Scott Key Bridge, Governor Harry W. Nice Memorial Bridge, Inter County Connector, John F. Kennedy Memorial Highway, Point Breeze Office Complex, Thomas J. Hatem Memorial Bridge, William Preston Lane Jr. Memorial Bridge

COUNTY: Anne Arundel County, Baltimore City, Baltimore County, Cecil County, Charles County, Harford County, Howard County, Montgomery County, Prince George's County, Queen Anne's County

ADVERTISED: **October 19, 2010**

PRE-BID MEETING: **10:00am on November 3, 2010 in the Conference Room at the Maryland Transportation Authority, 300 Authority Drive, 2nd Floor, Engineering/ Building, Baltimore, MD 21222**

PROJECT CONTACT: **Project Manager: Mr. Bhuvan Eshwar at (410) 537-7834**
Contract Administration: Ms. Maggie Johnson at (410) 537-7807

BIDS DUE: **12 Noon, December 2, 2010** in the Bid Box on the 1st floor of the Maryland Transportation Authority, Engineering Building, 300 Authority Drive, Baltimore, MD 21222

CLASSIFICATION: Class G (\$10,000,001 to \$15,000,000)

CONTRACT TIME: 1825 Calendar Days

LIQUIDATED DAMAGES: N/A

MINIMUM MBE GOALS: Overall 26%
African-American owned businesses 0%
Women owned businesses 0%

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



PROJECT DESCRIPTION

Miscellaneous Paving Repairs contract provides for the removal by grinding and replacement of bituminous concrete paving at bridge approaches, toll plazas, shoulders, acceleration and deceleration lanes, ramps, parking lots, joint repairs, slab failures, and mainline roadways which are experiencing surface distortion or distresses. The work on this contract is intended to be an "on call" contract.

The work under this contract may be performed at the facilities of Baltimore Harbor Tunnel, Fort McHenry Tunnel, Francis Scott Key Bridge, Governor Harry W. Nice Memorial Bridge, Inter County Connector, John F. Kennedy Memorial Highway, Point Breeze Office Complex, Thomas J. Hatem Memorial Bridge, and the William Preston Lane Jr. Memorial Bridge and related approach roadways located in Anne Arundel County, Baltimore City, Baltimore County, Cecil County, Charles County, Harford County, Howard County, and Queen Anne's County.

- 1) All engineering and layout services if required will be provided by the Authority.
- 2) It is anticipated that all project assignments will consist of a minimum of fifty (50) tons of bituminous concrete paving.
- 3) This contract will cover five (5) years of pavement grinding and repairs as indicated in this proposal. The term will begin one day after Notice to Proceed of the Contract.
- 4) In case of an emergency repair as designated by the Engineer, the Contractor shall be on site to perform work within four (4) hours of notification. On a normal repair, work is expected to take place within two weeks of notification.

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. In addition, all terms and conditions of the Standard Specifications for Construction and Materials dated July 2008, revisions thereof, or additions thereto shall apply to this IFB unless specified herein

SP 1-3 ORIGINAL FACILITY PLANS AND SITE VISITS

The original facility plans are on file at the Engineering Building of the Francis Scott Key Bridge and will be made available for inspection to prospective bidders. Parties interested in viewing the plans should contact Mr. Bhuvan Eshwar at (410) 537-7834. Parties interested in visiting the site should contact the following:



Facility	Contact Person	Phone Number
Baltimore Harbor Tunnel	Ms. Martara Hannah, Tunnel Administrator	(410) 537-1250
Fort McHenry Tunnel	Ms. Martara Hannah, Tunnel Administrator	(410) 537-1250
Francis Scott Key Bridge	Mr. Charles Raycob, Facility Administrator	(410) 537- 7513
Governor Harry W. Nice Memorial Bridge	Mr. Gary Jackson, Facility Administrator	(410) 537-6807
John F. Kennedy Memorial Highway	Mr. John Lohmeyer, Facility Administrator	(410) 537-1107
Point Breeze Office Complex	Mr. Carroll Hicks	(410) 537-5695
Thomas J. Hatem Memorial Bridge	Mr. John Lohmeyer, Facility Administrator	(410) 537-1107
William Preston Lane Memorial Bridge	Mr. Gordon Garretson, Deputy Facility Administrator	(410) 537-6659
Inter County Connector	Mr. Ken Knutson, Facility Administrator	(410) 537-8372

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 Maryland Transportation Authority (“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 10 days, the Subcontractor shall notify the Project Engineer in writing of the amount in dispute including the item numbers and payment quantity for each. The Project Engineer will then notify the Chief of Construction of the dispute. The Chief of Construction or his representative will verbally contact the prime Contractor within 48 hours to ascertain whether or not a performance dispute exists which necessitates non-payment to the Subcontractor. If a performance dispute exists, the prime Contractor must demonstrate that there is a valid basis to withhold payment from the Subcontractor. If the prime Contractor withholds payment from a Subcontractor, the prime Contractor shall provide to the Subcontractor written notice of the withholding of payment. The notice shall detail the reasons for withholding payment as well as the amount. A copy of the notice shall be provided to the Surety and the Authority. If no valid dispute exists, the prime Contractor will be directed to make immediate payment to the Subcontractor. The Subcontractor will be responsible for notifying the Chief of Construction if this payment is not made. Upon receipt of notification, the Chief of Construction will schedule a meeting with the Contractor and Subcontractor to verify and discuss the non-payment issue. This meeting will be held at the Authority’s offices within 2 working days of the Authority’s contact with the Subcontractor. If it is determined that the prime Contractor has



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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 Maintenance of Traffic for times permitted for lane closures and construction for the Baltimore Harbor Tunnel, Fort McHenry Tunnel, Francis Scott Key Bridge, Governor Harry W. Nice Memorial Bridge, John F. Kennedy Memorial Highway, Thomas J. Hatem Memorial Bridge, and William Preston Lane Jr. Memorial Bridge.

At the Point Breeze Office Complex, the Contractor will be allowed to work twenty-four (24) hours a day, seven (7) days a week.

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



3. The Authority requires the following minimum levels of insurance coverage for this contract:

- a) Worker's Compensation and Employer's Liability

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

- b) Comprehensive General Liability Insurance

The Contractor shall maintain Comprehensive General Liability Insurance in the amount of at least One Million Dollars (\$1,000,000.00) Combined Single Limit for Bodily Injury Liability and Property Damage Liability Insurance per occurrence and in the aggregate. Such insurance shall specifically include the Comprehensive General Liability Broad Form Endorsement and indicate explosion, collapse, and underground damage coverage.

- c) Comprehensive Automobile Liability Insurance

The Contractor shall maintain Comprehensive Automobile Liability Insurance (including all automotive equipment owned, operated, rented, or leased), in the amount of at least Five Hundred Thousand (\$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) 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 termination for 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:
5. Upon acceptance of a bid, provide the Authority with a list of Minority Businesses with whom the Contractor negotiated, including price quotes from Minority and Non-minority firms.

Third Tier Subcontracting:

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



Waivers:

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

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

Criminal Fraud Provisions:

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

SP 1-8 PROGRESS SCHEDULE REQUIREMENTS

Refer to Section 110 of the Standard Specifications.

SP 1-9 CORPORATE REGISTRATION

A foreign corporation is any corporation not incorporated under the Laws of the State of Maryland. All foreign corporations, prior to performing any services for the Authority, must register with the Maryland State Department of Assessments 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 Assessments 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.

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 to remove 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 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.



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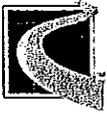
**GENERAL PROVISIONS
GP SECTION 1
DEFINITIONS AND TERMS**

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 Technology all references to the Maryland State Highway Administration’s offices and positions shall mean the Authority’s corresponding offices and positions.



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

GP-1.05 DEFINITIONS

Add the following definitions:

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



**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 he has investigated and satisfied himself 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 he has satisfied himself 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 himself with the available information may not relieve him 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 his bid on forms he has generated in the development of his 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
- (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 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. Sandra E. Clifford
Chief Procurement Officer
Maryland Transportation Authority
300 Authority Drive
Baltimore, MD 21222



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

GP-2.23 BID PROTESTS

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

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

All protests relating to this solicitation, the selection, and/or award must be filed in writing with the Authority's Procurement Officer, within the time limitations set forth in COMAR 21.10.07 and 21.10.02. Bid protests shall be filed not later than 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.



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GENERAL PROVISIONS
GP SECTION 4
SCOPE OF WORK

GP-4.10 WARRANTY OF CONSTRUCTION

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

Delete: The first paragraph in its entirety.

Insert: The following:

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



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

GP-5.12 FAILURE TO MAINTAIN ENTIRE PROJECT

Delete Section GP-5.12 in its entirety

Insert: Revise the paragraph to read as follows:

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



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**GENERAL PROVISIONS
GP SECTION 9
PAYMENT**

GP-9.05 LATE PAYMENTS

ADD the following:

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



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

TC-4.01 SHOP PLANS AND WORKING DRAWINGS.

Section TC 4.01 of the Specifications is amended to add:

All shop plans and working drawings for this project shall be submitted to:

Maryland Transportation Authority
Engineering Division
304 Authority Drive
Baltimore, Maryland 21222-2200
ATTN: Mr. David Ferrara, Director of Construction

The Contractor shall allow a minimum of four (4) weeks turn around time on all drawings from the date they are received by the Authority. All shop plans and working drawings shall be reviewed and approved by the Contractor prior to submitting for approval to the Maryland Transportation Authority and shall be submitted by the General Contractor only. No drawings sent to the Authority directly by subcontractors, fabricators, etc. will be accepted. Ten (10) sets of drawings shall be submitted for approval.

Acceptance of a material source by the Engineer does not constitute approval of the material as a substitute as an "equal". Submission of a material as an "or equal" must be done in accordance with the following paragraphs:

All shop drawings, regardless if "Submitted as Specified" or "Submitted as Equal to Specified," shall be furnished with complete, specific, detailed information from the manufacturer or supplier or the material or equipment the Contractor proposes to furnish, in which the requirements of the Specifications are clearly shown to be met. This shall include a point by point comparison with the detail requirements of the Specifications.

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 material or equipment specified, all shop drawings shall conform to the following requirements, conditions, and procedure:



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1. Substitution of equipment or materials other than those specified will be considered, providing, in the opinion of the Engineer, such equipment or material is equal to, or better than specified. The decision of the Engineer with respect to approval or disapproval of any material or equipment proposed to be substituted as an "or equal" is final. The Contractor shall have no claim of any sort by reason of such decision.
2. If the Contractor proposes to substitute materials or equipment as "or equal" to those specified, it shall be his responsibility to furnish, in addition to the information discussed above, a point by point comparison of the material or equipment specified under the Contract and that proposed to be substituted. The burden of responsibility in furnishing this information is with the Contractor.

If incomplete or irrelevant data is submitted as evidence of compliance with this section of the Specifications, the data will be returned and the request for approval will be denied.



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

TC-4.02 FAILURE TO 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 prorata share of the lump sum price bid for Maintenance of Traffic or an amount prorated from the Engineer's estimate, whichever is more. The amount prorated will be the per diem amount established by using the working days (based upon calendar dates when required) divided into the total value of the bid item or the Engineer's estimate of that item, whichever is more.

The above noted deduction will be assessed on the next progress 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 \$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



Maryland
Transportation
Authority

SPECIAL PROVISIONS

CONTRACT NO. MA-2435-000-002

Page 1 of 1

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 thirty (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.



**TC SECTION 7
PAYMENT**

TC-7.09 PRICE ADJUSTMENT FOR DIESEL FUEL

(a) **General.** A Price Adjustment (PA) will be made to provide additional compensation to the Contractor or a credit to the Administration for the fluctuation in the cost of diesel fuel.

The monthly index price used for calculating the PA will be the On-Highway Diesel Fuel Price for the Central Atlantic Region published by the U.S. Department of Energy, Energy Information Administration, at www.eia.doe.gov. The monthly index price will be the average of the weekly prices posted for the month.

The prevailing base index price will be the price specified for Diesel Fuel currently posted at www.marylandroads.com (Business with SHA/Contracts, Bids, and Proposals) prior to bid opening. A historical database will be maintained by the Administration.

The adjustment factors for specific categories of the work are included in Table TC-7.09. Category A-D will apply to this Contract.

The PA will be calculated when the index for the current month increases or decreases more than 5 percent of the base index. The total dollar amount of fuel adjustment will be limited to 5 percent of the Contract Total Amount as bid. If an increase or decrease in costs exceeds 5 percent of the Contract Total Amount as bid, no further adjustment will be made.

Computations for adjustment will be as follows:

$$\text{Percent Change} = [(E - B)/B] \times 100$$

$$\text{PA} = [E - (B \times D)] \times F \times Q$$

Where:

PA = Amount of the price adjustment

E = Current monthly index price

B = Prevailing base index price

D = 1.05 when increase is over 5%; 0.95 when decrease is over 5%

F = Applicable fuel adjustment factor from Table TC-7.09

Q = Quantity of individual units of work



TABLE TC-7.09

COST ADJUSTMENT FACTORS FOR DIESEL FUEL			
CATEGORY	DESCRIPTION	UNITS	FACTOR
A	Sum of Cubic Yards of Excavation in Category 200	Gallons/Cubic Yard	0.29
B	Sum of Structure Concrete in Category 400	Gallons/Cubic Yard	1.892
C	Sum of Aggregate Base in Category 500	Gallons per ton	0.60
D	Sum of HMA in Category 500	Gallons per ton	3.50
E	Sum of Rigid Concrete Pavement in Category 500	Gallons/Cubic Yard	0.95

Any difference between the checked final quantity and the sum of quantities shown on the monthly estimates for any item will be adjusted by the following formula:

$$FPA = [(FCQ \div PRQ) - 1] \times EA$$

Where:

- FPA = Final PA for the item that increased or decreased
- FCQ = Final Checked Quantity of the item
- PRQ = Total Quantity of the item reported on the most recent estimate
- EA = Total PA of the item shown on most recent estimate

(b) **Price Adjustment Criteria and Conditions.** The following criteria and conditions will be considered in determining the PA.

(1) **Payment.** The PA will be computed on a monthly basis. PA resulting in increased payment to the contractor will be paid under the item Price Adjustment for Diesel Fuel. The item amount will be established by the Administration, and shall not be revised by the Contractor. PA resulting in a decreased payment will be deducted from monies owed the Contractor.

The monthly base price for determining a PA for all work performed after the Contract completion date, as revised by an approved time extensions, will be the monthly base price at the time of the Contract completion date (as extended) or at the time the work was performed, whichever is less.



- (2) **Expiration of Contract Time.** When eligible items of work are performed after the expiration of Contract time with assessable liquidated damages, no PA will be made.
- (3) **Final Quantities.** Upon completion of the work and determination of final pay quantities, an adjusting Change Order will be prepared to reconcile any difference between estimated quantities previously paid and the final quantities.
- (4) **Inspection of Records.** The Administration reserves the right to inspect the records of the Contractor to ascertain actual pricing and cost information for the diesel fuel used in the performance of the applicable items of work..
- (5) **Additional Work.** When applicable items of work, as specified herein, are added to the Contract as additional work, in accordance with the Contract provisions, no PA will be made for the fluctuations in the cost of diesel fuel unless otherwise approved by the Engineer. The Contractor shall use current fuel costs when preparing required backup data for work to be performed at a negotiated price.
- (6) **Force Account.** Additional work performed on a force account basis, reimbursement for material, equipment, and man-hours as well as overhead and profit markups will be considered to include full compensation for the current cost of diesel fuel.



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Authority

SPECIAL PROVISIONS

100.01 – MOBILIZATION – PAVING EQUIPMENT

CONTRACT NO. MA-2435-000-002

Page 1 of 1

SECTION 100.01 MOBILIZATION – PAVING EQUIPMENT

100.01.01 DESCRIPTION

Mobilization shall consist of all work and operations necessary for the assembling and setting up for the paving operation, including the movement of personnel and equipment to and from the project site, and all other work and operations which must be performed prior to beginning of work on compensable items, and after completion of work, at the project site. The cost of required insurance and bonds and/or any other initial expense required for the start of work shall be included in this item.

100.01.04 MEASUREMENT AND PAYMENT

This item will not be measured but will be paid for on a per occurrence basis under the pertinent Mobilization – Paving Equipment item based on the following facility, or partial facility, where the work is located (see location sheets):

- A-1 Baltimore Harbor Tunnel (I-895)
- A-2 Francis Scott Key Bridge (I-695)
- A-3 Fort McHenry Tunnel (I-95)
- B-1 John F. Kennedy Memorial Highway (I-95) from the I-895 & I-95 merge to the Susquehanna River
- B-2 I-95 from the Susquehanna River to the Delaware Line
- C Thomas J. Hatem Memorial Bridge (US 40 over Susquehanna River)
- D William Preston Lane Jr. Memorial Bridge (US 50/US 301)
- E Governor Harry W. Nice Memorial Bridge (US 301)
- F Point Breeze Office Complex (Broening Highway)
- G Inter County Connector (MD 200)



Maryland
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Authority

SPECIAL PROVISIONS

CONTRACT NO. MA-2435-000-002

100.02 – MOBILIZATION – PAVEMENT REMOVAL EQUIPMENT

Page 1 of 1

SECTION 100.02 MOBILIZATION – PAVEMENT REMOVAL EQUIPMENT

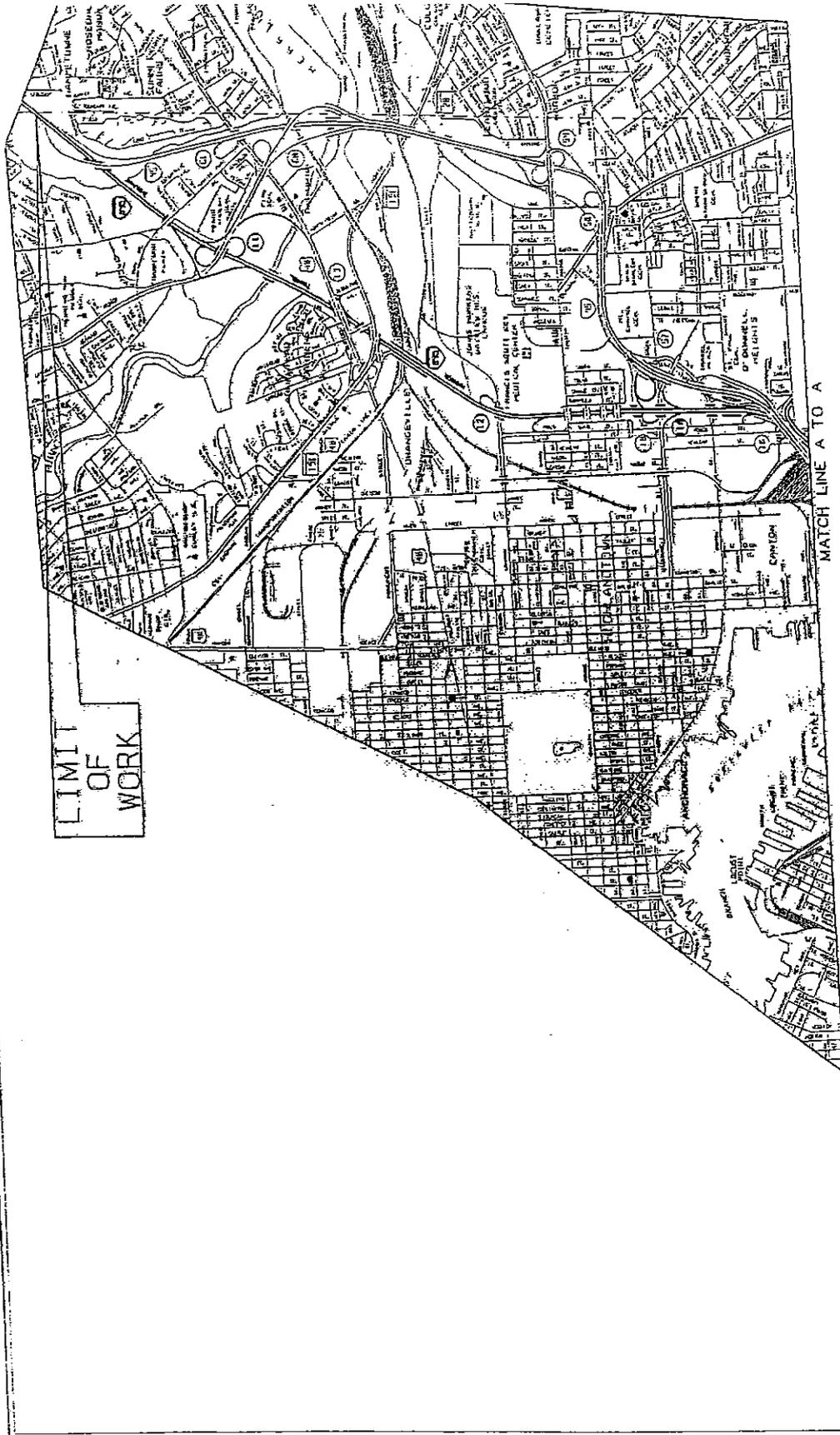
100.02.01 DESCRIPTION

Mobilization shall consist of all work and operations necessary for the assembling and setting up for the pavement removal operation, including the movement of personnel and equipment to and from the project site, and all other work and operations which must be performed prior to beginning of work on compensable items, and after completion of work, at the project site. The cost of required insurance and bonds and/or any other initial expense required for the start of work shall be included in this item.

100.02.04 MEASUREMENT AND PAYMENT

This item will not be measured but will be paid for on a per occurrence basis under the pertinent Mobilization – Pavement Removal Equipment item based on the following facility, or partial facility, where the work is located (see location sheets):

- A-1 Baltimore Harbor Tunnel (I-895)
- A-2 Francis Scott Key Bridge (I-695)
- A-3 Fort McHenry Tunnel (I-95)
- B-1 John F. Kennedy Memorial Highway (I-95) from the I-895 & I-95 merge to the Susquehanna River
- B-2 I-95 from the Susquehanna River to the Delaware Line
- C Thomas J. Hatem Memorial Bridge (US 40 over Susquehanna River)
- D William Preston Lane Jr. Memorial Bridge (US 50/US 301)
- E Governor Harry W. Nice Memorial Bridge (US 301)
- F Point Breeze Office Complex (Broening Highway)
- G Inter County Connector (MD 200)



CONTRACT NO.
DRAWING NO.
A-1
SHEET NO. 1 OF 1

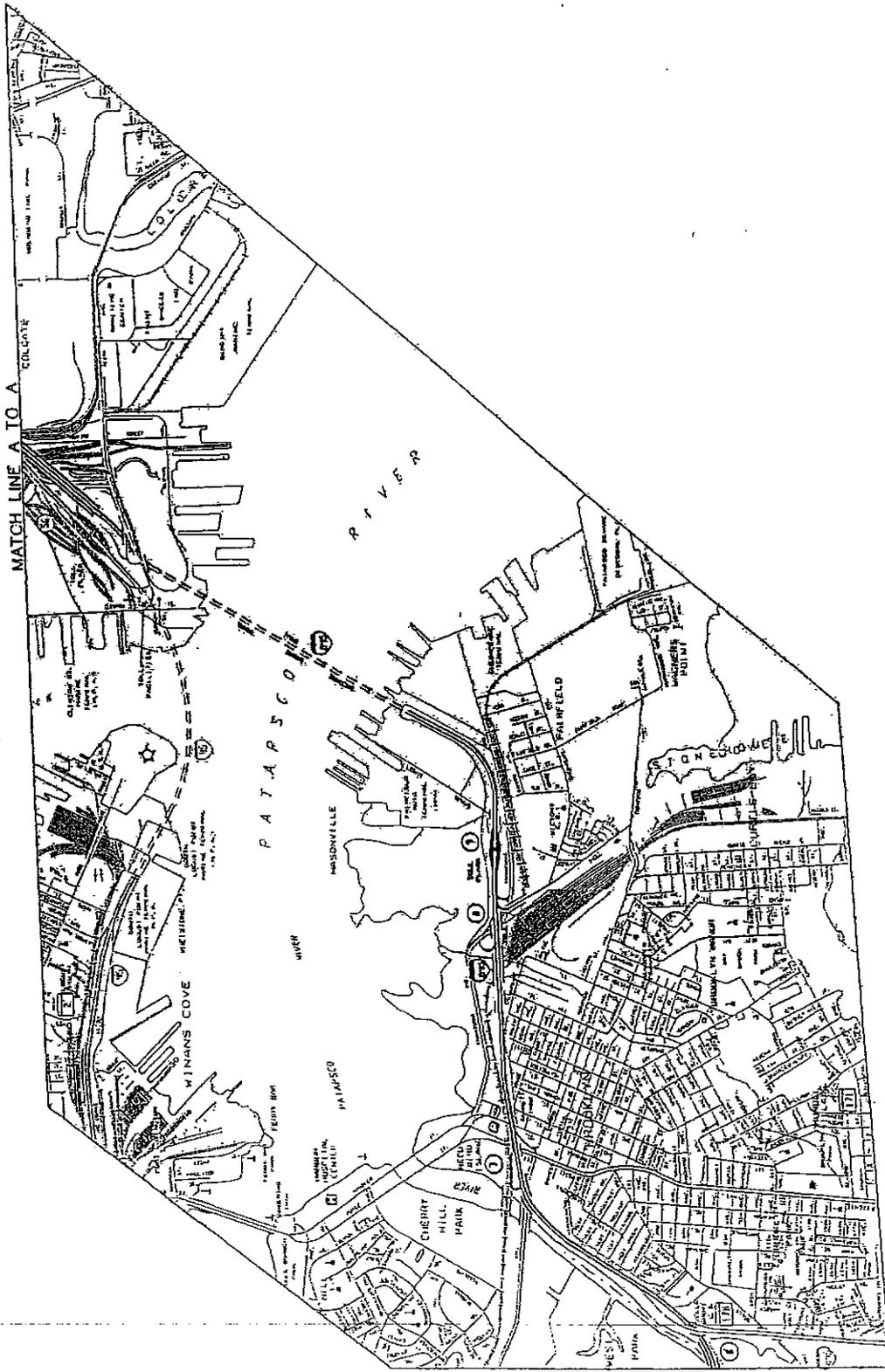
**BALTIMORE HARBOR TUNNEL (I-895)
MOBILIZATION LOCATION A-1
MISCELLANEOUS PAVING REPAIRS
1895-195 SPLIT TO MD. RTE. 1**

DESIGNED BY:
CHECKED BY:
DRAWN BY:
DATE:
SCALE:

Maryland Transportation Authority
- Engineering Division -

300 Authority Drive
Baltimore, MD. 21222

NOTES:



CONTRACT NO.
DRAWING NO. A-1
SHEET NO. 2 OF 2

**BALTIMORE HARBOR TUNNEL (I-895)
MOBILIZATION LOCATION A-1
MISCELLANEOUS PAVING REPAIRS
1895-196 SPLIT TO MD.RTE.1**

DESIGNED BY: A.E.N.
CHECKED BY: S.A.P.
DRAWN BY: S.A.P.
DATE: _____
SCALE: N.T.S.

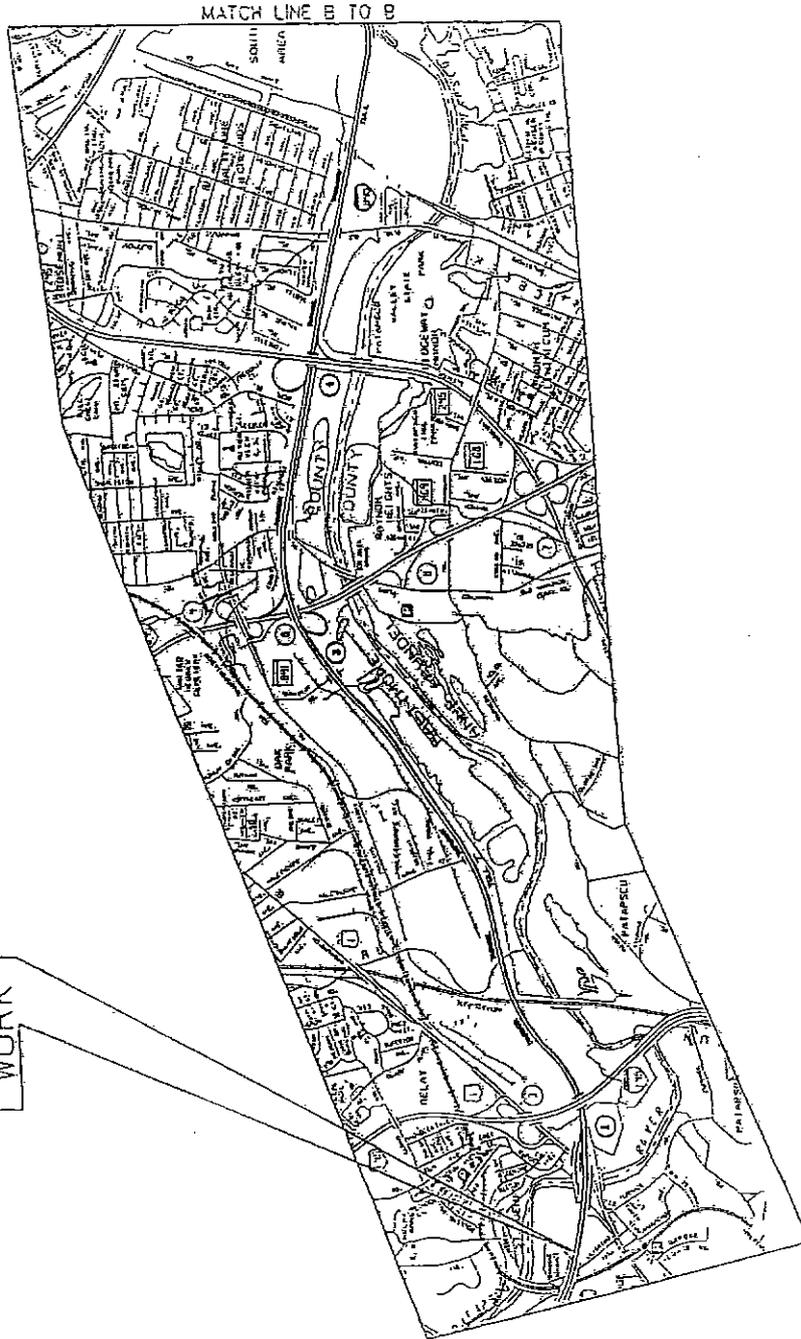
Maryland Transportation Authority
- Engineering Division -



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Baltimore, MD. 21222

NOTES:

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WORK



CONTRACT NO.
DRAWING NO.
A-1
SHEET NO.
3

**BALTIMORE HARBOR TUNNEL (J-895)
MOBILIZATION LOCATION A-1
MISCELLANEOUS PAVING REPAIRS
1895-195 SPLIT TO MD.RTE.1**

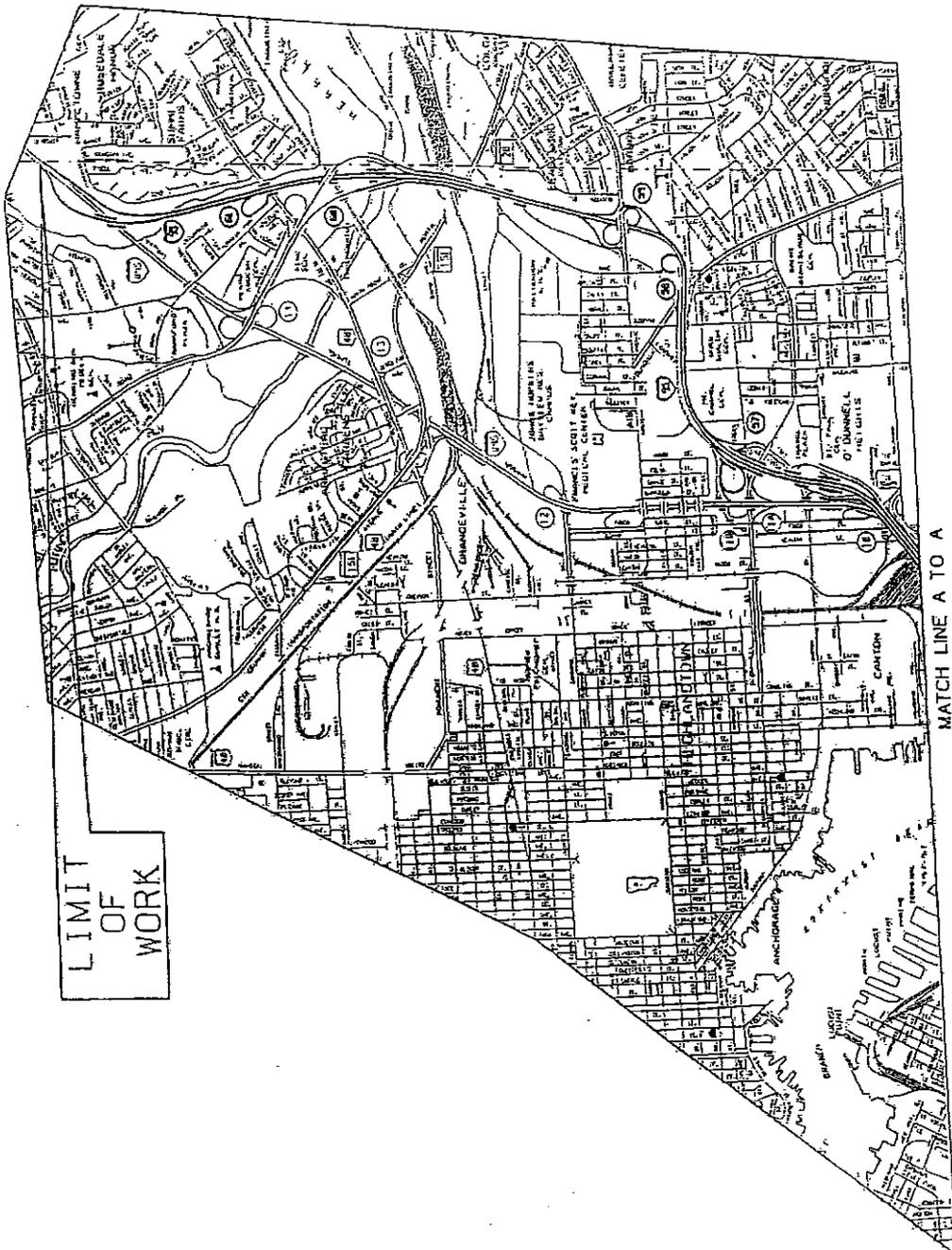
DESIGNED BY J.C.N. DRAWN BY C.A.P. CHECKED BY L.A.W.
CONST. REVIEW BY DATE SCALE W.T.S.

Maryland Transportation Authority
- Engineering Division -



300 Authority Drive
Baltimore, MD. 21224.

NOTES



LIMIT
OF
WORK

MATCH LINE A TO A

CONTRACT NO.
DRAWING NO.
A-3
SHEET NO.
1 OF

FORT McHENRY TUNNEL (I-95)
MOBILIZATION LOCATION A-3
MISCELLANEOUS PAVING REPAIRS
I-895 - I-95 SPLIT TO CATON AVE.

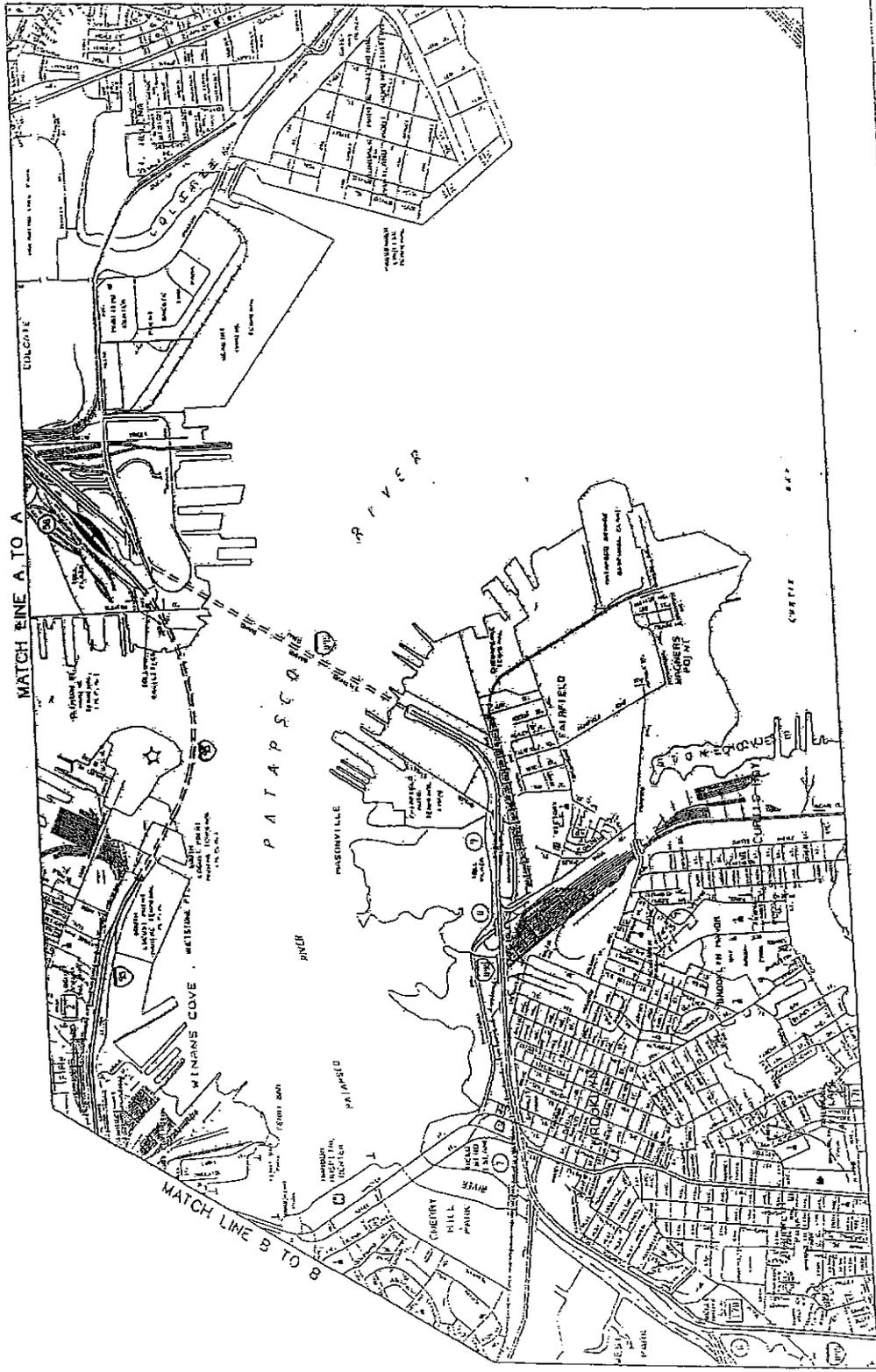
DESIGNED BY: J.C.A.
CONST. REVIEW BY:
DRAWN BY: C.A.P.
DATE:
CHECKED BY: S.P.S.
SCALE: N.T.S.

Maryland Transportation Authority
- Engineering Division -



300 Authority Drive
Baltimore, MD. 21222

NOTES



CONTRACT NO. _____
 DRAWING NO. **A-3**
 SHEET NO. **2**

DESIGNED BY: A.S.N.
 CONST. REVIEW BY: _____

DRAWN BY: C.A.V.
 CHECKED BY: R.A.W.
 SCALE: A.S.S.

DATE: _____

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 - Engineering Division -

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NOTES:



LIMIT
OF
WORK

CONTRACT NO.
DRAWING NO.
A-3
SHEET NO.
3 OF 3

FORT McHENRY TUNNEL (I-95)
MORILIZATION LOCATION A-3
MISCELLANEOUS PAVING REPAIRS
I-895 - I-95 SPLIT TO CATON AVE.

DESIGNED BY: J.A.M.
CONST. REVIEW BY: _____
DRAWN BY: C.M.P.
CHECKED BY: K.M.D.
SCALE: _____
DATE: _____

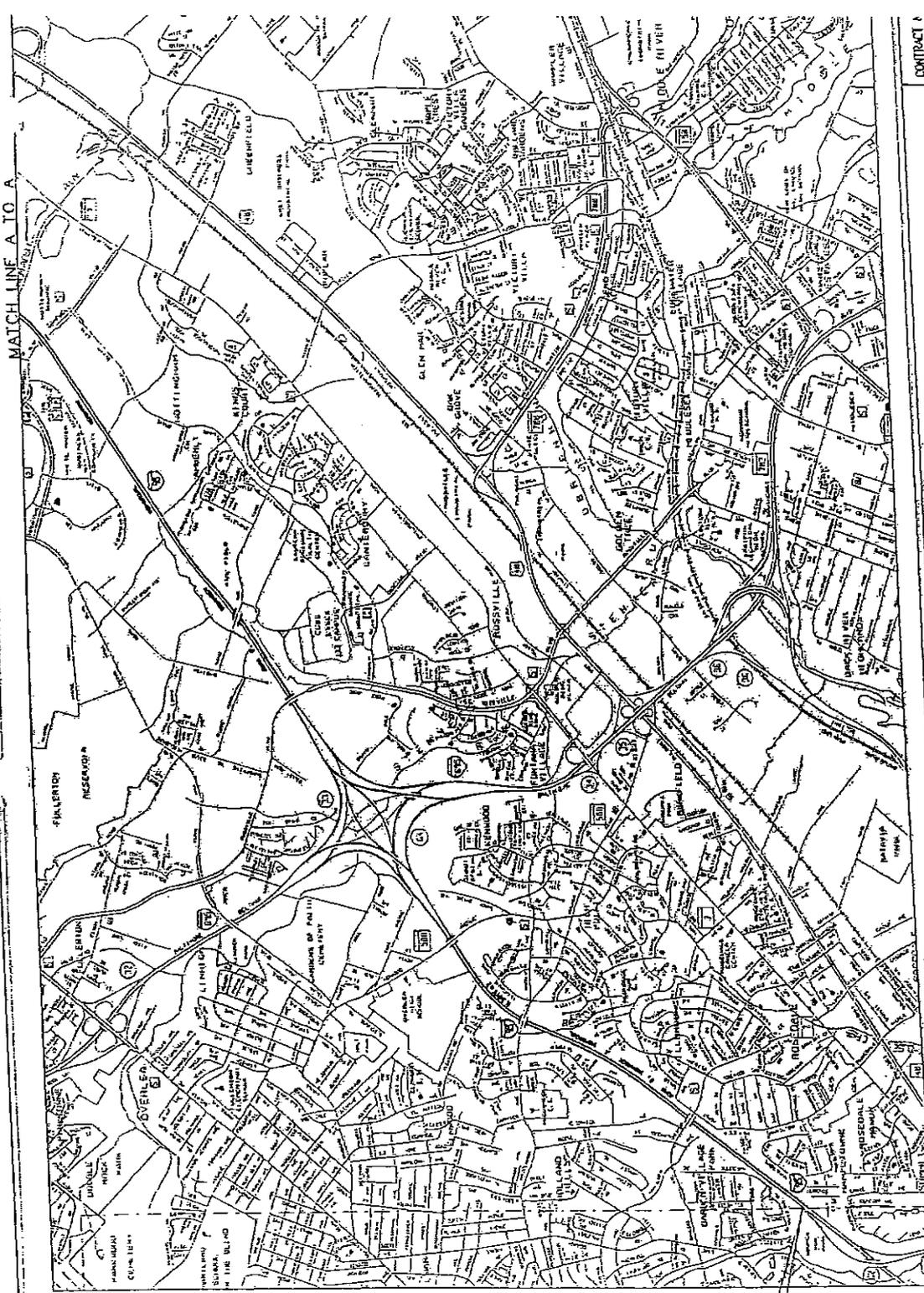
Maryland Transportation Authority
- Engineering Division -



300 Authority Drive
Baltimore, MD. 21222

NOTES

MATCH LINE A TO A



LIMIT OF WORK

CONTRACT NO. _____
 DRAWING NO. B-1
 SHEET NO. 1

JOHN F. KENNEDY MEMORIAL HIGHWAY (I-95)
 MOBILIZATION LOCATION B-1
 MISCELLANEOUS PAVING REPAIRS
 I-895 - I-95 SPLIT TO THE SUSQUEHANNA RIVER

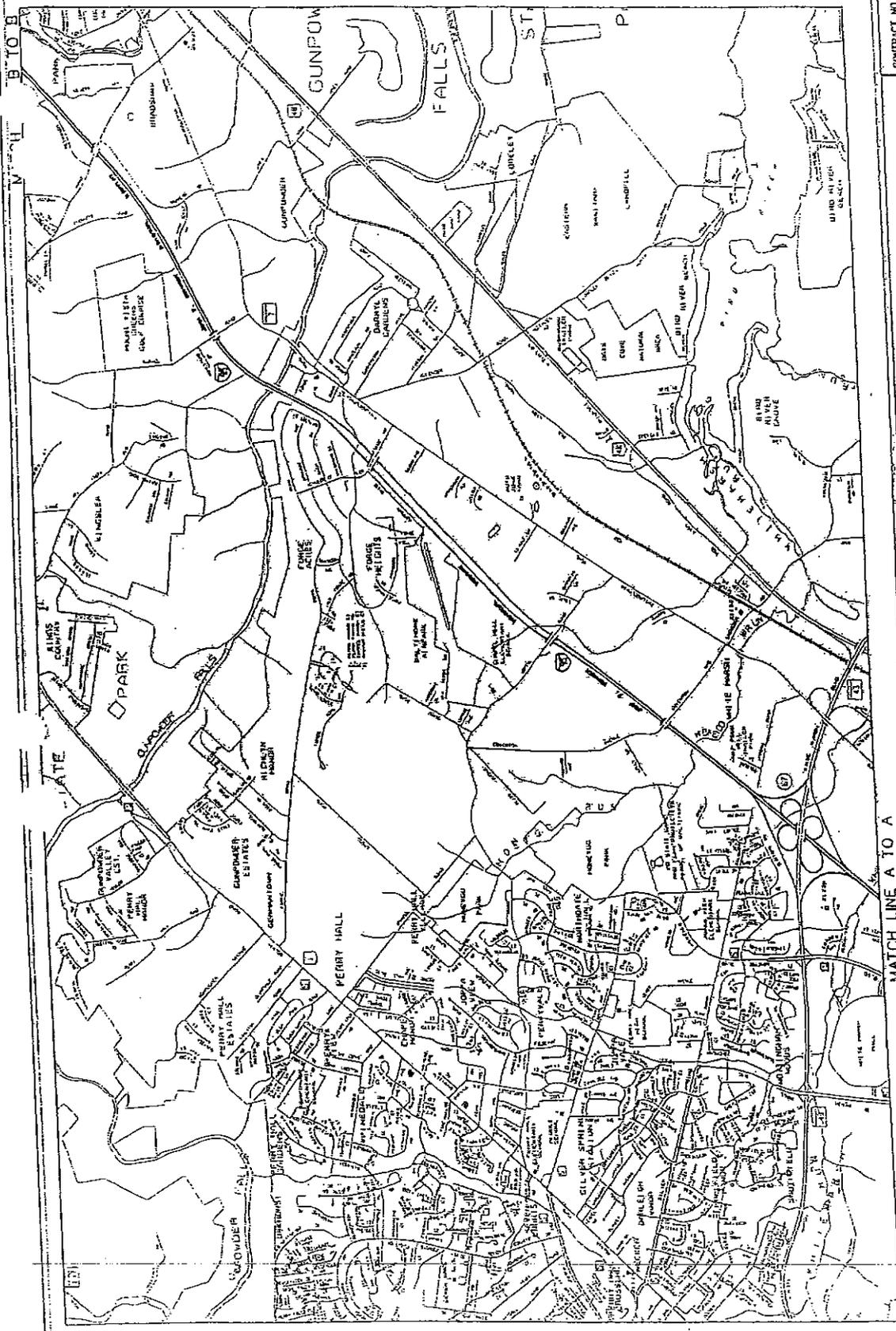
DESIGNED BY J.C.N.
 DRAWN BY C.A.V.
 CHECKED BY V.N.D.
 SCALE N.T.S.

CONST. REVIEW BY _____ DATE _____

Maryland Transportation Authority
 - Engineering Division -


 300 Authority Drive
 Baltimore, MD. 21222

NOTES

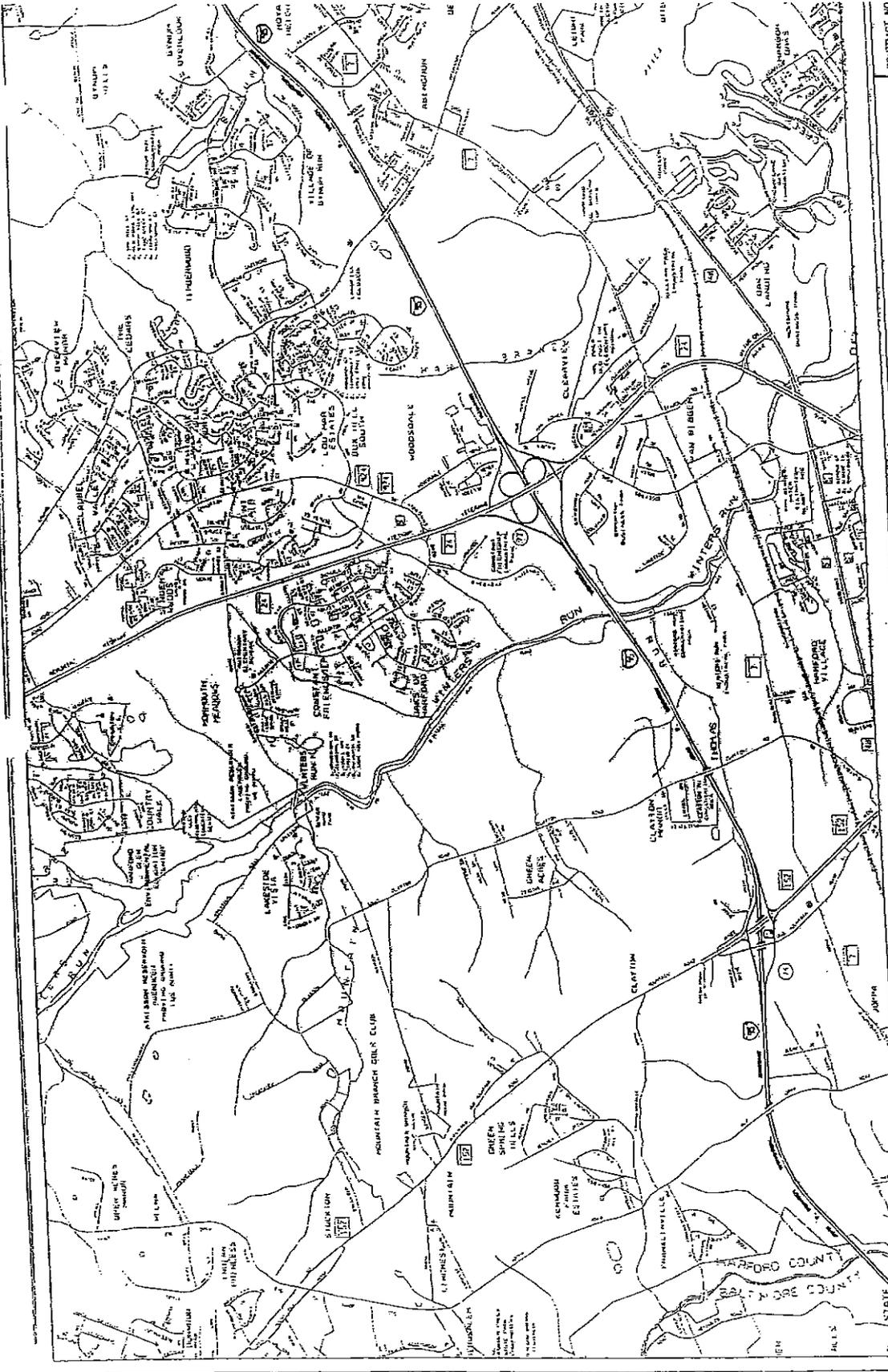


CONTRACT NO. DRAWING NO. B-1 SHEET NO. 2 OF 2	JOHN F. KENNEDY MEMORIAL HIGHWAY (I-95) MOBILIZATION LOCATION B-1 MISCELLANEOUS PAVING REPAIRS I-895 - I-95 SPLIT TO THE SUSQUEHANNA RIVER	DESIGNED BY: J.C.N.	CHECKED BY: S.A.D.	SCALE: N.T.S.
		DRAWN BY: C.A.P.	DATE:	CONST. REVIEW BY:

MATCH LINE A TO A
 Maryland Transportation Authority
 - Engineering Division -

 300 Authority Drive
 Baltimore, MD. 21222

NOTES



CONTRACT NO. _____
 DRAWING NO. **B-1**
 SHEET NO. **3**

JOHN F. KENNEDY MEMORIAL HIGHWAY (I-95)
MOBILIZATION LOCATION B-1
MISCELLANEOUS PAVING REPAIRS
I-895 - I-95 SPLIT TO THE SUSQUEHANNA RIVER

DESIGNED BY: J.A.C. -
 CONST. REVIEW BY: _____
 DRAWN BY: C.A.P. -
 CHECKED BY: W.A.W. -
 SCALE: _____
 DATE: _____

Maryland Transportation Authority
 - Engineering Division -

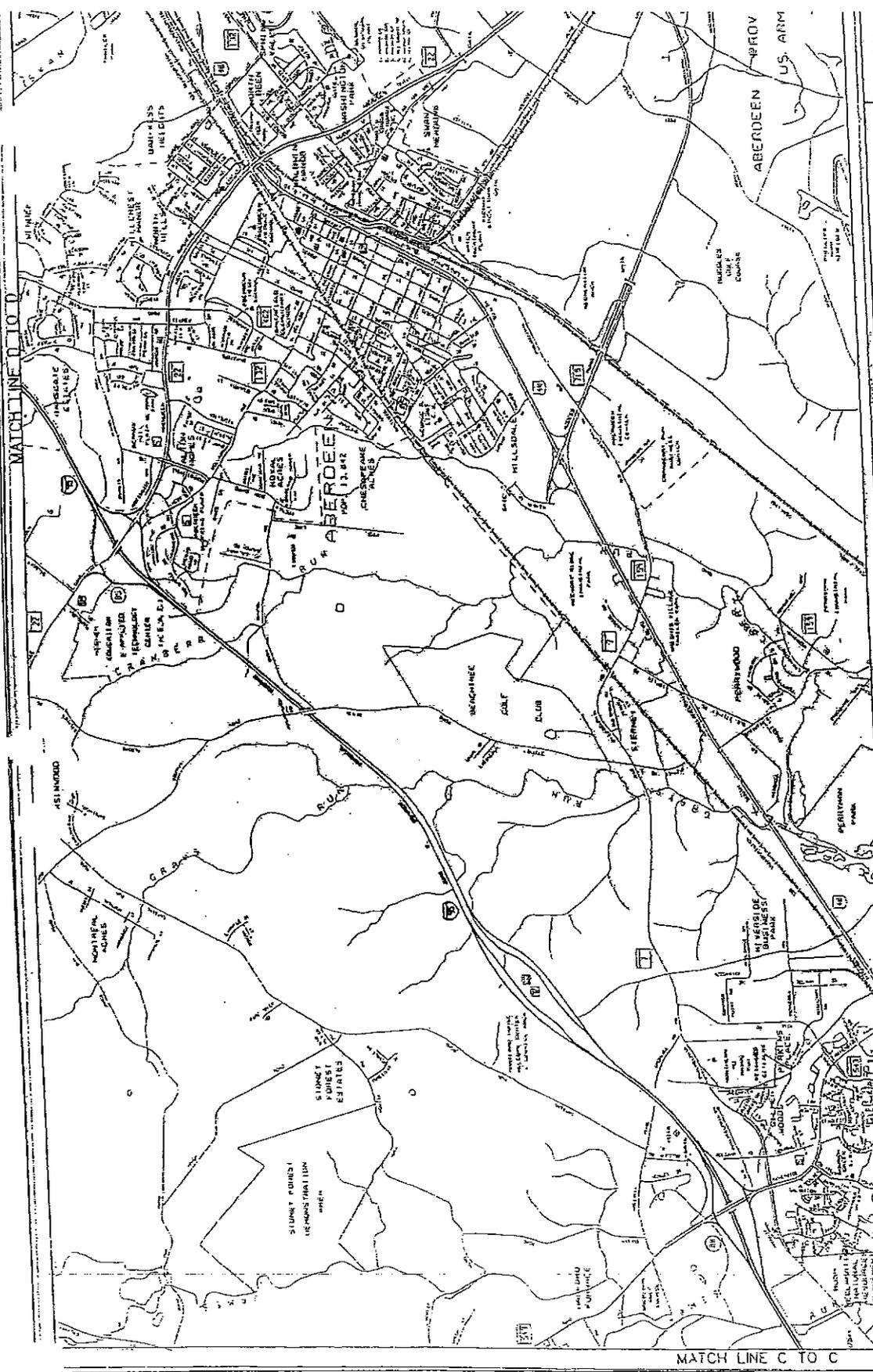

 300 Authority Drive
 Baltimore, MD. 21222

MATCH LINE B TO 8

NOTES:

MATCHLINE D TO D

MATCHLINE C TO C



MATCH LINE C TO C

CONTRACT NO. _____
 DRAWING NO. **B-1**
 SHEET NO. **4** OF **4**

JOHN F. KENNEDY MEMORIAL HIGHWAY (I-95)
MOBILIZATION LOCATION B-1
MISCELLANEOUS PAVING REPAIRS
I-895 - I-95 SPLIT TO THE SUSQUEHANNA RIVER

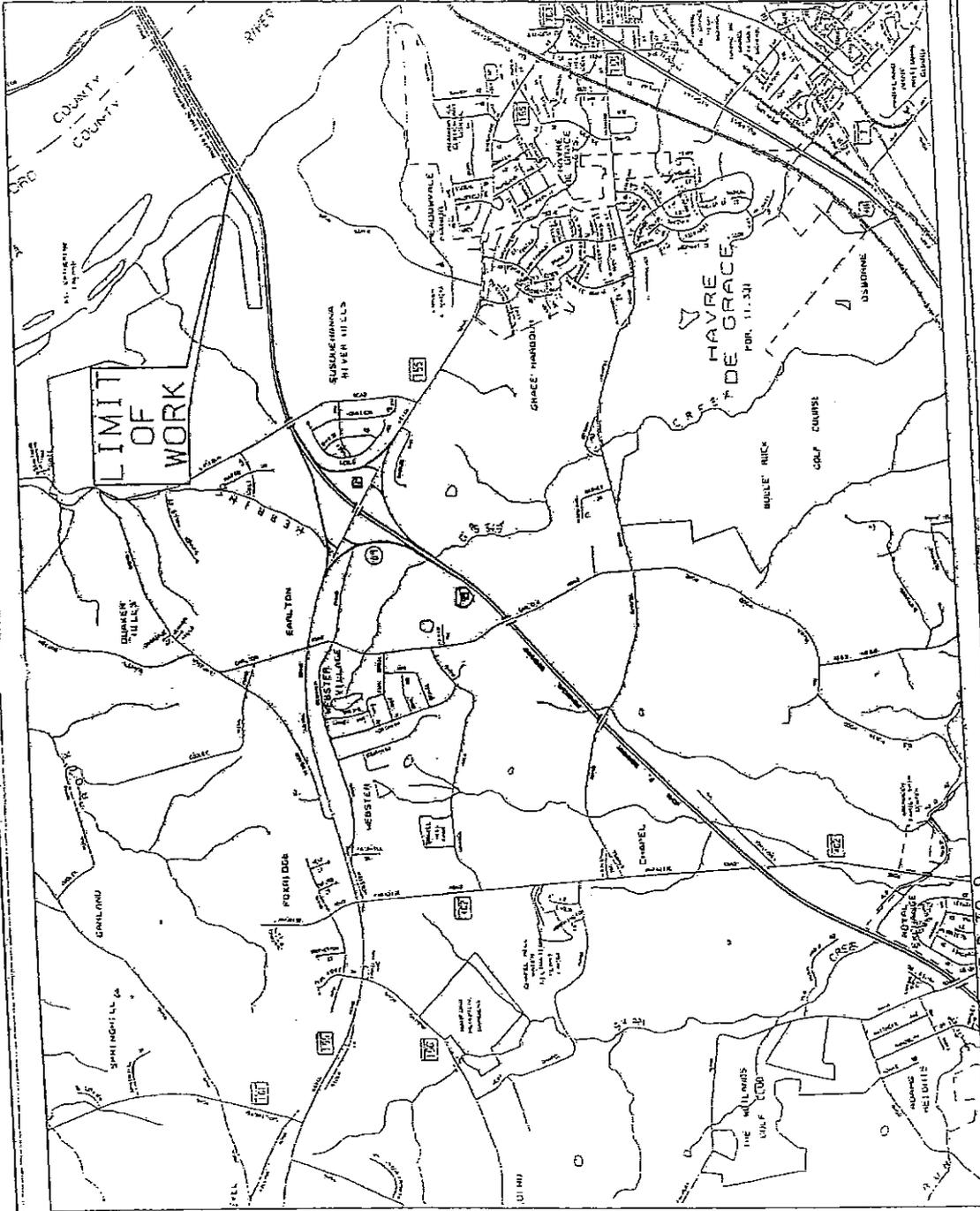
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 CONST. REVIEW BY: _____
 DRAWN BY: C.A.F. _____
 CHECKED BY: S.A.B. _____
 DATE: _____
 SCALE: N.T.S.

Maryland Transportation Authority
 - Engineering Division -



300 Authority Drive
 Baltimore, MD. 21222

NOTES:



CONTRACT NO.
DRAWING NO.
B-1
SHEET NO.
5 OF

**JOHN F. KENNEDY MEMORIAL HIGHWAY (I-95)
MOBILIZATION LOCATION II-1
MISCELLANEOUS PAVING REPAIRS
I-895 - I-95 SPLIT TO THE SUSQUEHANNA RIVER**

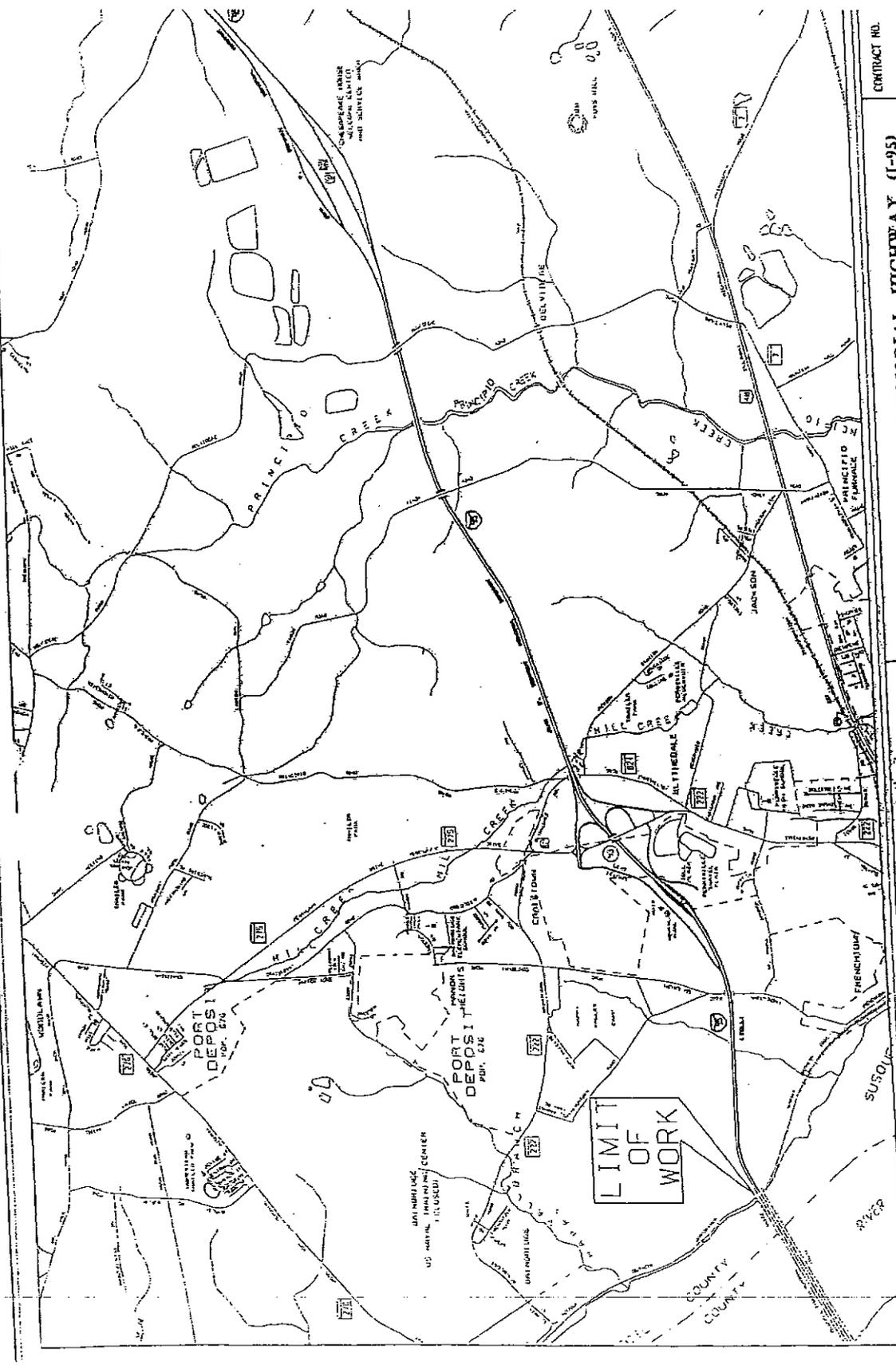
DESIGNED BY: A.S.-3
CONST. REVIEW BY:
DRAWN BY: C.A.N.
CHECKED BY: S.D.S.
SCALE: N.T.S.
DATE:

MARYLAND TRANSPORTATION AUTHORITY
Engineering Division



300 Authority Drive
Baltimore, MD. 21222

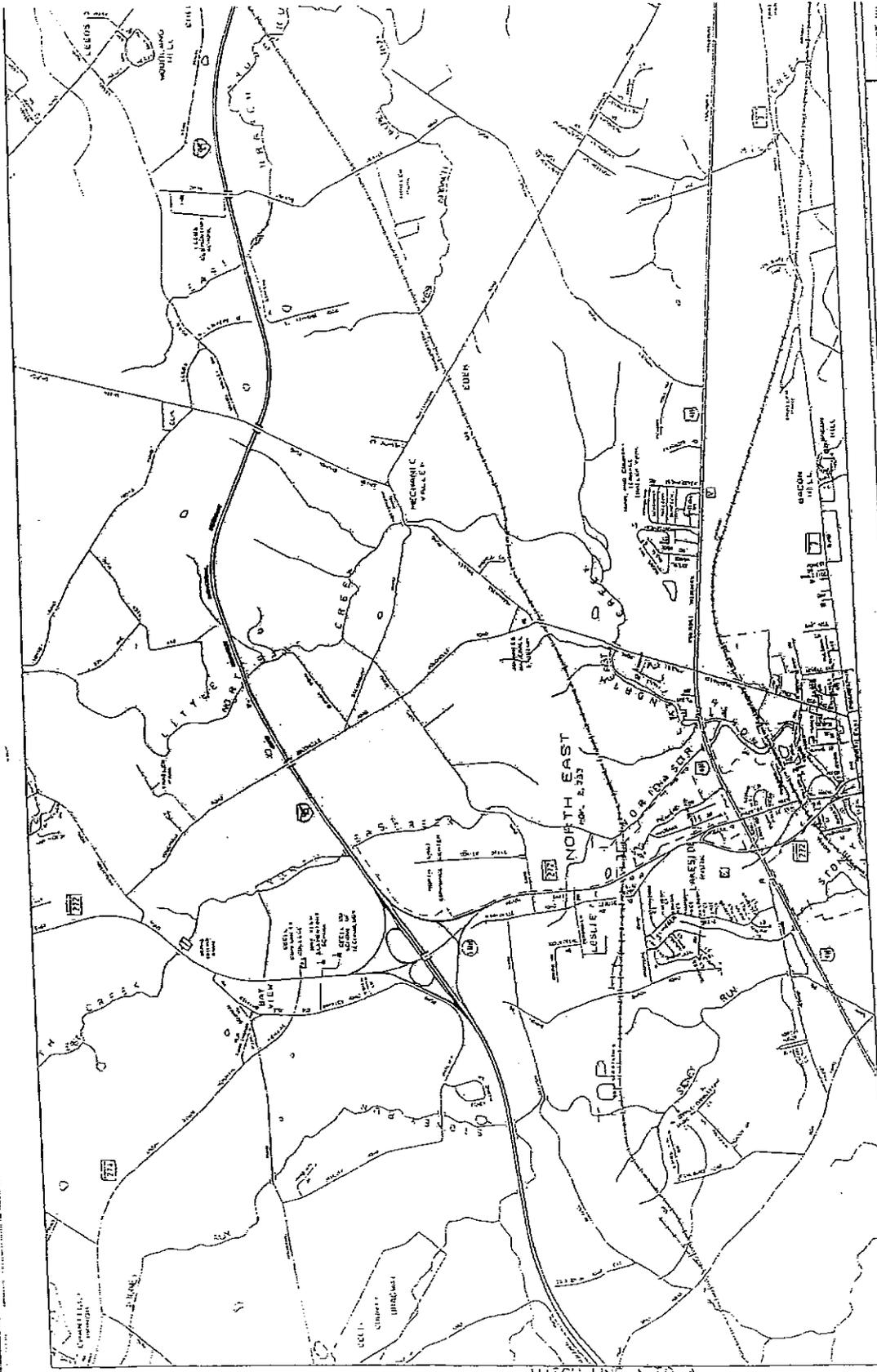
NOTES



CONTRACT NO.	JOHN F. KENNEDY MEMORIAL HIGHWAY (I-95)
DRAWING NO.	MOBILIZATION LOCATION B-2
DATE	B-2
SHEET NO.	MISCELLANEOUS PAVING REPAIRS
CHECKED BY	SUSQUEHANNA RIVER TO THE DELAWARE LINE
DESIGNED BY	DESIGNED BY A.C.N.
DRAWN BY	DRAWN BY C.A.P.
DATE	DATE
SCALE	SCALE N.T.S.
CONST. REVIEW BY	CONST. REVIEW BY

Maryland Transportation Authority
 - Engineering Division -
 300 Authority Drive
 Baltimore, MD. 21222

NOTES



CONTRACT NO. _____
 DRAWING NO. **B-2**
 SHEET NO. **2**

JOHN F. KENNEDY MEMORIAL HIGHWAY (I-95)
Mobilization Location B-2
Miscellaneous Paving Repairs
Susquehanna River to the Delaware Line

DESIGNED BY: A.S.N. DRAWN BY: C.M.P. CHECKED BY: W.P.D. SCALE: N.A.S.
 CONST. REVIEW BY: _____ DATE: _____

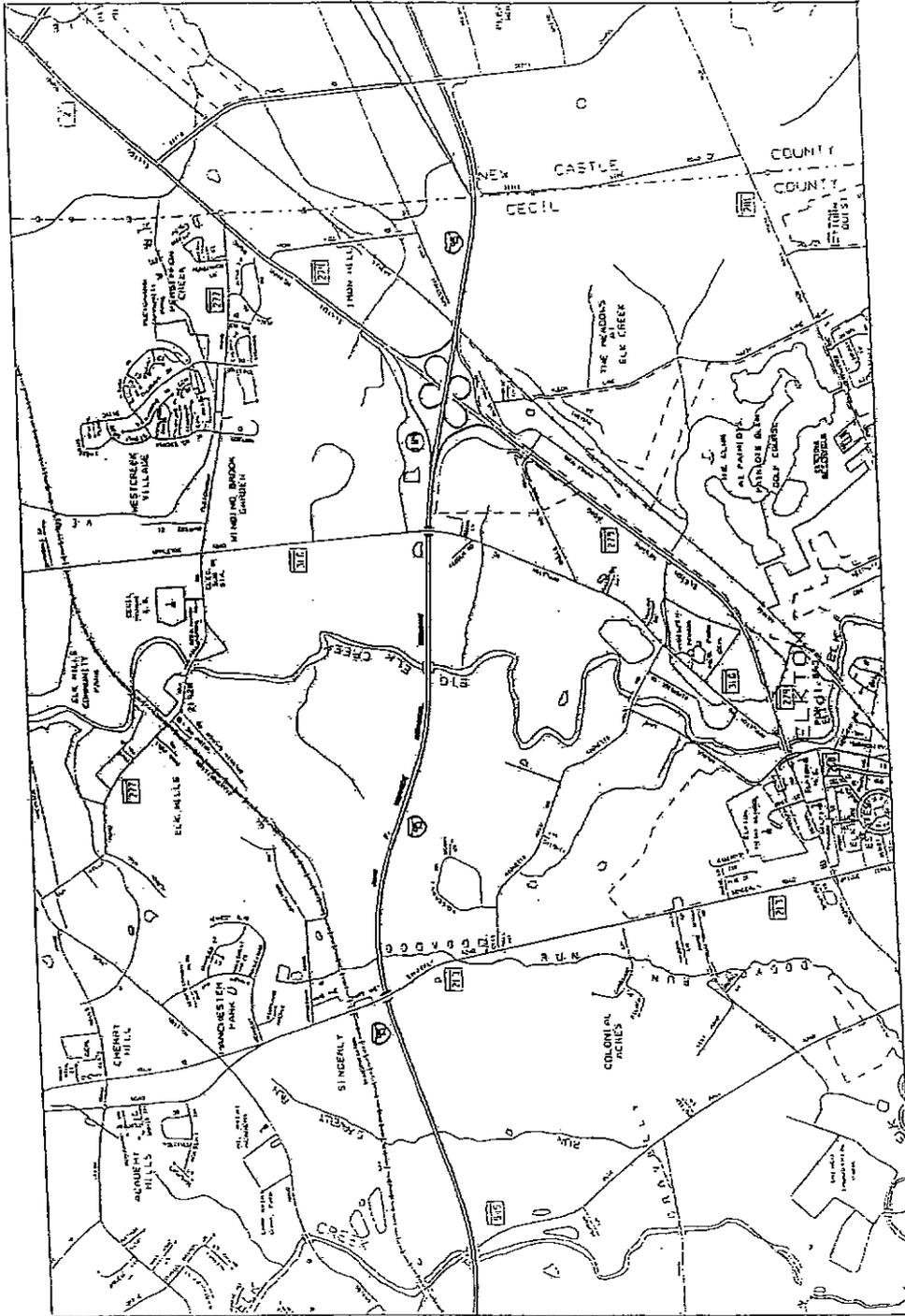
Maryland Transportation Authority
 - Engineering Division -



300 Authority Drive
 Baltimore, MD. 21222

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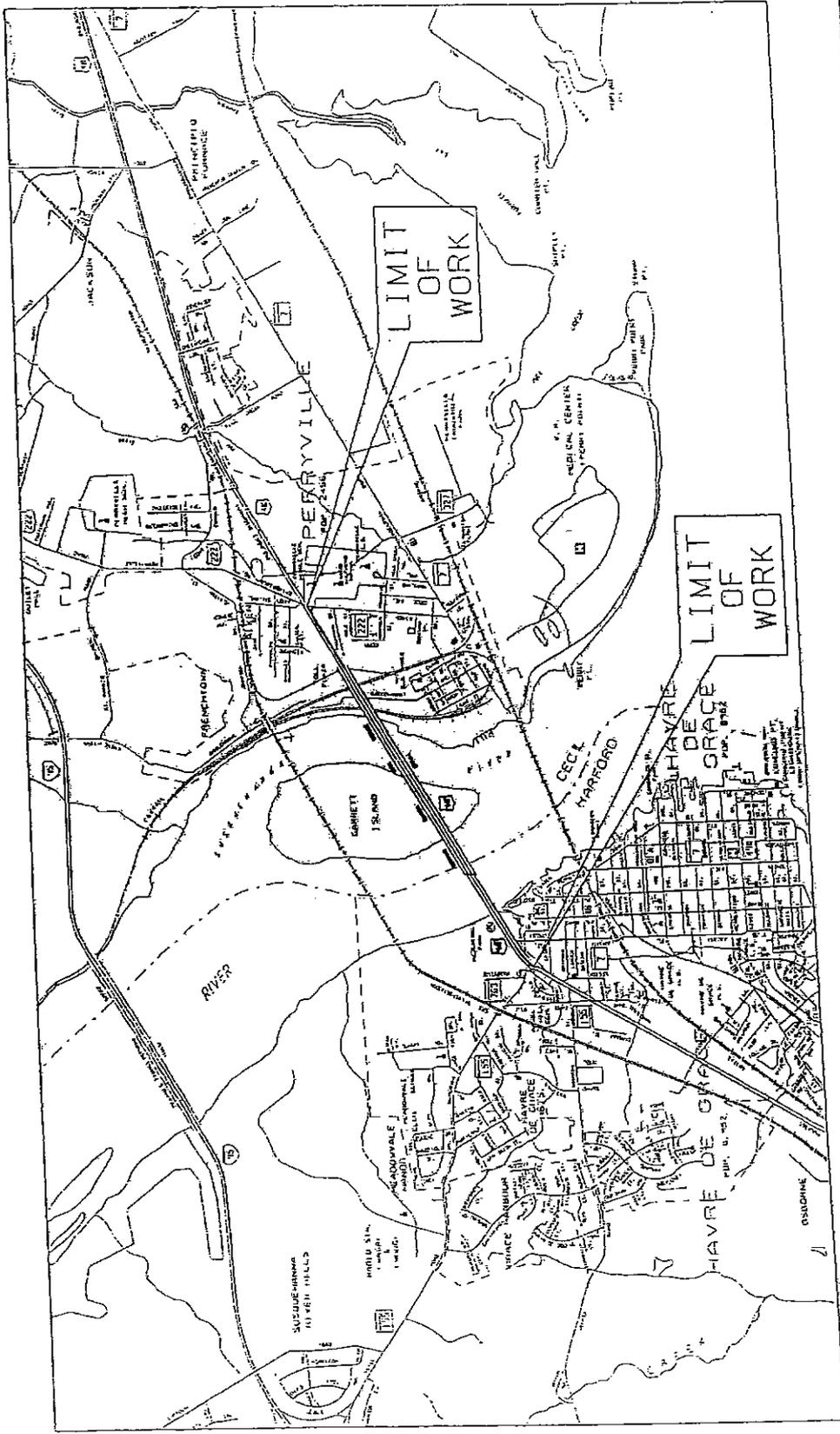
MATCH LINE B TO B

CONTRACT NO.	JOHN F. KENNEDY MEMORIAL HIGHWAY (I-95)
DRAWING NO.	B-2
SHEET NO.	3 OF 3
DESIGNED BY	J.C.N.
CHECKED BY	S.A.D.
DRAWN BY	C.A.P.
SCALE	N.T.S.
CONST. REVIEW BY	DATE

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 - Engineering Division -

 300 Authority Drive
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NOTES

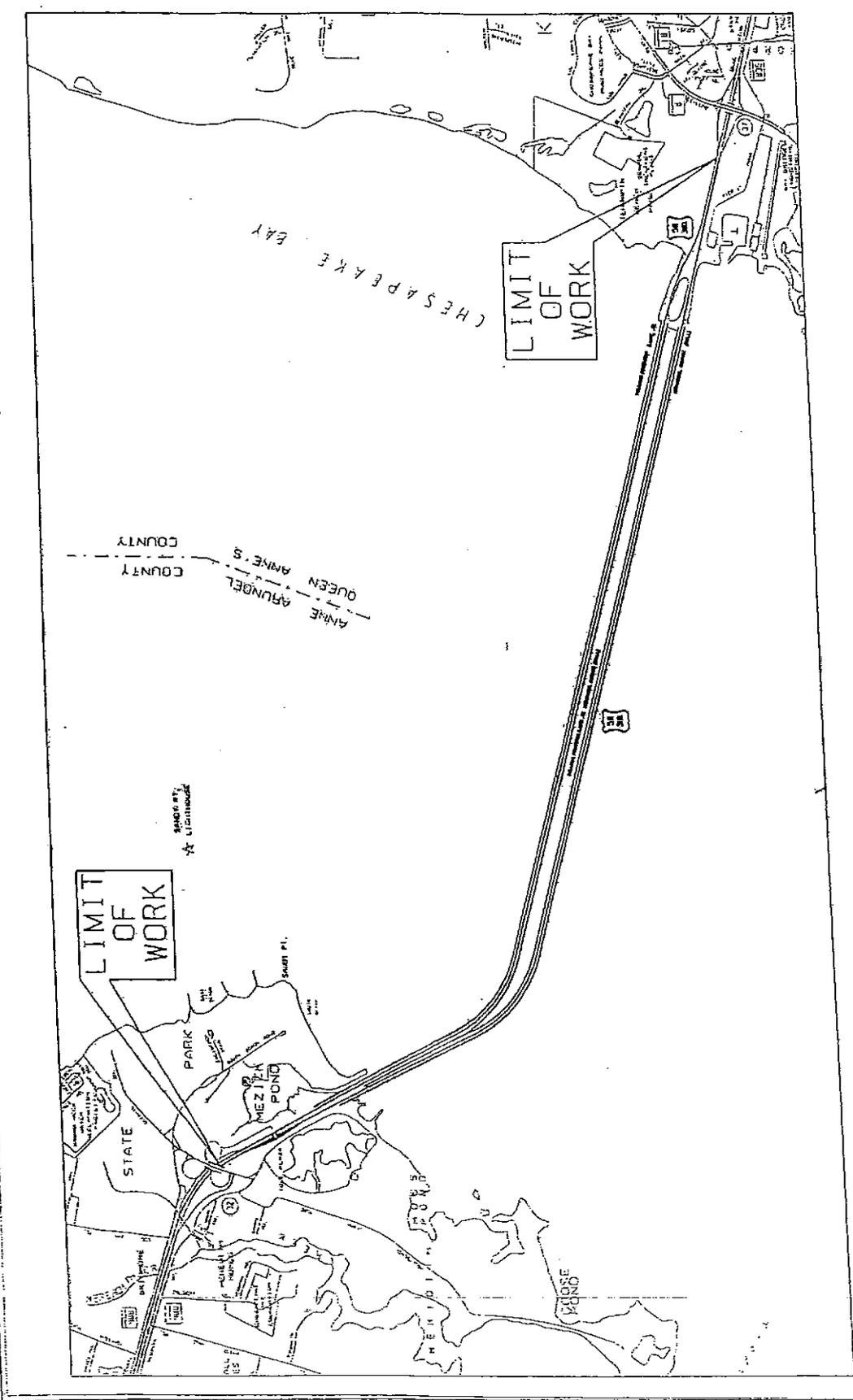


CONTRACT NO.	THOMAS J. HATEM MEMORIAL BRIDGE (RTE. 40)
DRAWING NO.	MOBILIZATION LOCATION C
SHEET NO.	C
DESIGNED BY	J.C.C.
DRAWN BY	C.A.V.
CHECKED BY	S.H.H.
SCALE	N.A.S.
DATE	
CONST. REVIEW BY	

Maryland Transportation Authority
 - Engineering Division -

 300 Authority Drive
 Baltimore, MD. 21222

NOTES:



CONTRACT NO.
DRAWING NO. D
SHEET NO. 1 OF 1

WM PRESTON LANE JR. BRIDGE CRTE. 50 30D
MOBILIZATION LOCATION D
MISCELLANEOUS PAVING REPAIRS
SANDY POINT TO STEVENSVILLE

DESIGNED BY: A.C.N. CHECKED BY: K.A.B.
CONST. REVIEW BY: DATE SCALE: N.I.S.

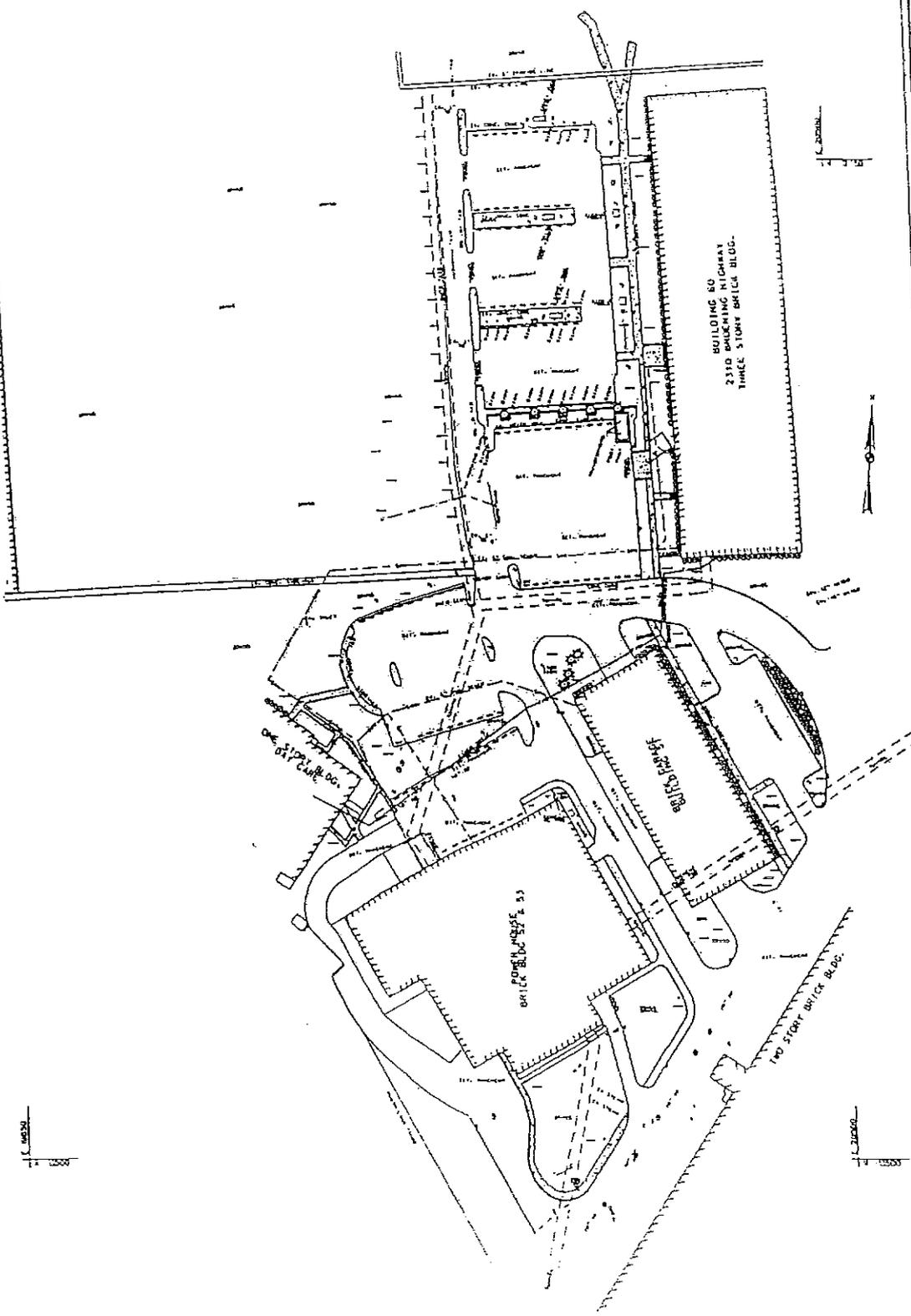
Maryland Transportation Authority
- Engineering Division -



300 Authority Drive
Baltimore, MD, 21222

NOTES:

TWO STORY BRICK BLDG.



CONTRACT NO.	
DRAWING NO.	F
SHEET NO.	1 OF 1

**POINT BREEZE OFFICE COMPLEX
(BROENING HIGHWAY)
MOBILIZATION LOCATION F
MISCELLANEOUS PAVING REPAIRS**

DESIGNED BY	J.C.W.	DRAWN BY	C.A.P.	CHECKED BY	K.A.D.
CONST. REVIEW BY		DATE		SCALE	N.T.S.

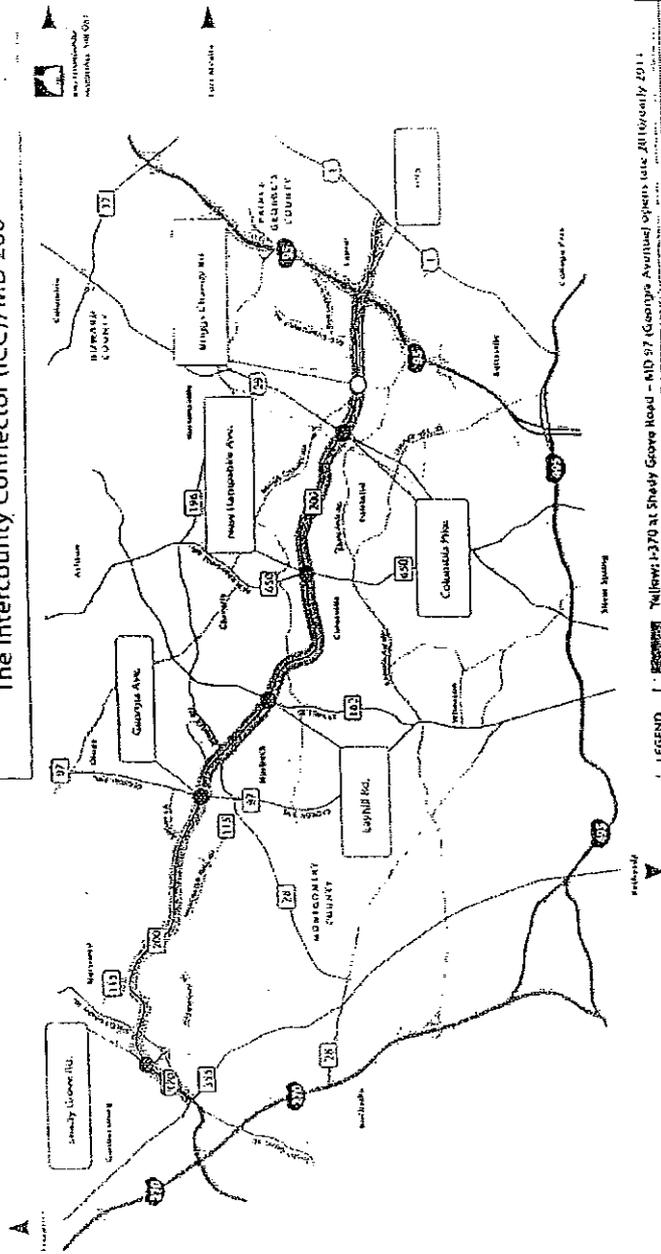
Maryland Transportation Authority
- Engineering Division -



300 Authority Drive
Baltimore, MD. 21222

NOTES

The Intercounty Connector (ICC)/MD 200

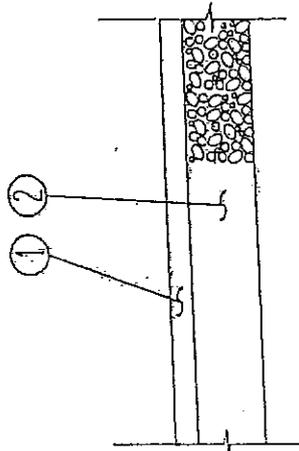
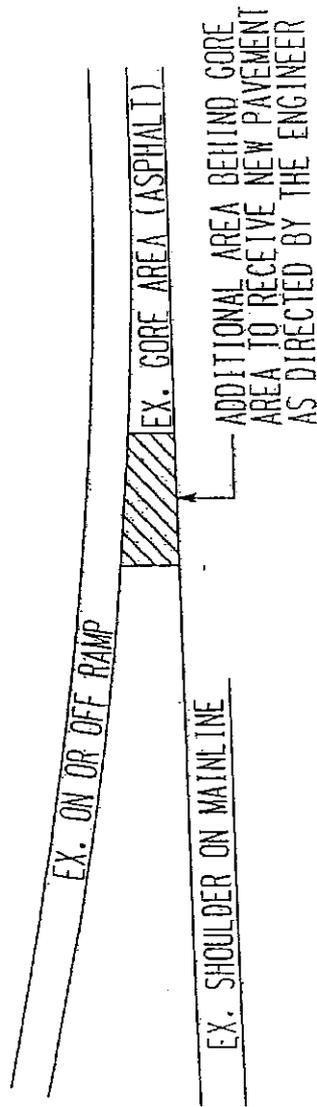


LEGEND

- Yellow: 1-17-10 at Shady Grove Road - MD 97 (Georgia Avenue) opens late 2011/early 2012
- Green: MD 97 (Georgia Avenue) - 192 at Laurel opens late 2011/early 2012
- Blue: Future
- Drivers can enter and exit eastbound and westbound ICC/MD 200 at these six interchanges:
 - I-270 at Shady Grove
 - MD 97 (Georgia Avenue)
 - MD 182 (Layhill Road)
 - I-495 at Laurel
- Briggs Chansey Road: Drivers can access eastbound ICC from Briggs Chansey Road. Briggs Chansey Road may only be accessed from westbound ICC.

THE MOBILIZATION LOCATIONS ARE NOT IDENTIFIED AT THIS TIME

NOTES: Maryland Transportation Authority - Engineering Division - 300 Authority Drive Baltimore, MD. 21222	POINT BREEZE OFFICE COMPLEX (GREENING, HIGHWAY) MOBILIZATION LOCATION G MISCELLANEOUS PAVING REPAIRS		CONTRACT NO. MA 2435-000
	DESIGNED BY: J.C.W. DRAWN BY: R.F. CHECKED BY: R.F.		DRAWING NO. G
CONST. REVIEW BY:		DATE: SEPTEMBER 2010	SHEET NO. J OF J
		SCALE: N.A.S.	



- 1. 2" HOT MIX ASPHALT SURFACE SUPERPAVE 12.5 M/M PG. 70-22
- 2. 6" GRADED AGGREGATE BASE COURSE

ADDITIONAL PAVING NEEDED DETAIL
N.T.S.

CONTRACT NO.		DRAWING NO.		TYP	
DESIGNED BY		DRAWN BY		CHECKED BY	
CONST. REVIEW BY		DATE		SCALE	
DESIGNED BY		DRAWN BY		CHECKED BY	
CONST. REVIEW BY		DATE		SCALE	
MISCELLANEOUS PAVING REPAIRS			TYPICALS DETAILS		
Maryland Transportation Authority - Engineering Division -			300 Authority Drive Baltimore, MD, 21222		
NOTES:					



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Transportation
Authority

SPECIAL PROVISIONS

104 – MAINTENANCE OF TRAFFIC - GENERAL

**CATEGORY 100
PRELIMINARY**

CONTRACT NO. MA-2435-000-002

SECTION 103 — ENGINEERS OFFICE

103.03 CONSTRUCTION.

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 3.4 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 16MB 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/Scanner. All-in-One Laser jet or a Color Laser Jet with Separate fax Machine



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(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) Two – USB 2.0 Flash Drive (4GB 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 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 Area Engineer and become the property of the Authority. The remaining microcomputer system shall remain the property of the Contractor.

Type ‘C’ and Type ‘D’ Engineer’s Office shall have two (2) complete microcomputer systems.



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**CATEGORY 100
PRELIMINARY
SECTION 104 – MAINTENANCE OF TRAFFIC**

104.00 General:

INSERT: The following:

- 1) The work in this Contract will affect the following roads and will require coordination with the Maryland Transportation Authority:
 - a) Baltimore Harbor Tunnel Thruway (I-895 in Baltimore City and Baltimore, Anne Arundel, and Howard Counties)
 - b) Fort McHenry Tunnel (I-95 in Baltimore City)
 - c) Francis Scott Key Bridge (I-695 in Baltimore City and Baltimore and Anne Arundel Counties)
 - d) Governor Harry W. Nice Memorial Bridge (U.S. 301 in Charles County)
 - e) Point Breeze Office Complex (Broening Highway in Baltimore City)
 - f) Thomas J. Hatem Memorial Bridge (U.S. 40 in Harford and Cecil Counties)
 - g) John F. Kennedy Memorial Highway (I-95 in Baltimore, Harford, and Cecil Counties)
 - h) William Preston Lane Jr. Memorial Bridge (U.S. 50/ U.S. 301 in Anne Arundel and Queen Anne's Counties)
 - i) Inter County Connector (MD 200 in Montgomery County and Prince George's County)

AGENCY CONTACTS

Contact	Facility	Phone Number
Martara Hannah Tunnel Administrator	Baltimore Harbor Tunnel Thruway (I-895) and Fort McHenry Tunnel (I-95 in Baltimore City)	(410) 537-1250
Charles Raycob Facility Administrator	Francis Scott Key Bridge (I-695)	(410) 537-7513
Gary Jackson Facility Administrator	Governor Harry W. Nice Memorial Bridge	(410) 537-6807
John Lohmeyer Administrator- Northern Region	John F. Kennedy Memorial Highway (I-95) & Thomas J. Hatem Memorial Bridge (U.S. 40)	(410) 537-1107
Carroll Hicks	Point Breeze Office Complex (Broening Highway)	(410) 537-1073
Gordon Garretson Deputy Facility Administrator	William Preston Lane Jr. Memorial Bridge	(410) 537-6659
Roxane Y. Mukai	Traffic Manager, MDTA	(410) 537-7848
Ken Knutson Facility Administrator	Inter County Connector	(410) 537-8372



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104.01 Traffic Control Plan (“TCP”)

Section 104.01 Description:

DELETE: The first sentence of the last paragraph on page 149: “The Contractor shall . . . is to be closed.”

INSERT: The following:

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.



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ALLOWABLE LANE CLOSURE SCHEDULE
BALTIMORE HARBOR TUNNEL (BHT) – THRUWAY

Time of Day	Days of the Week	Allowed Closures
7:00 AM – 3:00 PM	Monday - Thursday	Southbound, South of I-295 Single Lane Closure
9:30 AM – 2:30 PM	Monday - Thursday	Southbound, North of I-295 Single Lane Closure
7:00 AM – 3:00 PM	Monday - Thursday	Northbound, South of I-295 Single Lane Closure
9:00 AM – 2:30 PM	Monday - Thursday	Northbound, North of I-295 Single Lane Closure
7:00 AM – 1:00 PM	Friday	Southbound, South of I-295 Single Lane Closure
9:30 AM – 1:00 PM	Friday	Southbound, North of I-295 Single Lane Closure
7:00 AM – 1:00 PM	Friday	Northbound, South of I-295 Single Lane Closure
9:30 AM – 12:00 PM	Friday	Northbound, North of I-295 Single Lane Closure
8:00 PM – 5:00 AM	Monday - Thursday	NB or SB Single Lane Closure
10:00 PM – 10:00 AM	Friday - Saturday	NB or SB Single Lane Closure
10:00 PM – 5:00 AM	Sunday	NB or SB Single Lane Closure
10:00 PM Friday – 10:00 AM Sunday	Friday - Sunday	*Continuous NB or SB Single Lane Closure

*These closures are subject to the Administrators approval.

No lane/shoulder closures are permitted 2 hours before, during or 2 hours after a stadium event.

No lane closures are permitted the day before, the day after and on the following Holidays:

- New Years
- Good Friday
- Easter
- Memorial Day
- Independence Day



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No lane closures are permitted two days before, two days after and on the following Holidays:

Labor Day
Thanksgiving
Christmas

If a holiday falls on a Thursday, Friday or Monday, no closures will be allowed during that weekend.

ALLOWABLE LANE CLOSURE SCHEDULE
BALTIMORE HARBOR TUNNEL (BHT) – TUNNEL BORE CLOSURES

Time of Day	Days of the Week	Allowable Closures
8:30 PM – 4:30 AM	Monday - Thursday	Northbound or Southbound

Maintenance of Traffic for BHT tunnel bore closures are furnished and installed by MDTA maintenance personnel.

TOLL LANE CLOSURE SCHEDULE
BALTIMORE HARBOR TUNNEL
(TWO – WAY OPERATION WHILE TUNNEL BORE IS CLOSED)

TIME OF DAY	DAYS OF THE WEEK	TOLL LANES CLOSED
8:00 PM – 10:00 PM	Monday – Thursday	Northbound Toll Lanes 3, 4 and 5. Toll Lane 1 may also be closed.
8:00 PM – 10:00 PM	Monday – Thursday	Southbound Toll Lanes 10 may be closed.
10:00 PM – 5:00 AM	Monday - Thursday	Northbound Toll Lanes 3, 4, 5 and 7.
10:00 PM – 5:00 AM	Monday - Thursday	Southbound Toll Lanes 10 and 11.

Toll lane closures are activated by the Baltimore Harbor Tunnel Toll Supervisor. Modification of toll lane closures must be coordinated with the Baltimore Harbor Tunnel Toll Supervisor at least ten days in advance of scheduled closures.



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ALLOWABLE LANE CLOSURE SCHEDULE
FORT McHENRY TUNNEL (FMT) – ROADWAY

Time of Day	Days of the Week	Allowed Closures
9:00 AM – 2:30 PM	Monday - Thursday	Southbound, South of I-395 Single Lane Closure
9:30 AM – 2:30 PM	Monday - Thursday	Southbound, North of I-395 Single Lane Closure
9:30 AM – 2:30 PM	Monday - Thursday	Northbound, South of I-395 Single Lane Closure
7:00 AM – 2:30 PM	Monday - Thursday	Northbound, North of I-395 Single Lane Closure
9:00 AM – 1:00 PM	Friday	Southbound, South of I-395 Single Lane Closure
9:30 AM – 1:00 PM	Friday	Southbound, North of I-395 Single Lane Closure
9:30 AM – 1:00 PM	Friday	Northbound, South of I-395 Single Lane Closure
7:00 AM – 1:00 PM	Friday	Northbound, North of I-395 Single Lane Closure
7:30 PM – 5:00 AM	Monday - Thursday	Southbound, South of I-395 Single Lane Closure
7:00 PM – 5:00 AM	Monday - Thursday	Southbound, North of I-395 Single Lane Closure
7:30 PM – 5:00 AM	Monday - Thursday	Northbound, South of I-395 Single Lane Closure
7:30 PM – 7:00 AM	Monday - Thursday	Northbound, North of I-395 Single Lane Closure
9:00 PM – 9:00 AM	Friday & Saturday	NB & SB Single Lane Closure
9:00 PM – 5:00 AM	Sunday	Northbound, South of I-395 & SB Single Lane Closure
9:00 PM – 7:00 AM	Sunday	Northbound, North of I-395 Single Lane Closure
9:30 PM – 5:00 AM	Sunday - Thursday	NB & SB Double Lane Closure – 4 Lane Section
10:30 PM – 5:00 AM	Sunday - Thursday	NB & SB Double Lane Closure – 3 Lane Section
10:00 PM – 9:00 AM	Friday - Saturday	NB & SB Double Lane Closure – 4 Lane Section
10:30 PM – 8:00 AM	Friday - Saturday	NB & SB Double Lane Closure – 3 Lane Section
11:00 PM – 5:00 AM	Monday - Thursday	Triple Lane Closure – 4 lane Section



ALLOWABLE LANE CLOSURE SCHEDULE
FORT McHENRY TUNNEL (FMT) – Tunnel Bore Closures

Time of Day	Days of the Week	Allowed Closures
8:00 PM – 5:00 AM	Monday - Thursday	I-95 Northbound
7:00 PM – 5:00 AM	Monday - Thursday	I-95 Southbound

Maintenance of Traffic for FMT tunnel bore closures are furnished and installed by MDTA maintenance personnel. Only one bore in each direction may be closed at any given time.

No lane/shoulder closures are permitted 2 hours before, during or 2 hours after a stadium event.

No lane closures are permitted the day before, the day after and on the following Holidays:

- New Years
- Good Friday
- Easter
- Memorial Day
- Independence Day

No lane closures are permitted two days before, two days after and on the following Holidays:

- Labor Day
- Thanksgiving
- Christmas

If a holiday falls on a Thursday, Friday or Monday, no closures will be allowed during that weekend.

ALLOWABLE LANE CLOSURE SCHEDULES
FRANCIS SCOTT KEY BRIDGE

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
9:00AM – 3:00PM	Monday – Friday	Single Lane Closure
8:00PM – 5:00AM	Monday – Friday	Single Lane Closure
8:00PM – 5:00AM	Friday to Monday	Single Lane Closure



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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 lane closures will be permitted during that weekend. No lane closures are permitted two days prior to and following the Thanksgiving and Christmas Day holidays.

ALLOWABLE LANE CLOSURE SCHEDULES
GOVERNOR HARRY W. NICE MEMORIAL BRIDGE

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
9:00 AM – 3:00 PM	Monday – Thursday	Single Lane Closure
9:00 AM – 12:00 Noon	Friday	Single Lane Closure
8:00 PM – 5:00 AM	Monday - Thursday	Single Lane Closure
10:00 PM – 5:00 AM	Sunday	Single Lane Closure

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



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If a holiday falls on a Thursday, Friday or Monday, no closures will be permitted during that weekend.

The Contractor must provide a means of communication to the Governor Harry W. Nice Memorial Bridge Police detachment as a safety requirement. Acceptable forms of communication shall consist of a mobile telephone, citizens band or portable two-way radio.

ALLOWABLE LANE CLOSURE SCHEDULES
JOHN F. KENNEDY MEMORIAL HIGHWAY

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
Continuous	Monday - Sunday	Shoulder Closure
9:00 AM – 3:00 PM	Monday – Thursday	Single Lane Closure
9:00 PM – 5:00 AM	Monday – Thursday	Single Lane Closure
9:00 AM – 12:00 Noon	Friday	Single Lane Closure
11:00 PM – 5:00 AM	Monday – Thursday	Double Lane Closure
Midnight – 5:00 AM	Monday – Thursday in four lane sections	Triple Lane Closure

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 lane closures will be permitted during that weekend. No lane closures are permitted two days prior to and following the Thanksgiving and Christmas Day holidays.



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ALLOWABLE LANE CLOSURE SCHEDULES

Thomas J. Hatem Memorial Bridge

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
9:00 AM – 3:00 PM	Monday – Thursday	Single Lane Closure
7:00 PM – 5:00AM	Monday – Thursday	Single Lane Closure

The Contractor must provide a means of communication to the Thomas J. Hatem Memorial Bridge Police detachment as a safety requirement. Acceptable forms of communication shall consist of a mobile telephone, citizens band or portable two-way radio.

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

ALLOWABLE LANE CLOSURE SCHEDULES
WILLIAM PRESTON LANE, JR. MEMORIAL BRIDGE

October 1 through April 30:*

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
9:00AM – 2:30PM	Monday – Thursday	Single Lane Eastbound
9:00PM – 6:00AM	Monday – Thursday	Single Lane Eastbound
9:00AM – 12:00Noon	Friday	Single Lane Eastbound
10:00PM – 6:00AM	Saturday & Sunday	Single Lane Eastbound
9:00AM – 2:30PM	Monday – Thursday	Single Lane Westbound
7:00PM – 5:00AM	Monday – Thursday	Single Lane Westbound
9:00AM – 12:00Noon	Friday	Single Lane Westbound
9:00PM – 7:00AM	Saturday & Sunday	Single Lane Westbound
9:00PM – 5:00AM	Monday – Thursday	Double Lane Westbound

No lane closures permitted from December 23 through January 2.



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Any eastbound closure will require implementation of contra-flow operation on the westbound bridge.

May 1 through September 30*:

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
9:00AM – 2:30PM	Monday – Thursday	Single Lane Eastbound
10:00PM – 6:00AM	Monday – Thursday	Single Lane Eastbound
9:00AM – 2:30PM	Monday - Thursday	Single Lane Westbound
9:00PM – 5:00AM	Monday - Thursday	Single Lane Westbound

Any eastbound closure will require eastbound contra-flow operation on the westbound bridge.

* Between the hours of 5 AM and 9 PM no more than one of the existing five traffic lanes may be closed at any time.

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
- Columbus Day
- Veterans Day (if it falls on a Friday or Monday).
- 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. If a holiday happens to fall between May 1 and September 30; no closures will be permitted during the week of the holiday without the express approval of the William Preston Lane Jr. Memorial (Chesapeake Bay) Bridge (Facility) Administrator.

No lane or shoulder closures will be permitted without written approval of the Facility Administrator.



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Contractor's request for changes to the allowed hours of closure must be submitted to the Engineer. Requested changes cannot be approved without the approval of the facility Administrator and the Authority's Traffic Manager.

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. All existing lanes of traffic along US Route 50/301 must be completely open during these hours.

The Contractor must provide a means of communication to the William Preston Lane Jr. Memorial (Chesapeake Bay) Bridge Police detachment as a safety requirement. Acceptable forms of communication shall consist of a mobile telephone, citizens band or two-way radio.

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.

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 45 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 manufacturer'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-



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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	\$ 50.00
Over 5	\$ 50.00 per Minute (In addition to the Original 5 minutes)



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104.01.04 MEASUREMENT AND PAYMENT.

INSERT: The following:

Maintenance of Traffic will not be measured and paid for but shall be incidental to the Contract Price per Unit Day for Each Type of Closure. 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.



**CATEGORY 100
PRELIMINARY**

SECTION 104 — MAINTENANCE OF TRAFFIC

166 **DELETE:** Section 104.11 TEMPORARY PAVEMENT MARKINGS. in its entirety.

INSERT: The following.

104.11 TEMPORARY PAVEMENT MARKINGS.

104.11.01 DESCRIPTION. Furnish, install, and remove temporary pavement markings as specified in the Contract Documents or as directed by the Engineer. These markings shall include lines, letters, numbers, arrows, and symbols.

104.11.02 MATERIALS.

Removable Preformed Pavement Marking Material	Refer to the
Nontoxic Lead Free Waterborne Pavement Markings	Contract Documents
Black Out Tape	QPL

104.11.03 CONSTRUCTION.

104.11.03.01 Quality Assurance/Quality Control. Quality control testing shall be completed by the Contractor’s Administration certified technicians. The Engineer will complete the quality assurance checks in conformance with MSMT 729 by performing the Nighttime Visibility Evaluations.

104.11.03.02 Warranty Period. The Contractor shall maintain and be responsible for any defects in the pavement markings for a period of 180 days from the date of application. The Contractor shall replace the pavement markings as necessary within this period as directed by the Engineer at no additional cost to the Administration. Refer to GP-5.11.

104.11.03.02 Application and Removal. The pavement markings shall be applied in conformance with the manufacturer’s recommendations and the Contract Documents. Markings shall be applied in the same direction as the flow of traffic. The markings shall be located as specified in the Contract Documents or as directed by the Engineer.

Pavement markings may be applied to either new or existing paved surfaces. When applied to newly paved surfaces, the markings shall be placed before traffic is allowed on the pavement. Nontoxic lead free waterborne pavement markings shall be used for all temporary pavement markings except for the final surface. However, the Contractor may use removable preformed pavement markings at no additional cost to the Administration.

When at the “end of season”, the temperatures are too low to allow the placement of removable tape on the final surface, a written exception request may be submitted to the Engineer to allow the use of nontoxic lead free waterborne paint in lieu of removable tape until the following striping season.



When it is appropriate to shift lanes, all nonapplicable pavement markings within the travel way and adjacent to the travel way as directed by the Engineer shall be completely removed.

Surface Condition. Prior to application of pavement markings, the pavement surface shall be clean, dry, and free of all contaminants, including curing compound, dirt, and loose particles. Residual pavement markings shall be removed. Loose or poorly constructed markings shall also be removed.

Pavement Marking Removal. All removable preformed pavement markings shall be completely removed prior to application of the permanent markings. On stage construction or final surfaces of portland cement concrete pavements, any objectionable adhesive residue shall be removed by water blasting or other methods as may be approved by the Engineer. Open flame is prohibited to remove adhesive residue, or any pavement markings. The Contractor shall remove all nonapplicable pavement markings so that there is no damage to the existing or final surface.

Retroreflectance. The initial retroreflectance readings for temporary pavement markings shall be a minimum of 250 and 150 millicandellas/lux/square meter for white and yellow, respectively. The Engineer will monitor the pavement markings in conformance with MSMT 729 during the Contractor's 180 day period of responsibility.

104.11.04 MEASUREMENT AND PAYMENT. Payment for Removable Preformed Pavement Markings, Removal of Removable Preformed Pavement Markings, Nontoxic Lead Free Waterborne Pavement Marking Paint, and the Removal of Existing Pavement Markings will be measured and paid for using one or more of the items listed below and as specified in the Contract Documents.

The payment will be full compensation for furnishing, placing, complete removal of lines, letters, numbers, arrows, symbols, and the removal of all residue. In addition, payment will cover maintenance and replacement during the 180 day period, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. Removal and replacement of temporary pavement markings required beyond the 180 day period will be measured and paid for at the Contract unit price for the pertinent temporary pavement marking item.

Temporary markings replaced during the 180 day period as a result of plowing (as determined by the Engineer) will be paid for at the Contract unit price for the pertinent temporary marking item.

- (a) Nontoxic Lead Free Waterborne Pavement Marking Paint-in width specified-per linear foot.
- (b) Removable Preformed Pavement Line Markings-in width specified-per linear foot.
- (c) Removable Preformed Letters, Symbols, Arrows, and Numbers per each.
- (d) Removal of Removable Preformed Pavement Markings-any width-per linear foot.
- (e) Removal of Removable Preformed Letters, Symbols, Arrows and Numbers per each.



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- (f) Removal of Existing Pavement Line Markings-any width per linear foot.
- (g) Removal of Existing Letters, Symbols, Arrows, and Numbers per each.
- (h) Black Out Tape Lines-in width specified-per linear foot.
- (i) Removal of Black Out Tape Lines-any width-per linear foot.



**CATEGORY 100
PRELIMINARY**

**SECTION 104
MAINTENANCE OF TRAFFIC**

104.14 CONES FOR MAINTENANCE OF TRAFFIC.

104.14.02 MATERIALS.

171 **DELETE:** First paragraph on this page “Cones shall be...an upright position”.

INSERT: The following.

All cones shall meet MdMUTCD and be new or like new condition. All cones shall be orange in color. Cones shall be at least 28 in. high, 10 in. diameter at the inside of the base, and reflectorized with two white retroreflective stripes. The top stripe shall be 6 in. wide and located 3 to 4 inches from the top of the cone. The second stripe shall be 4 in. wide and located 2 inches below the top band.

Tall-Weighted Cones. When specified, tall-weighted cones shall be at least 42 in. high and 7 in. diameter at the inside of the base. Tall-weighted cones shall be manufactured of low density polyethylene (LDPE) and have four high performance wide angle white and orange retroreflective stripes. The stripes shall be horizontal, circumferential and 6 in. wide. Alternate stripe colors with the top stripe being orange. Any nonretroreflective spaces between the orange and white stripes shall not exceed 1/2 in.

104.14.03 CONSTRUCTION.

ADD: The following after the first paragraph “The Contractor’s name...away from traffic”.

Equip all cones with approved weights or anchor collars, (15 lb. maximum) as needed to maintain an upright position. Anchor collars shall fit to the base of the cone. For tall-weighted cones use anchor collars weighing 10 to 30 lb.



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SPECIAL PROVISIONS
500.01 – BITUMINOUS CONCRETE PAVEMENT

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SECTION 500.01 – BITUMINOUS CONCRETE PAVEMENT

500.01.01 DESCRIPTION

This work shall consist of placing of bituminous concrete pavement in accordance with the Specifications and as directed by the Engineer. The Contractor shall furnish all necessary labor, equipment and other items required by the specifications for placing bituminous concrete paving.

500.01.02 MATERIALS

The Contractor will submit his job-mix formulas meeting the following gradation requirements:

2” Hot Mix Asphalt Superpave 12.5 M/M PG 70-22

14” Hot Mix Asphalt Superpave 25 M/M PG 70-22 for full depth patch

2” Hot Mix Asphalt Superpave 12.5 M/M Gap Graded PG 76-22

500.01.03 CONSTRUCTION

Preparation of materials and construction methods shall be in accordance with Section 504 of the Specifications.

500.01.04 MEASUREMENT AND PAYMENT

Refer to Section 504.04.



Maryland
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Authority

SPECIAL PROVISIONS

CONTRACT NO. MA-2435-000-002

500.02 – HOT MIX ASPHALT PATCH – FULL DEPTH

Page 1 of 1

SECTION 500.02 – HOT MIX ASPHALT PATCH – FULL DEPTH

500.02.01 DESCRIPTION

This work shall consist of repairing rigid or flexible pavement by removing section of existing pavement and replacing the removed material using Hot Mix Asphalt Paving Material. The location for repair will be as directed by the Engineer.

500.02.02 MATERIALS

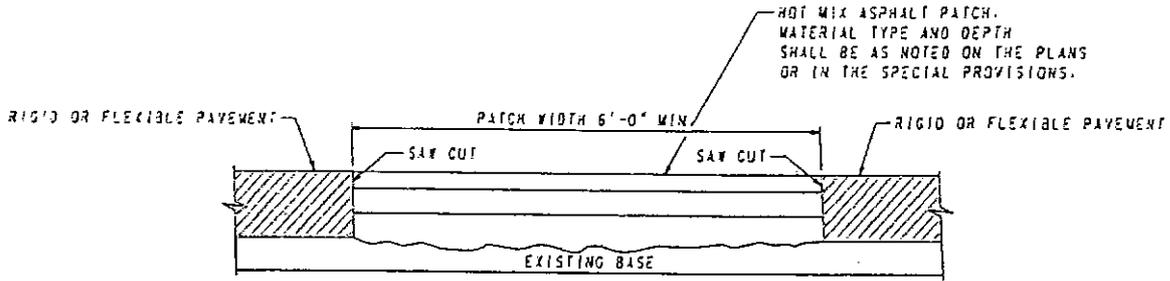
Materials shall conform to 504.02 and 505.02.

500.02.03 CONSTRUCTION

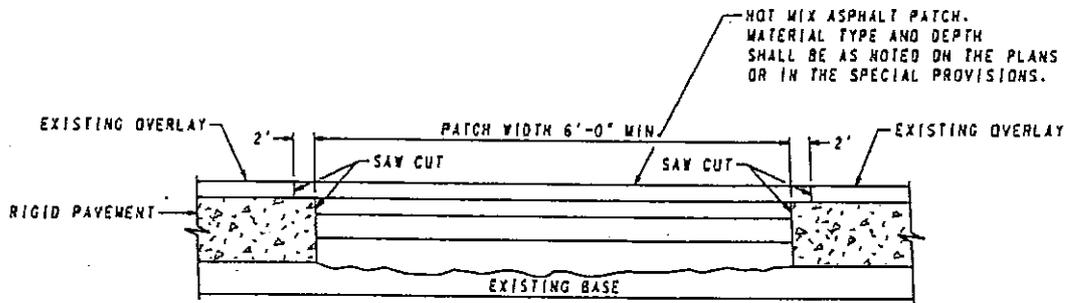
Refer to Section 505.03.

500.02.04 MEASUREMENT AND PAYMENT

Shall conform to 505.04 and 505.04.01.



RIGID OR FLEXIBLE PAVEMENT



RIGID PAVEMENT WITH FLEXIBLE OVERLAY

NOTES

1. REFER TO SECTION 505 OF THE SPECIFICATIONS FOR FLEXIBLE PAVEMENT AND TO SECTION 522 OF THE SPECIFICATIONS FOR RIGID PAVEMENT.
2. TACK COAT TO BE APPLIED TO THE PATCH. APPLY EVENLY WITH PRESSURIZED SPRAY WAND.
3. REFER TO APPLICABLE PLAIN AND REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT TYPE 1 AND TYPE 2 REPAIR STANDARDS FOR PERMANENT RIGID REPAIRS.

SPECIFICATION 505	CATEGORY CODE ITEMS	<p>Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES PERMANENT PATCHING FOR RIGID OR FLEXIBLE PAVEMENT USING HOT MIX ASPHALT</p>									
APPROVED	<i>Kel G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT										
SHA State Highway Administration	<table border="1" style="width: 100%;"> <tr> <td>APPROVAL • SHA REVISIONS</td> <td>APPROVAL • FEDERAL HIGHWAY ADMINISTRATION</td> </tr> <tr> <td>APPROVAL 3-6-86</td> <td>APPROVAL 3-18-85</td> </tr> <tr> <td>REVISED 10-1-01</td> <td>REVISED</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> <tr> <td>REVISED</td> <td>REVISED</td> </tr> </table>			APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 3-6-86	APPROVAL 3-18-85	REVISED 10-1-01	REVISED	REVISED	REVISED
APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION										
APPROVAL 3-6-86	APPROVAL 3-18-85										
REVISED 10-1-01	REVISED										
REVISED	REVISED										
REVISED	REVISED										
		STANDARD NO. MD 578.03									



Maryland
Transportation
Authority

SPECIAL PROVISIONS

CONTRACT NO. MA-2435-000-002

500.03 – GRINDING EXISTING CONCRETE PAVEMENT
FROM BRIDGE APPROACHES

Page 1 of 1

**SECTION 500.03 – GRINDING EXISTING CONCRETE PAVEMENT
FROM BRIDGE APPROACHES**

500.03.01 DESCRIPTION

This work shall consist of removing existing concrete pavement at a depth of 2 inches from the existing roadway in the area of bridge approaches.

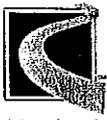
Grinding of the existing concrete pavement shall be performed in accordance with Section 509 of the Specifications.

Removal of debris behind the grinding operation shall be in accordance with Section 509.03, as directed by the Engineer.

The cleaning and milling operation debris from the roadway shall be a high priority operation of the Contractor and diligent efforts shall be put forth in this endeavor.

500.03.04 MEASUREMENT AND PAYMENT

Grinding existing concrete pavement will be measured and paid for at the Contract unit price per square yard. The pavement will be full compensation for grinding, the disposal of grinding material, and for all material, labor, equipment, tools and incidentals necessary to complete the work.



Maryland
Transportation
Authority

SPECIAL PROVISIONS
500.04 – ADDITIONAL PAVING NEED

CONTRACT NO. MA-2435-000-002

Page 1 of 1

SECTION 500.04 – ADDITIONAL PAVING NEED

500.04.01 DESCRIPTION

This work shall consist of constructing additional paving in areas as shown in Section 100.02, on the following details, and as directed by the Engineer.

500.04.02 MATERIALS

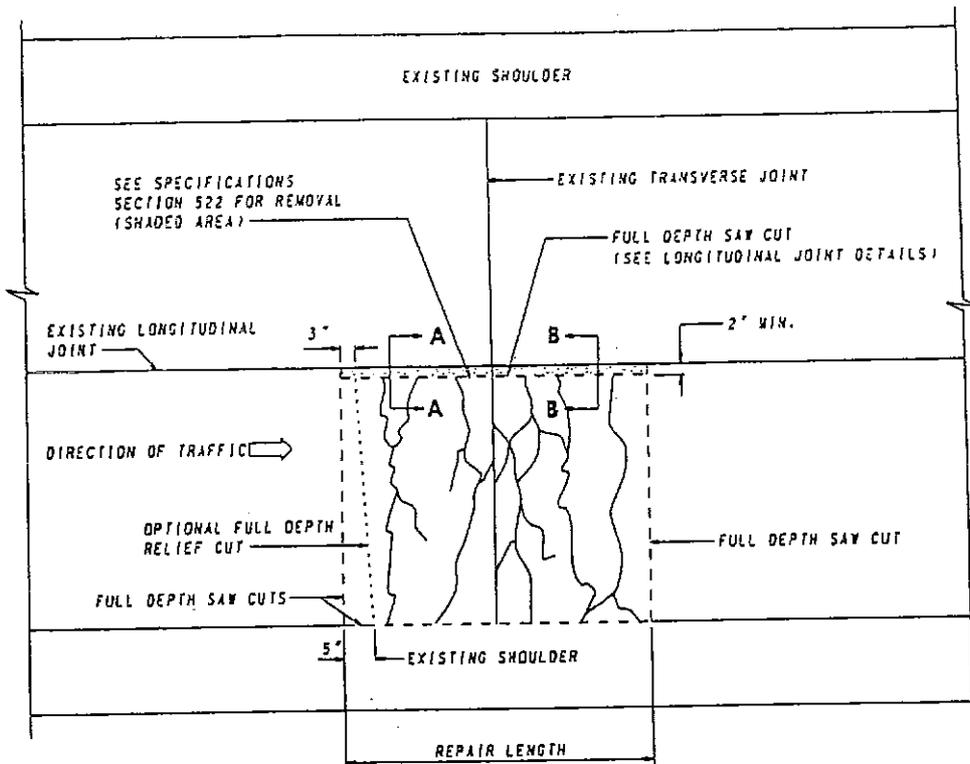
Refer to Section 901.01 for Graded Aggregate. Refer to Section 904.04 for Hot Mix Asphalt Mixes.

500.04.03 CONSTRUCTION

Refer to Section 504.03.

500.04.04 MEASUREMENT AND PAYMENT

Additional paving need will be measured and paid for at the contract unit price per square yard. The payment will be full compensation for all excavation, hauling, furnishing, placing all materials including Hot Mix Asphalt, Graded Aggregate where specified by the Engineer, and for all material, labor, equipment, tools and incidentals necessary to complete the work.

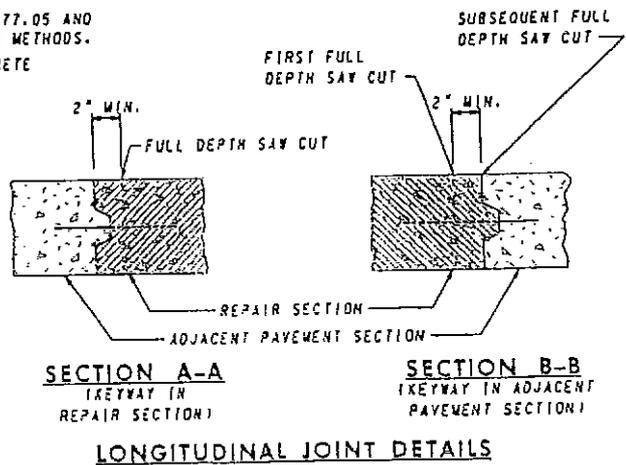


PLAN

NOTES

1. SHOULDER JOINT CUTS MAY BE CUT DIRECTLY ON THE EXISTING JOINT.
2. CUTS RUNNING PARALLEL AND ADJACENT TO A LANE OF TRAFFIC SHALL BE MADE A MINIMUM OF 2 IN. IN FROM THE EXISTING JOINT.
3. SAW CUTS MAY BE MADE INTO THE SHOULDER.
4. DASHED LINES INDICATE CUTS TO BE MADE.
5. SEE STANDARDS MD 577.02, MD 577.03, MD 577.04 MD 577.05 AND MD 577.06 FOR DETAILS OF TYPE 1 AND TYPE 2 REPAIR METHODS.
6. ALL SAW CUTS ARE INCIDENTAL TO THE SPECIFIC CONCRETE PAVEMENT REPAIRS ITEM IN THE INVITATION FOR BIDS.

NOTE: IF IT IS DETERMINED THAT THE KEYWAY IS FORMED IN THE ADJACENT PAVEMENT SECTION, THE SUBSEQUENT FULL DEPTH SAW CUT MAY BE MADE ON THE LONGITUDINAL JOINT.



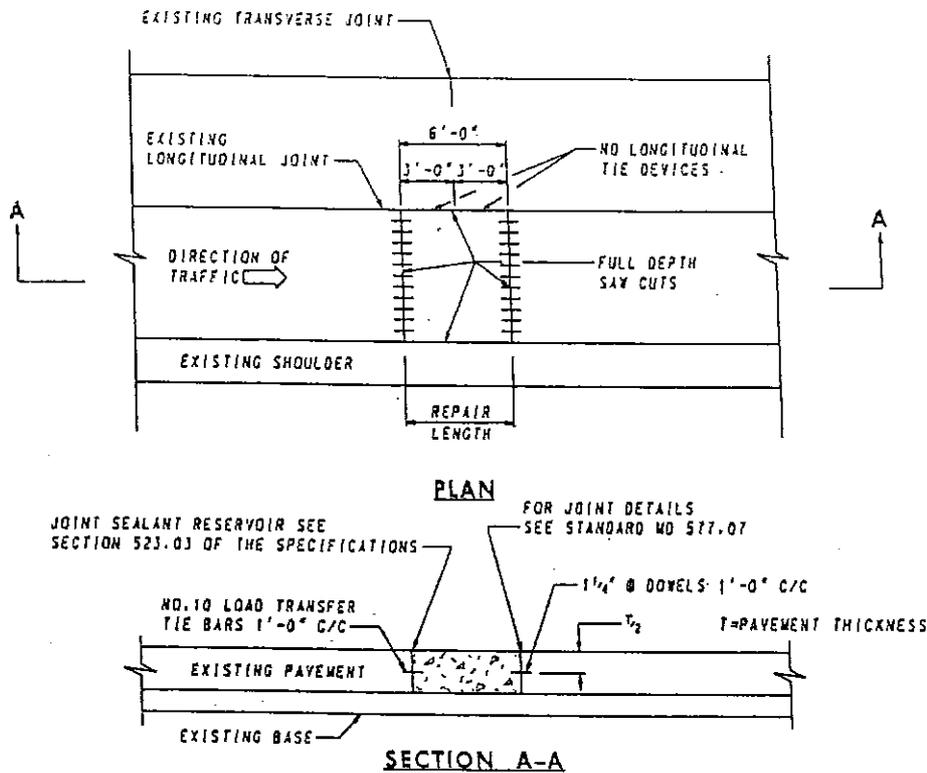
LONGITUDINAL JOINT DETAILS

SPECIFICATION 522	CATEGORY CODE ITEMS
APPROVED <i>Kat G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL - SHA REVISIONS
	APPROVAL - FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-6-85
	APPROVAL 3-18-86
	REVISION 10-1-01
REVISION	REVISION
REVISION	REVISION

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONVENTIONALLY REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT REPAIRS
SAW CUTS FOR LIFT OUT METHOD

STANDARD NO. MD 577.01

METHOD 'A' REPAIRS PERFORMED AT AN EXISTING TRANSVERSE JOINT EVEN THOUGH ONLY ONE SIDE NEEDS REPAIR. THE TOTAL REPAIR LENGTH SHALL BE 6' CENTERED ON THE ADJACENT TRANSVERSE JOINT.



REPAIR GUIDELINES

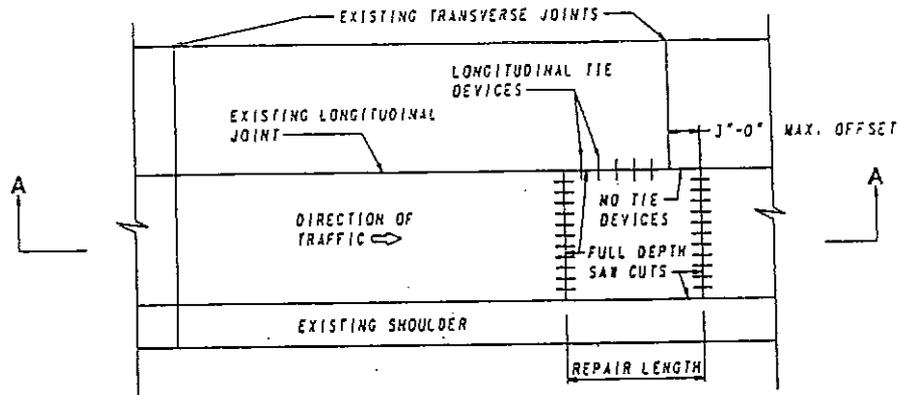
1. TYPE 1 REPAIRS ARE 6 FT TO LESS THAN 15 FT IN LENGTH AND REQUIRE NO REINFORCEMENT. (PLAIN CONCRETE)
2. REPAIR SLABS AND REMAINS OF EXISTING SLABS SHALL NOT BE LESS THAN 6 FT IN LENGTH.
3. EXISTING DOWELS AND ASSEMBLIES SHALL BE COMPLETELY REMOVED WHEN A REPAIR IS PERFORMED AT A TRANSVERSE JOINT.
4. ALL REPAIRS OFFSET MORE THAN 3 FT ON EITHER SIDE OF AN EXISTING TRANSVERSE JOINT SHALL BE EXTENDED TO A MINIMUM OF 6 FT AND DOWEL ASSEMBLIES SHALL BE PLACED ADJACENT TO THE EXISTING TRANSVERSE JOINTS AS SHOWN IN REPAIR METHOD 'C' ON STANDARD MD 577.04.

NOTES

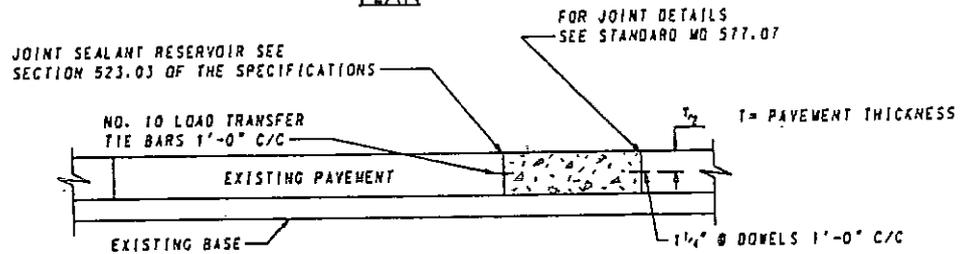
1. REPAIRS SHALL BE MADE IN ACCORDANCE WITH SECTION 522 OF THE SPECIFICATIONS.
2. REPAIRS SHALL BE MADE USING CONCRETE MEETING THE REQUIREMENTS OF SECTION 522.02 OF THE SPECIFICATIONS.
3. SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SUBSECTION 522.03.04 OF THE SPECIFICATIONS AND MAY REQUIRE ADDITIONAL MATERIAL TO FACILITATE PLACEMENT OF LOAD TRANSFER DEVICES.
4. HOLES FOR THE DOWELS AND LOAD TRANSFER TIE DEVICES SHALL BE DRILLED SIMULTANEOUSLY TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS WHICH WILL MAINTAIN THE DRILLS IN A LONGITUINALLY PARALLEL POSITION.
5. JOINTS SHALL BE MADE IN ACCORDANCE WITH SECTION 520 OF THE SPECIFICATIONS AND STANDARD MD 577.07.
6. ALL LOAD TRANSFER TIE BARS AND DOWELS SHALL BE EPOXY COATED.
7. SEE STANDARD MD 577.01 FOR PAVEMENT REPAIR SAW CUTS FOR LIFT OUT METHOD.

SPECIFICATION 522	CATEGORY CODE ITEMS	<p style="font-size: 1.2em; font-weight: bold;">Maryland Department of Transportation</p> <p style="font-size: 1.2em; font-weight: bold;">STATE HIGHWAY ADMINISTRATION</p> <p style="font-size: 0.8em;">STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES</p> <p style="font-size: 1.1em; font-weight: bold;">METHOD 'A' PLAIN</p> <p style="font-size: 1.1em; font-weight: bold;">PORTLAND CEMENT CONCRETE PAVEMENT</p> <p style="font-size: 1.1em; font-weight: bold;">TYPE 1 REPAIRS</p>
APPROVED	 DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 3-6-85	APPROVAL 3-18-85
	REVISED 10-1-01	REVISED 4-26-89
	REVISED	REVISED
STANDARD NO. MD 577.02		

METHOD 'B' REPAIRS PERFORMED AT AN EXISTING TRANSVERSE JOINT WHEN THE REPAIR EXCEEDS 3 FT. ON ONLY ONE SIDE OF THE JOINT. (NOTE THAT THE 3 FT. OFFSET IS TO ALLOW FOR THE REMOVAL AND REPLACEMENT OF DOWELS.)



PLAN



SECTION A-A

REPAIR GUIDELINES

1. TYPE 1 REPAIRS ARE 6 FT TO LESS THAN 15 FT IN LENGTH AND DO NOT REQUIRE REINFORCEMENT. (PLAIN CONCRETE) TYPE 2 REPAIRS ARE 15 FT. AND GREATER IN LENGTH AND REQUIRE REINFORCEMENT. (REINFORCED CONCRETE) SEE METHOD 'D' ON STANDARD 577.05 FOR STEEL REINFORCEMENT DETAILS.
2. REPAIR SLABS AND REMAINS OF EXISTING SLABS SHALL NOT BE LESS THAN 6 FT. IN LENGTH.
3. EXISTING DOWELS AND ASSEMBLIES SHALL BE COMPLETELY REMOVED WHEN A REPAIR IS PERFORMED AT A TRANSVERSE JOINT.
4. ALL REPAIRS OFFSET MORE THAN 3 FT. ON EITHER SIDE OF AN EXISTING TRANSVERSE JOINT SHALL BE EXTENDED TO A MINIMUM OF 6 FT AND DOWEL ASSEMBLIES SHALL BE PLACED ADJACENT TO THE EXISTING TRANSVERSE JOINTS AS SHOWN IN REPAIR METHOD 'C' ON STANDARD MD 577.04.

NOTES

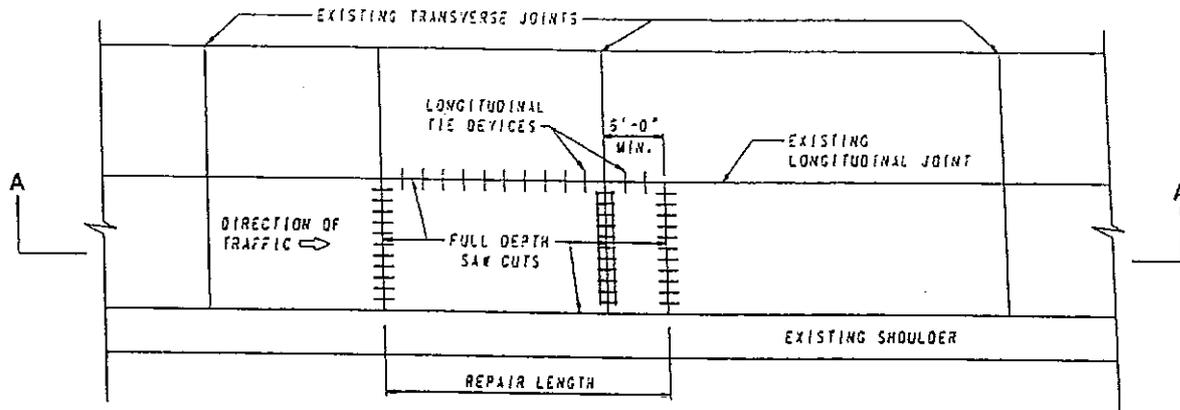
1. REPAIRS SHALL BE MADE IN ACCORDANCE WITH SECTION 522 OF THE SPECIFICATIONS.
2. REPAIRS SHALL BE MADE USING CONCRETE MEETING THE REQUIREMENTS OF SECTION 522.02 OF THE SPECIFICATIONS.
3. SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SUBSECTION 522.03.04 OF THE SPECIFICATIONS AND MAY REQUIRE ADDITIONAL MATERIAL TO FACILITATE PLACEMENT OF LOAD TRANSFER DEVICES.
4. HOLES FOR THE DOWELS AND LOAD TRANSFER TIE DEVICES SHALL BE DRILLED SIMULTANEOUSLY TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS WHICH WILL MAINTAIN THE DRILLS IN A LONGITUDINALLY PARALLEL POSITION.
5. JOINTS SHALL BE MADE IN ACCORDANCE WITH SECTION 520 OF THE SPECIFICATIONS AND STANDARD MD 577.07.
6. ALL LOAD TRANSFER TIE BARS AND DOWELS SHALL BE EPOXY COATED.
7. SEE STANDARD MD 577.01 FOR PAVEMENT REPAIR SAW CUTS FOR LIFT OUT METHOD.

SPECIFICATION 522	CATEGORY CODE ITEMS
APPROVED <i>Kurt G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL - SHA REVISIONS
	APPROVAL 3-5-85
	REVISED 10-1-01
	REVISED
	REVISED
APPROVAL - FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL 3-18-85	
REVISED 4-24-87	
REVISED	
REVISED	

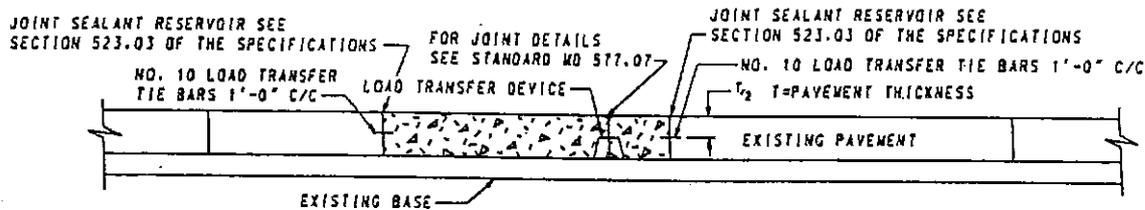
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
METHOD 'B' PLAIN OR CONVENTIONALLY REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT TYPE 1 AND TYPE 2 REPAIRS

STANDARD NO. MD 577.03

METHOD 'C' REPAIRS EXCEEDING 3 FT. ON BOTH SIDES OF AN EXISTING TRANSVERSE JOINT.



PLAN



SECTION A-A

REPAIR GUIDELINES

1. TYPE 1 REPAIRS ARE 6 FT. TO LESS THAN 15 FT. IN LENGTH AND REQUIRE NO REINFORCEMENT. (PLAIN CONCRETE)
TYPE 2 REPAIRS ARE 15 FT. AND GREATER IN LENGTH AND REQUIRE REINFORCEMENT. (REINFORCED CONCRETE)
SEE METHOD 'D' ON STANDARD 577.05 FOR STEEL REINFORCEMENT DETAILS.
2. REPAIR SLABS AND REMAINS OF EXISTING SLABS SHALL NOT BE LESS THAN 6 FT. IN LENGTH.
3. ALL REPAIRS OFFSET MORE THAN 3 FT ON EITHER SIDE OF AN EXISTING TRANSVERSE JOINT SHALL BE EXTENDED TO A MINIMUM OF 6 FT. AND DOVEL ASSEMBLIES SHALL BE PLACED ADJACENT TO THE EXISTING TRANSVERSE JOINT.
4. EXISTING DOVELS AND ASSEMBLIES SHALL BE COMPLETELY REMOVED WHEN A REPAIR IS PERFORMED AT A TRANSVERSE JOINT.

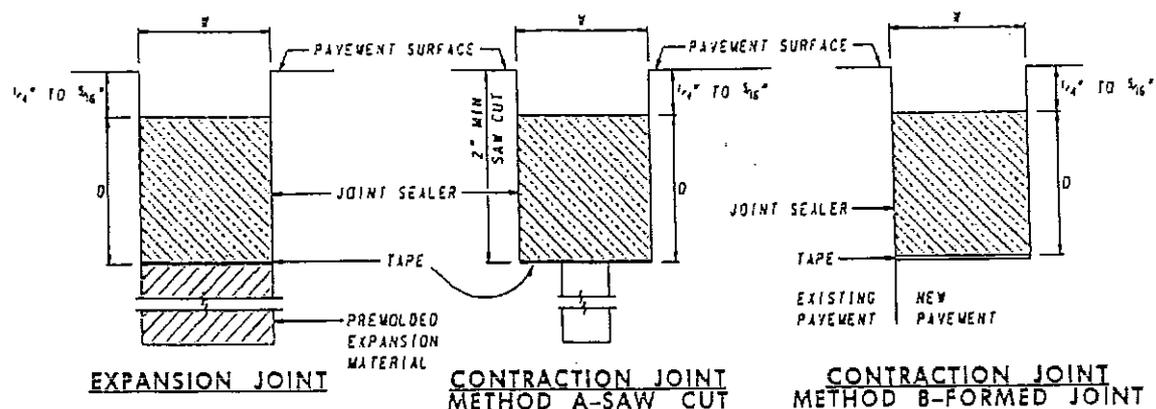
NOTES

1. REPAIRS SHALL BE MADE IN ACCORDANCE WITH SECTION 522 OF THE SPECIFICATIONS.
2. REPAIRS SHALL BE MADE USING CONCRETE MEETING THE REQUIREMENTS OF SECTION 522.02 OF THE SPECIFICATIONS.
3. SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SUBSECTION 522.03.04 OF THE SPECIFICATIONS AND MAY REQUIRE ADDITIONAL MATERIAL TO FACILITATE PLACEMENT OF LOAD TRANSFER DEVICES.
4. HOLES FOR THE DOVELS AND LOAD TRANSFER TIE DEVICES SHALL BE DRILLED SIMULTANEOUSLY TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS WHICH WILL MAINTAIN THE DRILLS IN A LONGITUDINALLY PARALLEL POSITION.
5. JOINTS SHALL BE MADE IN ACCORDANCE WITH SECTION 520 OF THE SPECIFICATIONS AND STANDARD MD 577.07.
6. ALL LOAD TRANSFER TIE BARS AND DOVELS SHALL BE EPOXY COATED.
7. SEE STANDARD MD 577.01 FOR PAVEMENT REPAIR SAW CUTS FOR LIFT OUT METHOD.

SPECIFICATION 522	CATEGORY CODE ITEMS
APPROVED	<i>Kate G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-6-85
	REVISED 10-1-01
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 3-13-84
REVISED	REVISED 4-16-87
REVISED	REVISED
REVISED	REVISED

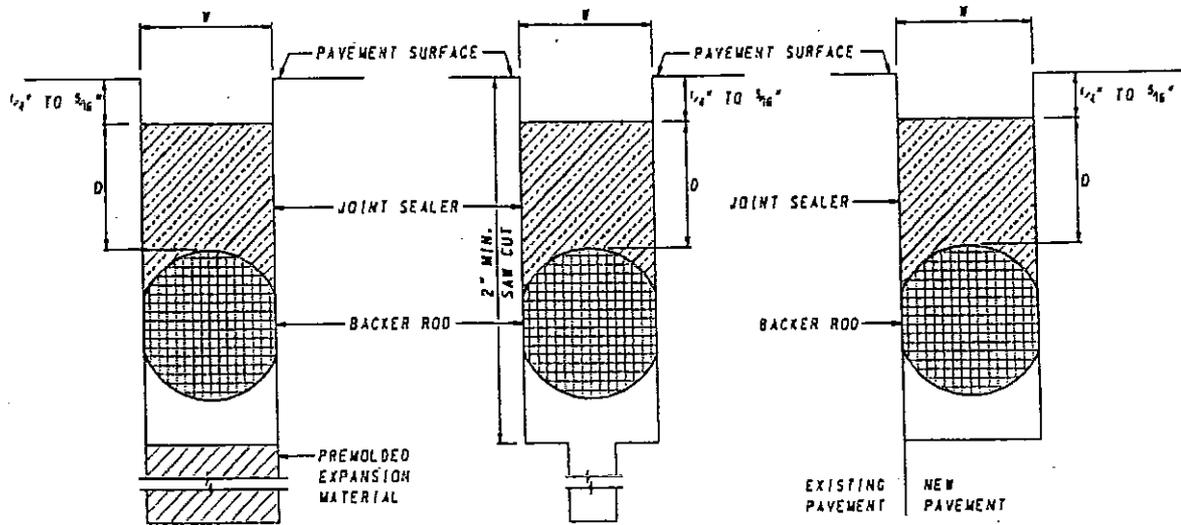
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
METHOD 'C' PLAIN OR CONVENTIONALLY REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT TYPE 1 AND 2 REPAIRS

STANDARD NO. MD 577.04



EXPANSION JOINT CONTRACTION JOINT METHOD A-SAW CUT CONTRACTION JOINT METHOD B-FORMED JOINT

JOINTS WITH TAPE



EXPANSION JOINT CONTRACTION JOINT METHOD A-SAW CUT CONTRACTION JOINT METHOD B-FORMED JOINT

JOINTS WITH BACKER ROD

SLAB THICKNESS = "T"
BACKER ROD DIA. = 1.25"

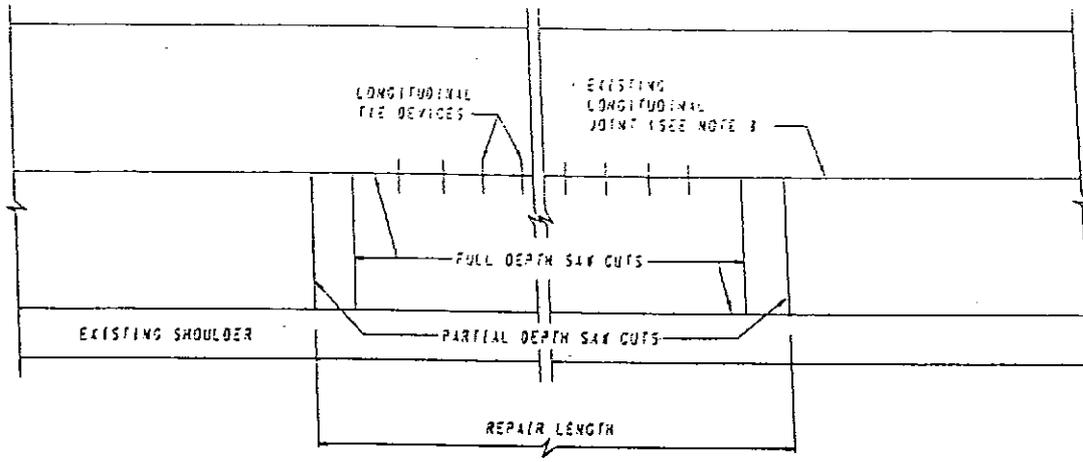
NOTES

1. $W = \frac{3}{4}"$ FOR TRANSVERSE EXPANSION JOINTS UNLESS FIELD CONDITIONS REQUIRE A LARGER OPENING.
 $D = W$ UNLESS SILICONE JOINT SEALANT IS USED, THEN $D = \frac{1}{2} W$.
 $W = \frac{1}{4}"$ TO $\frac{1}{2}"$ FOR TRANSVERSE CONTRACTION JOINTS & LONGITUDINAL JOINTS.
2. THE CONTRACTOR MAY ELECT TO USE TAPE OR BACKER ROD TO MAINTAIN THE SPECIFIED SHAPE FACTORS FOR THE JOINT SEALANT. THE ENGINEER MAY REQUIRE THE USE OF THE BACKER ROD IF THE TAPE METHOD DOES NOT PROHIBIT BOND OF THE JOINT SEALANT TO THE BOTTOM OF THE RESERVOIR OR IF THE BOTTOM OF THE RESERVOIR IS TOO LOW TO MAINTAIN THE SHAPE FACTOR AND THE $\frac{1}{4}"$ TO $\frac{3}{16}"$ CLEARANCE BETWEEN THE TOP SURFACE OF THE JOINT SEALANT AND THE ROADWAY SURFACE.
3. SEE SECTION 520 OF THE SPECIFICATIONS.
4. THE INITIAL SAW CUT SHALL BE $T/4 + \frac{1}{4}"$ AND SHALL BE COMPLETED WITHIN 24 HOURS AFTER PLACEMENT OF CONCRETE.
5. COST OF JOINTS SHALL BE INCIDENTAL TO THE PRICE BID FOR CONCRETE PAVEMENT REPAIRS OR CONCRETE PAVEMENTS.

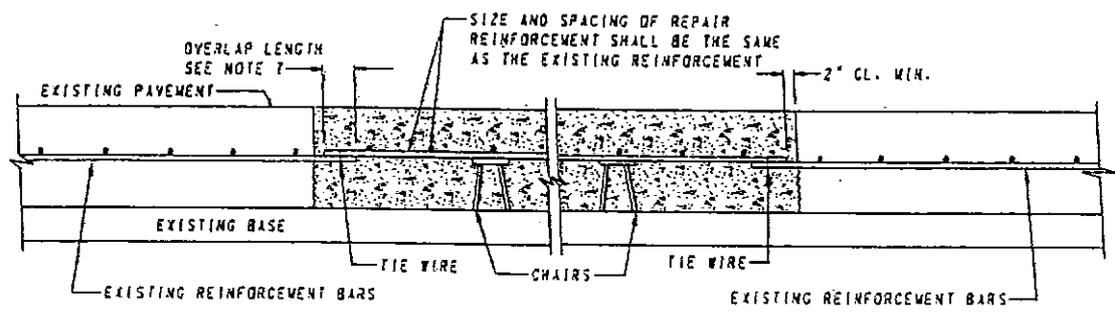
SPECIFICATION 520	CATEGORY CODE ITEMS
APPROVED	<i>Karl G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL • SHA REVISIONS
	APPROVAL 3-6-86
	REVISED 10-1-01
	REVISED
	REVISED
APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	APPROVAL 3-18-86
	REVISED 2-24-88
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
JOINTS FOR PLAIN OR CONVENTIONALLY REINFORCED PORTLAND CEMENT CONCRETE PAVEMENTS

STANDARD NO. MD 577.07



PLAN



ELEVATION

NOTES

1. REPAIRS SHALL BE MADE IN ACCORDANCE WITH SECTION 522 OF THE SPECIFICATIONS.
2. REPAIRS SHALL BE MADE USING CONCRETE MEETING THE REQUIREMENTS OF SECTION 522.02 OF THE SPECIFICATIONS.
3. SUBGRADE PREPARATION SHALL BE MADE IN ACCORDANCE WITH SUBSECTION 522.03.04 OF THE SPECIFICATIONS.
4. LONGITUDINAL JOINT SHALL BE MADE IN ACCORDANCE WITH SECTION 520 OF THE SPECIFICATIONS AND STD. NO 577.07
5. ALL REINFORCEMENT BARS, CHAIRS, TIE DEVICES AND TIE WIRES SHALL BE EPOXY COATED
6. PAVEMENT REPAIR SAW CUTS AND LIFT OUT METHOD SEE STD. NO 577.01.
7. REINFORCEMENT STEEL OVERLAP SHALL BE 18" MINIMUM FOR NO. 3 STEEL BARS AND 22" MINIMUM FOR NO. 5 STEEL BARS.
8. IN INSTANCES WHERE THE EXISTING PAVEMENT WAS POURED AS ONE SLAB THE LONGITUDINAL TIE DEVICES ARE NOT APPLICABLE. THE SAW CUTS SHALL EXTEND THE FULL WIDTH OF THE PAVEMENT.

SPECIFICATION 522	CATEGORY CODE ITEMS
APPROVED	<i>K. G. McCall</i> DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT
	APPROVAL - SHA REVISIONS
	APPROVAL 1-13-70
	REVISED 11-1-01
	REVISED
	APPROVAL - FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-3-70
	REVISED
	REVISED
	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CONTINUOUSLY REINFORCED
PORTLAND CEMENT CONCRETE PAVEMENT
REPAIRS

STANDARD NO. MD 577.10



Maryland
Transportation
Authority

SPECIAL PROVISIONS
500.05 – CONTINGENT MISCELLANEOUS REPAIRS

CONTRACT NO. MA-2435-000-002

**CATEGORY 500
PAVING**

SECTION 500.05 — CONTINGENT MISCELLANEOUS REPAIRS

500.05.01 DESCRIPTION

A contingent allowance of \$700,000.00 has been included in the Proposal Form for miscellaneous paving repairs. This item will only be used if necessary and will not be used without approval of the Engineer.

500.05.02 MATERIALS Not applicable.

500.05.03 CONSTRUCTION Not applicable.

500.05.04 MEASUREMENT AND PAYMENT

Payment for materials for pavement repairs, and other additional items as directed by the Engineer will be paid for under the “Contingent Miscellaneous Repairs” item. There is no guarantee that any or all of this item will be used during the term of the Contract.



**CATEGORY 500
PAVING**

SECTION 504 — HOT MIX ASPHALT PAVEMENT

504.03 CONSTRUCTION

470 **DELETE:** 504.03.04 Tack Coat in its entirety.

INSERT: The following.

504.03.04 Tack Coat. Dry and clean the surface of all loose and foreign materials prior to application of the tack coat. Apply the tack coat uniformly across the surface as directed using an application rate of 0.01 to 0.05 gal/yd².

504.04 MEASUREMENT AND PAYMENT.

478 **DELETE:** 504.04.01 Price Adjustment for Asphalt Binder in its entirety.

INSERT: The following.

504.04.01 Price Adjustment for Asphalt Binder. A Price Adjustment (PA) will be made to provide additional compensation to the Contractor or a credit to the Administration for the fluctuation in the cost of asphalt binder.

For adjustment purposes, the prevailing base index price will be the price specified for PG 64-22 Asphalt Binder posted at www.marylandroads.com (Business Center /Contracts Bids and Proposals) at time of bid opening. Cost differentials between PG 64-22 and a binder specified shall be included in the price bid per ton for Hot Mix Asphalt. A historical database will be maintained by the Administration.

The PA will be made when the index price for the month of placement increases or decreases more than 5 percent of the prevailing base index price. Computations will be as follows:

$$\text{Percent Change} = ((P_p - P_b) / P_b) \times 100$$

$$PA = T \times Q \times ((P_p - (D \times P_b))$$

Where:

- PA = Price Adjustment for the current month
- T = Design target asphalt content expressed as a decimal
- Q = Quantity of Hot Mix Asphalt placed for the current month
- P_p = Index price for PG 64-22 Asphalt Binder per ton for the month of placement



D = 1.05 for increases over 5 percent; 0.95 for decreases over 5 percent

Pb = Prevailing base index price for PG 64-22 Asphalt Binder per ton

PA resulting in increased payment to the contractor will be paid under the item Price Adjustment for Asphalt Binder. The item amount will be established by the Administration and shall not be revised by the Contractor. PA resulting in a decreased payment will be deducted from monies owed the Contractor.

479 **DELETE:** 504.04.02 Price Adjustments for Hot Mix Asphalt Mixture and Pavement Density in its entirety.

INSERT: The following.

504.04.02 Payment Adjustments for Pavement Density and Hot Mix Asphalt Mixture. Payment adjustments for pavement density will be based on individual subplot core test data for a given lot and the lot average density as specified in this section and Table 504A. Payment reductions for density and for mixture will be made by adjusting the payment for Hot Mix Asphalt. Incentive payments will be made using the Contract items for Pavement Density and Hot Mix Asphalt Mixture. The item amounts established by the Administration shall not be revised. Payment reductions for density will be waived for portions of the pavement where a poor foundation is determined as the cause for inadequate density.



TABLE 504A		
Dense Graded HMA Mixes – Percent of Maximum Density		
Lot Average % Minimum	No Individual Sublot Below %*	Pay Factor (DF)
94.0	94.0	1.050
93.8	93.7	1.045
93.6	93.4	1.040
93.4	93.1	1.035
93.2	92.8	1.030
93.0	92.5	1.025
92.8	92.2	1.020
92.6	91.9	1.015
92.4	91.6	1.010
92.2	91.3	1.005
92.0	91.0	1.000
91.8	90.8	0.990
91.6	90.6	0.980
91.4	90.4	0.970
91.2	90.2	0.960
91.0	90.0	0.950
90.8	89.8	0.940
90.6	89.6	0.930
90.4	89.4	0.920
90.2	89.2	0.910
90.0	89.0	0.900
89.8	88.8	0.890
89.6	88.6	0.880
89.4	88.4	0.870
89.2	88.2	0.860
89.0	88.0	0.850
88.8	87.8	0.840
88.6	87.6	0.830
88.4	87.4	0.820
88.2	87.2	0.810
88.0	87.0	0.800
Less than 88.0	87.0	0.750 or rejected by Engineer

Note 1: When any test data is above 97.0, the Engineer may reject the lot. When not rejected, the lot will receive a pay adjustment in accordance with the following:
 (a) When the density lot average is above 97.5, the pay factor = 0.750.
 (b) When 3 subplot densities are above 97.0, the pay factor = 0.950.
 (c) When 4 or more subplot densities are above 97.5, the pay factor = 0.750.



- Note 2: Pay incentive or pay disincentive will not be paid for placements identified as wedge/level courses or thin lift courses.
- *Note 3: When the Contractor's core specific gravity data does not compare with the Administration's core specific gravity data, only the Administration's single subplot values and lot average value will be used in acceptance decision.
- *Note 4: The average subplot values and the lot average will be used in acceptance decision.

Acceptance of a mixture lot will be in conformance with Sections 904, 915, and MSMT 735. A composite pay factor (CPF) for asphalt content and gradation will be based on the total estimated percent of the lot that is within Specification limits as computed using the quality level analysis in conformance with MSMT 735.

Payment adjustments will be computed as follows:

$$\begin{aligned} \text{Density Lot Payment Adjustment} &= (\text{DF} - 1) \times (\text{AP}) \times (\text{TL}) \\ \text{Mix Design Lot Payment Adjustment} &= (\text{MF} - 1) \times (\text{AP}) \times (\text{TL}) \end{aligned}$$

where:

- MF = Mixture pay factor [0.55 + (0.5 x CMPWSL)]
Refer to MSMT 735 for CMPWSL.
- DF = Density pay factor from Table 504A.
- AP = Adjusted/applicable unit price per 504.04.01.
- TL = Applicable tonnage per lot.

An in-place density lot containing material with a pay factor of less than 1.000 may be accepted at the reduced pay factor provided the pay factor for density is at least 0.800, and there are no isolated defects.

A mixture lot containing material with a pay factor of less than 1.000 may be accepted at the reduced pay factor provided the composite pay factor for asphalt content and grading is at least 0.750, and there are no isolated defects.

An in-place density lot containing nonconforming material that fails to obtain at least a 0.800 pay factor and a mixture lot containing nonconforming material that fails to obtain at least a 0.750 pay factor for asphalt content and gradation will be evaluated to determine acceptance. Lots that are rejected shall be replaced.

Lots with less than five Quality Control or Quality Assurance samples per in-place density lot will not be evaluated for incentive payment.

When less than three mix samples have been obtained at the time of the acceptance sampling or at the time a lot is terminated, the Engineer will determine if the material in a shortened lot will be considered a part of the previous lot or whether it will be accepted based on the individual test data.



CATEGORY 500
PAVING

SECTION 504 — HOT MIX ASPHALT PAVEMENT

504.04 MEASUREMENT AND PAYMENT.

463 **ADD:** The following after 504.04.04 Dispute Resolution.

504.04.05 Asphalt Cement Price Index. The prevailing base price of PG 64-22 Asphalt Cement during the month of advertisement for this project as determined by the Administration is \$ 467.00 per ton. When a grade other than PG 64-22 is specified by the Contract Documents, the cost differential, if any, must be reflected in the price bid per ton for Hot Mix Asphalt.



**CATEGORY 500
PAVING**

SECTION 505—HOT MIX ASPHALT PATCHES

505.03 CONSTRUCTION.

485 **DELETE:** 505.03.08 Patch Placement in its entirety.

INSERT: The following.

505.03.08 Patch Placement. Thoroughly clean and tack coat the exposed vertical surfaces of the adjacent pavement as specified in 504.03.04 prior to placing the HMA patch. Spread the HMA with a shovel, rake, or by other approved methods. Do not place HMA on a frozen base.

Maintain lift thickness in conformance with the following:

HOT MIX ASPHALT LIFT THICKNESS		
MIX DESIGNATION (mm)	MINIMUM (in.)	MAXIMUM (in.)
9.5	1.0	2.0
12.5	1.5	3.0
19.0	2.0	4.0
25.0	3.0	5.0
37.5	4.0	6.0



**CATEGORY 500
PAVING**

486 **DELETE:** SECTION 506 — HOT MIX ASPHALT GAP-GRADED in its entirety.

INSERT: The following.

SECTION 506 — GAP-GRADED STONE MATRIX ASPHALT

506.01 DESCRIPTION. Place gap-graded stone matrix asphalt surface (GGSMA) as specified. GGSMA shall conform to Section 504, except as specified herein.

506.02 MATERIALS.

Gap-Graded Stone Matrix Asphalt	904.05
Production Plant	915

506.03 CONSTRUCTION.

506.03.01 Demonstration. Before proceeding with the actual work, the Contractor shall demonstrate to the Engineer that a satisfactory mix can be produced, placed, and the compactive effort determined. A minimum of 100 tons of GGSMA shall be placed outside the project limits for the demonstration. A new strip will be required if a project carries over to a new season. Paver and rollers shall conform to 504.03.01. A material transfer vehicle may be used as part of the demonstration strip.

506.03.02 Hauling Units. Dry soap powder, as approved by the Engineer, may be used with the release agent specified in 915.02(f). Truck beds shall be raised to drain excess water before being loaded with GGSMA.

A light dusting of No. 10 aggregate coated with 1 percent asphalt may be used in lieu of the liquid release agent.

The time between plant mixing and shipment shall not exceed one hour (storage time may vary depending upon gradation, type of binder and/or stabilizer. Storage material shall consistently have results of no less quality than mixtures discharged directly into hauling vehicles). Each load shall be completely covered with a full tarp extending a minimum of 6 in. over each side of the truck body and securely fastened.

506.03.03 Weather Restrictions. Placement of GGSMA will be permitted only when the ambient and surface temperatures are at least 50 F and in accordance with 504.03.02.

506.03.04 Material Transfer Vehicle (MTV). Use a material transfer vehicle to apply the final surface course. The MTV shall perform additional mixing of the Gap-Graded SMA material and then deposit the mixture into the paver at a uniform temperature and consistency.



SPECIAL PROVISIONS INSERT
506 – GAP GRADED STONE MIX ASPHALT

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506.03.05 Mix Temperature. The minimum temperature of the mixture at the time of placement shall be established during the mix design procedure.

506.03.06 Pavement Thickness. The thickness of the pavement shall be as specified in the Contract Documents. Thin Lift specification 504.03.12 is not applicable to GGSMA.

506.03.07 Tack Coat. Refer to 504.03.04 except that, the resulting coating shall be residual asphalt applied at a rate of 0.03 to 0.05 gal/yd².

506.03.08 Compaction. Compaction shall be performed using a minimum of three steel-wheeled rollers, each weighing 10 to 12 tons. The rollers shall follow the paver within 500 ft. or roll as approved in the QC Plan. Rolling shall start immediately after placement. In place density shall conform to 504.03.11 (c), except that the density shall be 94 to 97 percent of maximum density. Sampling and testing shall be performed as specified in 504.03.11.

The rollers shall be equipped with a watering or soapy watering system that prevents material from sticking to the rollers.

506.03.09 Control Strip. The Contractor may opt to construct a control strip for guidance in determining roller patterns to achieve optimum density. When a control strip is constructed, it shall be placed on the first workday in which SMA is placed and shall be between 400 and 500 ft in length. Based on the Contractor's evaluation of the initial control strip, paving may continue at the Contractor's risk.

The Contractor will not be assessed a density pay adjustment for the amount of material required for construction of the control strips. Should the removal of any control strip be necessary, the Contractor shall remove it at no additional cost to the Administration.

The Engineer may require the Contractor to construct a control strip any time during placement of SMA based on the evaluation of compaction results.

506.03.10 Pavement Profile. Refer to the Pavement Surface Profile requirements specified in the Contract Documents.

506.03.11 Sampling and Testing for Density and Mixture. For sampling and testing for density and mixture refer to 504.03.10 and 11.

506.04 MEASUREMENT AND PAYMENT. Gap-Graded Stone Matrix Asphalt will be measured and paid for at the Contract unit price per ton, complete and in place. The payment will be full compensation for furnishing, hauling, placing all materials, material transfer vehicle, antistripping additive, tack coat, control strips, setting of lines and guides where specified, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Material produced for the demonstration will not be measured but the cost will be incidental to the item GGSMA.



SPECIAL PROVISIONS INSERT
506 — GAP GRADED STONE MIX ASPHALT

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506.04.01 Price Adjustment for Stone Matrix Asphalt Mixture and Pavement Density.
Refer to 504.04 except as follows:

GAP GRADED STONE MATRIX ASPHALT MIXES		
PERCENT OF MAXIMUM DENSITY		
LOT AVERAGE MINIMUM (%)	NO INDIVIDUAL SUBLOT BELOW (%)	PAY FACTOR (%)
95.0	95.0	105.0
94.9	94.8	104.5
94.8	94.6	104.0
94.7	94.4	103.5
94.6	94.2	103.0
94.5	94.0	102.5
94.4	93.8	102.0
94.3	93.6	101.5
94.2	93.4	101.0
94.1	93.2	100.5
94.0	93.0	100.0
93.8	92.7	99.0
93.6	92.4	98.0
93.4	92.1	97.0
93.2	91.8	96.0
93.0	91.5	95.0
92.8	91.2	94.0
92.6	90.9	93.0
92.4	90.6	92.0
92.2	90.3	91.0
92.0	90.0	90.0
91.8	89.7	89.0
91.6	89.4	88.0
91.4	89.1	87.0
91.2	88.8	86.0
91.0	88.5	85.0
Less than 91.0	—	75.0 or rejected per Engineer

Note 1: When any test data is above 97.0, the lot may be rejected per the Engineer. When not rejected, the lot will receive a pay adjustment in accordance with the following:

- (a) When the density lot average is above 97.5, the pay factor = 75%.



- (b) When 3 subplot densities are above 97.0, the pay factor = 95%.
- (c) When 4 or more subplot densities are above 97.5, the pay factor = 75%.

Note 2: Pay incentive or pay disincentive will not be paid for placements identified as wedge/level courses or thin lift courses.

Note 3: When the Contractor's core specific gravity data does not compare with the Administration's core specific gravity data, only the Administration's single subplot values and lot average value will be used in acceptance decision.

Note 4: The average subplot values and the lot average will be used in acceptance decision.

506.04.02 Dispute Resolution. Refer to 915.02.01, Responsibilities of the Administration, (e).



**CATEGORY 500
PAVING**

SECTION 550 — PAVEMENT MARKING PAINT

550.01 DESCRIPTION. Furnish and apply nontoxic lead free waterborne pavement marking paint to pavement surfaces as specified in the Contract Documents or as directed by the Engineer. These markings includes lines (striping), legends (letters and numbers) and symbols.

550.02 MATERIALS. Paint is a nontoxic lead free waterborne pavement marking and is a non-durable material. All Paint Pavement Marking material shall be selected from the Qualified Products List.

Nontoxic Lead Free Waterborne
Pavement Marking Material

951.01

550.03 CONSTRUCTION.

550.03.01 Quality Control / Quality Assurance. Refer to Section 549.

550.03.02 Application. The location, width, and type of marking shall be as specified in the Contract Documents or as directed by the Engineer.

- (a) **Temperature.** The markings shall be applied when the paint, ambient and surface temperature, and relative humidity conform to the manufacturer's recommendations.
- (b) **Glass Beads.** The Contractor shall apply the Maryland Blend gradation of glass beads uniformly across the surface of the stripe, at the rate of 7 to 9 lb/gal of paints.
- (c) **Thickness.** The paint shall be applied at a wet film thickness of 18 ± 1 mils.
- (d) **Color.** The color of the dry markings shall match Federal Standard 595 (38907 - yellow or 37925 - white). The Contractor shall make available the specified color chips for the Engineer's use to visually determine that the waterborne material matches the specified color.
- (e) **No-Track.** The paint shall conform to 60 second no-track requirements. The no-track condition shall be determined by passing over the applied line at approximately 30 degrees with a standard passenger car or pickup truck. When viewed from a distance of 50 ft, the pavement surface shall show no evidence of the paint being picked up and redeposited on the pavement by the vehicle.
- (f) **Retroreflectance.** The minimum retroreflectance shall be 150 millicandelas/lux/square meter for yellow and 250 millicandelas/lux/square meter for white as determined in conformance with MSMT 729.

550.03.03 Application Equipment. The equipment used for application of the paint shall be approved by the Engineer prior to start of work, and shall be capable of applying waterborne traffic paint that has been approved by the Administration. The Contractor shall provide access to the paint application equipment for inspection by the Engineer.



SPECIAL PROVISIONS INSERT
550 —PAVEMENT MARKING PAINT

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The paint carriage on the left side of the paint truck shall have three paint and bead guns. The paint carriage on the right side of the paint truck shall have two paint and bead guns.

All 10 in. lines shall be applied using two paint and bead guns. Raising the paint carriage in order to paint these lines with one paint gun and bead gun is prohibited.

The footage counters used to measure pavement markings shall be calibrated, and a notarized certification shall be submitted to the Engineer as part of the Quality Control Plan.

Temperature gauges shall be calibrated every six months and a copy of the calibration certification shall be submitted to the Engineer as part of the Quality Control Plan.

The applicator shall apply the surface dressing beads to the wet paint marking by means of a pressurized bead dispenser or other mechanical conveying method not dependent upon gravity for uniform application. The bead dispenser shall be equipped with an automatic cutoff system that will stop the flow of the paint material whenever there is a disruption in the application of the beads so that all markings placed shall be covered with a uniform layer of surface dressing beads.

Application equipment shall be capable of applying the markings at multiple width settings ranging from 4 to 12 in.

The applicator shall provide a method for cleanly cutting off stripe ends and shall be capable of applying all longitudinal pavement markings.

The equipment shall be mobile and maneuverable to the extent that straight lines can be followed and all standard curves can be made in true arcs.

All parts of the equipment shall be thoroughly cleaned of foreign material or different colored material prior to the introduction of a new batch of material.

550.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for all pavement preparation, furnishing and placing of markings, testing, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. Refer to 549.04.

Pavement Marking Paint will be measured and paid for at the Contract unit price for one or more of the following items:

- (a) Pavement Marking Paint lines (striping) will be measured and paid for at the Contract unit price per linear foot for the color and width specified.
- (b) Pavement Marking Paint Legends (letters and numbers) and Symbols will be measured and paid for at the Contract unit price per square foot. The square foot pay quantity for Legends (letters and numbers) and Symbols will be as specified in the Administrations Standard Details.



**CATEGORY 500
PAVING**

SECTION 557 – SNOWPLOWABLE RAISED PAVEMENT MARKERS

557.01 DESCRIPTION. Furnish and install new Snowplowable Raised Pavement Markers (SRPM) and replacement components as specified in the Contract Documents or as directed by the Engineer.

557.02 MATERIALS.

Castings	Qualified Products List / 951.05
Pavement Marker Reflector Lenses	Qualified Products List / 951.05
Epoxy	951.05

Snowplowable Raised Pavement Markers are durable materials.

557.03 CONSTRUCTION.

Casting. Recycled iron castings are prohibited.

Placement. Snowplowable Raised Pavement Markers shall be installed and located as specified in the Contract Documents and in conformance with the Maryland Manual of Uniform Traffic Control Devices (MdMUTCD).

General Installation Requirements.

- (a) The Contractor shall install the SRPM no later than two weeks after the completion of the final surface or as directed by the Engineer.
- (b) At the time of installation, the road surface and ambient temperature shall be as specified in the manufacturers' recommendations. Installing markers on wet pavement surfaces as determined in MSMT 729 is prohibited.
- (c) At the time of installation, the Contractor shall have on the jobsite all the materials necessary to complete the installation.
- (d) The quality control test strip containing a minimum of 10 groove cuts spaced as specified in the Contract Document shall be constructed to verify the accuracy and ability of the equipment and personnel. The contractor shall replace at no additional cost to the Administration any incorrect groove cuts and any incorrect casting placements within the test strip.
- (e) At the time of installation, SRPM castings delivered with Pavement Marker Reflector Lens affixed should be free of dirt, dust, oil, grease, rust, moisture, or any foreign matter that will impair adhesion to the pavement. Any residual material that inhibits retroreflectivity of the reflector lens shall be removed without damage to the lens surface. It shall be the contractor's responsibility to clean each contaminated casting by sand blasting, wire



brushing or other procedure approved by the Engineer to remove all foreign matter prior to installation. The use of chemicals to remove rust from the castings is prohibited.

- (f) The contractor shall replace at no additional cost to the Administration any incorrect groove cut and any incorrect casting placement. An additional test strip may be required by the Engineer in the event of incorrect installations. Incorrect installations, as determined by the Engineer, shall be corrected and repaired by the contractor at no additional cost to the Administration.

Pavement Marker Reflector Lens. Reflector lenses for pavement markers shall be the same color as the adjacent pavement marking except the back side shall be as follows;

- (a) One-Way Applications: The backside for One-Way Markers shall be red or blank as specified in the Contract Documents or as directed by the Engineer.
- (b) Two-Way Applications: The backside for Two-Way Markers shall be the same color as the adjacent pavement marking.

The pavement marker reflector lens shall be imprinted with the model/batch number and the manufacturers' name.

Castings. The casting shall be imprinted with the model number and the manufacturer's name.

New Installation.

- (a) The SRPM shall be installed in accordance with manufacturer's recommendations and D 4383. The installed height shall not exceed 0.25 in. above the road surface. The surface of the keel and web shall be free of scale, dirt, oil, grease or any other contaminant which may reduce its bond to the epoxy adhesive. All requirements of the manufacturer's installation instructions shall be met.
- (b) The groove cut for the casting shall be the appropriate dimensions to allow 0.125 in. movement side to side of the casting. All leveling lugs on the casting must contact the pavement. The leading and trailing edges of the casting must lie below the pavement surface and the casting properly seated. All other requirements of the manufacturer's installation instructions shall be met.
- (c) Lenses used shall be of a type specifically manufactured and approved for use as SRPM reflector lenses. Lenses that are manufactured exclusively for recessed pavement markers are not permitted as substitutes for SRPM reflector lenses.

Replacement.

- (a) Casting Replacement. The re-use of damaged or removed castings is prohibited.
- (b) Pavement Marker Reflector Lens Replacement. The Contractor shall remove and dispose of any damaged reflector lens and replace with a new lens. Previously installed undamaged castings which are missing a reflector lens shall have a new reflector lens installed. The replacement lenses shall be installed per manufacturer's written instructions.



- (c) Casting Groove Cut Replacement and Accuracy. The re-use of existing groove cuts is prohibited; castings shall only be installed in new groove cuts. Previously used groove cuts shall be permanently patched in accordance with applicable sections of 504, 505 and 522 or

as directed by the Engineer. The location of the replacement groove cut shall be within 10 percent longitudinally in front (with the direction of traffic) and no lateral deviation exceeding 1½ in.

Casting Adhesive. The epoxy adhesive used to fasten the castings to the pavement surface shall conform to D 4383-05 Table X1.1.

Reflector Lens Adhesive in Casting. The adhesive used to fasten the reflector lens to the casting shall meet the manufacturers' recommendations.

Quality Assurance/Quality Control. Section 549.

Observation Period. The Contractor shall replace at no additional cost to the Administration, any SRPM or Pavement Marker Reflector Lenses found to be damaged, non-retroreflective or missing due to improper installation or manufacturing defects within 180 days after opening to traffic.

557.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for all pavement preparation, furnishing and placement of SRPM's, testing, removal, groove cutting, repair and all materials, labor, equipment, tools and all incidentals necessary to complete the work.

- (a) Snowplowable Raised Pavement Markers will be paid for at the Contract unit price per each. Furnishing and installing SRPM includes the casting, reflector, adhesive and grooving.
- (b) Removal of existing Castings, excluding any incorrect installation by the Contractor, and repair of Groove Cuts will be paid for at the Contract unit price per each.
- (c) Replacement of Pavement Marker Reflector Lenses will be paid for at the Contract unit price per each.



CATEGORY 500
SECTION 559 — PERMANENT PREFORMED PATTERNED
REFLECTIVE PAVEMENT MARKINGS

559.01 DESCRIPTION. Furnish and apply permanent preformed patterned reflective pavement (PPPRP) markings.

559.02 MATERIALS.

Permanent Preformed Patterned Reflective Pavement Marking Materials	951.07
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559.03 CONSTRUCTION.

559.03.01 General. PPPRP markings shall be applied in conformance with the manufacturer's recommendations or as directed by the Engineer.

On new hot mix asphalt projects, the PPPRP markings shall be inlaid into the hot surface of the top course of pavement. No top course paving shall be permitted unless the stripping crew and marking materials are at the project site.

When the Contract Documents specifies the use of PPPRP markings on concrete pavements or existing asphalt pavements, the Contractor shall use heat, solvent, or other type of adhesive primer in conformance with the manufacturer's recommendations.

Preformed legends and symbols shall conform to the applicable shape and sizes as specified in the MdMUTCD, and Contract Documents.

PPPRP markings shall conform to pavement contours and be resistant to deformation by traffic and damage from snow removal equipment. Surface preparation, use of solvents and primers and equipment used in the application of PPPRP markings shall conform with the manufacturer's recommendations and be approved by the Engineer. After PPPRP markings are applied, they shall be immediately ready for traffic.

559.03.02 Quality Assurance/Quality Control. Refer to 549.03.01.

559.03.03 Cleaning Pavement Surfaces. Refer to 549.03.02.

559.03.04 Application. Refer to 549.03.03 and the following:

(a) **Manufacturer's Recommendations.** The Contractor shall provide a copy of the manufacturer's recommendations to the Engineer, and shall follow them for the installation of the line markings.

(b) **Adherence.** Adherence of PPPRP markings shall be randomly checked by using a paint scraper or another approved tool, which shall be held nearly parallel with the highway surface, so there is no dislodging of the tape.



- (c) **Thickness.** The finished thickness of the PPPRP markings shall have a minimum caliper of 0.060 in. at the thickest portion of the patterned cross section, and a minimum caliper of 0.020 in. at the thinnest portion of the cross section. Measurements shall be made from the top of finished pavement surface.
- (d) **Color.** The color of the markings shall match Federal Standard 595 (33538 - yellow, 37886 – white, or 37038 - black). The Contractor shall supply the specified color chips for the Engineer’s use to visually determine that the PPPRP markings match the specified color.
- (e) **Retroreflectance.** Refer to MSMT 729 and the following:

MINIMUM RETROREFLECTANCE

COLOR	RETROREFLECTIVITY	CORRECTIVE ACTION
White	350 or higher	None
Yellow	250 or higher	
White	less than 350	Necessary corrective actions, removal, replacement
Yellow	less than 250	

- (f) **Width.** Refer to 549.03.01(a).
- (g) **Alignment.** Refer to 549.03.01(a).
- (h) **Layout Markings.** Refer to 549.03.01(a).

559.03.05 **Quality Control Test Strip.** Refer to 549.03.03.

559.03.06 **Responsibility.** Section 549.

559.03.07 **Observation Period.** The Contractor shall be responsible for any defects in materials and workmanship of the PPPRP markings for a period of 180 days from the date the markings are applied and under traffic.

The Engineer will not assess time charges during the observation period provided all other work on the Contract is complete. At the end of the observation period, the Engineer will inspect the pavement marking for durability, color, reflectivity, and inform the Contractor of all pavement markings that have failed and require replacement. The pavement marking will be considered failed for any of the following conditions:

- (a) More than five percent of the substrate is exposed in any 2000 ft section of longitudinal pavement marking line.
- (b) Retroreflectance values have dropped below 300 mcd/L/m² for white or 220 mcd/L/m² for yellow.



(c) Marking is discolored on a visual comparison with the color chips.

The Contractor shall remove and replace all failed PPPRP markings within 30 days of receiving written notification from the Engineer at no additional cost to the Administration. Work shall be in conformance with the manufacturer's recommendation and as approved by the Engineer before the project is accepted. The replacement markings shall conform to the same requirements as the original markings. If the work is not completed in this period, the Engineer will resume time charges until this work is completed.

At the end of the observation period, the Engineer will accept the work and terminate the Contractor's responsibilities upon satisfactory inspection of the PPPRP markings.

559.04 MEASUREMENT AND PAYMENT. Measurement and payment for the pertinent Permanent Prefomed Patterned Reflective Pavement Marking items will be as specified in 549.04. The reflectometer will become the property of the Contractor at the completion of the project.



**CATEGORY 500
PAVING**

SECTION 565 — REMOVAL OF EXISTING PAVEMENT MARKINGS

565.01 DESCRIPTION. Remove existing pavement markings (lines, letters, numbers, arrows, and symbols) during temporary or permanent traffic shifts, and repairing any roadway areas damaged during the removal process. This Specification does not apply to raised or recessed pavement markers. Temporary blackout tape shall be applied when existing pavement markings will require salvaging for reuse after completion of temporary traffic shifts necessary to perform work specified in the Contract Documents. Refer to 104.11.02.

565.02 MATERIALS. Not applicable.

565.03 CONSTRUCTION. The Contractor shall layout and apply all new pavement markings (temporary or permanent) as specified in Section 549 before any removal of existing pavement markings begin.

565.03.01 Quality Control/Quality Assurance. At least two weeks prior to the start of pavement markings removal, the Contractor shall submit a Quality Control Plan (QCP) to the Engineer for review. The QCP shall contain (as a minimum) the following information:

- (a) How the Contractor proposes to perform the work while ensuring conformance with the Specifications.
- (b) Proposed method of removal based on road conditions, type and number of equipment to be used, manpower expectations, and time frame to complete the work based on maintenance of traffic (MOT) restrictions.
- (c) Location and quantity of markings to be removed.
- (d) Protective shielding plan and containment system, particularly in the case of markings that may contain toxic materials.

The QCP shall also detail when, how, and what corrective actions will be taken for unsatisfactory construction practices and deviations from the Contract Documents. Any deviation from the QCP shall be cause for immediate suspension of work. Operations shall not resume without the Engineer's approval.

565.03.02 Quality Control Test Strip. Prior to the beginning of work, the Contractor shall demonstrate the removal method to the Engineer for approval. A minimum of 100 ft of existing pavement markings shall be removed as a test strip at a location determined by the Engineer. If the method does not work or shows signs of damaging the road surface, then another method shall be tried. Additional control strips will be required. The preferred method is that which least damages the roadway and completely removes the markings.



SPECIAL PROVISIONS INSERT

CONTRACT NO. MA-2435-000-002

559 — PREFORMED PATTERNED REFLECTIVE MARKINGS

565.03.03 Methods of Removal. The following removal methods are based on the pavement condition and type of marking material:

- (a) **Manual.** A scraper or putty knife shall be used to lift tape from the pavement surface. Open flame for tape removal is prohibited.
- (b) **High Pressure Water Blasting.** A high pressure water blast shall be used to break the bond between the marking material and the pavement surface. The water blast may contain fine grit.
- (c) **Alternate Methods.** Abrasive blasting or grinding methods shall be submitted for approval to the Office of Materials Technology prior to use.

565.03.04 Cleaning Pavement Surfaces. Immediately behind the removal operation, a vacuum equipped street sweeper capable of removing all loose material shall be used to remove all dust and debris generated by the removal process prior to returning the area to traffic. The Contractor shall prevent debris from draining into inlets and waterways, and all debris shall be collected and disposed of on an approved spoil area or landfill.

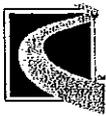
565.03.05 Alignment. Removal shall be performed in a straight and uniform manner, and shall follow the longitudinal alignment of the markings with a lateral deviation of no more than 1 in. in any 10 ft section. Affected area shall not exceed 1/2 in. on either side of the existing marking. The depth shall be uniform throughout, 1/8 in. or less, with no gouge areas in the pavement surface. If a second pass is necessary to completely remove the markings, the edges of the groove shall be feathered to a width of 1.25 in. on each side for every additional 1/8 in. of depth.

565.03.06 Corrective Action. Any pavement surface damaged beyond the requirements specified herein by the Contractor's operations shall be repaired or repaved as determined by the Engineer at no additional cost to the Administration.

565.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for the removal of the markings, pavement clean up, test strips, protective shielding, containment, disposal of marking material and pavement debris, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Removal of the existing pavement markings will be measured and paid for at the Contract unit price for one or more of the following items:

- (a) Removal of Existing Pavement Marking Lines per linear foot, any width.
- (b) Removal of Existing Pavement Marking Letters, Symbols, Arrows, and Numbers per square foot.



**CATEGORY 800
TRAFFIC**

SECTION 800.01 - CATALOG CUTS AND WORKING DRAWINGS

800.01.01 DESCRIPTION. This work shall consist of the Contractor preparing and transmitting submittals to demonstrate the performance of the work will be in accordance with the Contract Documents. Submittal schedules, catalog cuts, shop drawings, installation methods, manufacturer's certifications, photometric data and working drawings shall be furnished on all Contractor furnished items for highway signing, sign lighting, highway lighting and traffic signals. Stakeouts of the sign locations shall be submitted for all sign structure locations as specified in the Contract Documents

800.01.02 MATERIALS. Not Applicable.

800.01.03 CONSTRUCTION.

Submittal Requirements. Submittals shall be scheduled and coordinated with the Contractor's construction schedule. A complete submittal schedule and list of required submittals shall be submitted with the first submittal, but no later than three days after the pre-construction conference. The schedule for submission of submittals shall be arranged so that related equipment items are submitted concurrently.

The Engineer may require changes to the submittal schedule to permit concurrent review of related equipment. Shop drawings for closely related items such as a sign and its support structures shall be submitted together.

Submittal Documents. Contractor's drawings shall be neat in appearance, legible and explicit to enable proper review to ensure Contract compliance. They shall be complete and detailed to show fabrication, assembly and installation details, wiring and control diagrams, catalog data, pamphlets, descriptive literature, and performance and test data. They shall be accompanied by calculations or other sufficient information to provide a comprehensive description of the structure, machine or system provided and its intended manner of use. If the Contractor's drawings deviate from the Contract Documents, the Contractor shall so advise the Engineer in writing with the submittal and state the reason therefore.

No portion of the work requiring a Contractor's drawing shall be started nor shall any materials be fabricated, delivered to the site, or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved Contractor's drawings shall be at the Contractor's risk. The Administration will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.



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Shop drawings shall show types, sizes, accessories, layouts including plans, elevations and sectional views, component, assembly and installation details, and all other information required to illustrate how applicable portions of the Contract requirements will be fabricated and installed.

In case of fixed mechanical and electrical equipment, layout drawings drawn to scale, shall be submitted to show required clearances for operation, maintenance and replacement of parts. Manufacturer's certified performance curves, catalog cuts, pamphlets, descriptive literature, installation and application recommendations, shall be provided and indicate conformance to the Contract Documents. Certifications shall be originals. Certification shall also be sent to the Maryland Department of Transportation (SHA) Office of Materials and Technology ("OMT") as required in the Contract Documents.

Manufacturer's catalog, product and equipment data shall be certified and shall include materials type, performance characteristics, voltage, phase, capacity, and similar data along with wiring diagrams when applicable. Indicate catalog, model and serial numbers representing specified equipment. Provide complete component information to verify all specified required items. Installation recommendations and instructions shall provide written Manufacturer's detail step by step preparation and installation of the materials, and products including recommended tolerances and space for maintenance and operation.

Catalog cuts for sign luminaires shall have photometric data attached for each sign to be illuminated. Photometric printouts shall include the sign number, the illumination on a one foot square grid covering the entire sign face, the average illumination, the maximum to minimum uniformity ratio, and a working drawing for the sign face attached.

Catalog cuts for roadway luminaires shall have photometric data attached as specified in the Contract Documents.

The Contractor shall submit working drawings as required for changes, substitutions, contractor design items, and Contractor designed methods of construction. Requirements for working drawings will be listed in appropriate Specification Sections and in Special Provisions. Drawings shall be accompanied by calculations or other information to completely explain the structure, machine or system described and its intended use. Review and approval of such drawings by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract.

Working drawings and calculations as submitted shall be sealed, dated and signed by a Professional Engineer registered in the State of Maryland.

The review and approval of Contractor's drawings by the Administration shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. The



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Contractor shall be responsible for the verification and accuracy of all dimensions and insuring that all Contractor furnished items are compatible, and conform to all design and performance criteria.

All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefore.

Submittal Process. Each Contractor's drawing submitted by the Contractor shall have affixed to it the following Certification Statement, signed by the Contractor:

"By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and pertinent data and I have checked and coordinated each item with other applicable approved drawings and Contract requirements."

With the first submittal, submit a Contractor's submittal schedule, listing by Specification Section number, all submittals required and approximate date submittal will be forwarded.

Each submittal having catalog descriptions, shop drawings, working drawings, photometric data, manufacturer's certifications, method of construction and manufacturer's installation recommendations shall be submitted for approval:

Each submittal shall have a transmittal page that indicates the Contractor's and Subcontractor's address and phone numbers. Submittals containing multiple items need the identification only on the exterior of each package. For original submittals, and each subsequent resubmittal that may be required, 9 copies will be submitted. A separate copy shall be forwarded to the Engineer.

All submittals for approval shall have the following identification data, as applicable, contained thereon or permanently adhered thereto.

- (a) Drawing title, drawing number, revision number, and date of drawing and revision.
- (b) Applicable Contract Drawing Numbers and Specification Section and Paragraph Numbers.

The first page of every catalog description, working drawing and material certification shall be stamped in red with the following. All pertinent Contract Document information shall be filled in the spaces provided.



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MARYLAND TRANSPORTATION AUTHORITY	
SUBMITTAL PACKAGE # _____ DATED _____	
CONTRACT # _____ LOCATION _____	
PROJECT DESCRIPTION _____	
ITEM # _____ THIS ITEM CONTAINS _____ PAGES	
ITEM DESCRIPTION _____	
<input type="checkbox"/> ACCEPTED	
<input type="checkbox"/> ACCEPTED AS NOTED	
<input type="checkbox"/> REJECTED - REVISE & RESUBMIT	
REVIEWERS NAME _____	DATE _____

The Contractor shall indicate the submittal package by sequential numbering and date of submittal. Catalog, product data or brochure submittals containing various products, sizes and materials shall be underscored or highlighted to indicate the salient features required to meet the specifications. Likewise, items not applicable to the Contract shall be marked "not applicable" or crossed out.

If one or more of the items in a submittal are not approved, resubmittal of only the unapproved items is required, highlighted to show the particular item being resubmitted. Resubmittals shall bear original submittal number and be lettered sequentially.

Three copies of all Contractor's drawings will be returned to the Contractor.

Each submittal shall be in accordance with the Contractor's submission schedule. Allow thirty days for checking and appropriate action by the Engineer.

Contractor's submittals will be returned, marked with one of the following classifications:

ACCEPTED: no corrections, no marks

ACCEPTED AS NOTED: a few minor corrections. Item shall be installed in accordance with the corrected drawings.



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REJECTED - REVISE & RESUBMIT: requires corrections or is otherwise not in accordance with the Contract Documents. No items shall be fabricated. Correct and resubmit drawings as per original submission. Allow thirty days for checking and appropriate action by the Engineer.

800.01.04 MEASUREMENT AND PAYMENT. Catalog cuts, manufacturer's certifications, photometric data and working drawings will not be measured but the cost will be incidental to the pertinent items specified in the Contract Documents.



**CATEGORY 900
MATERIALS**

SECTION 901 — AGGREGATES

664 **DELETE:** 901.05 STONE FOR GABIONS in its entirety.

INSERT: The following.

901.05 STONE FOR GABIONS. Meet the quality requirements specified in 901.03 except the loss by sodium sulfate shall not be greater than 12 percent:

DEPTH OF BASKET in.	SIZE OF INDIVIDUAL PIECES * in.
6	3 – 6
9	4 – 7
12	4 – 7
18	4 – 7
36	4 – 12

*Size of pieces will be determined visually.



**CATEGORY 900
MATERIALS**

665 **DELETE:** SECTION 902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS in its entirety.

INSERT: The following.

SECTION 902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS

902.01 STORAGE. Storage of materials shall conform to the Contract Documents and as directed by the Engineer.

902.02 CERTIFICATION OF PORTLAND CEMENT AND BLENDED HYDRAULIC CEMENT. The manufacturer shall furnish certification as specified in TC-1.02. The certification shall also include:

- (a) The mill shall report its quality control procedures, and submit a new report whenever there is a procedural change.
- (b) The mill's control laboratory shall be inspected by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology on their regularly scheduled visits. The Engineer shall be provided with copies of the reports of these inspections along with an account of the action taken to correct cited deficiencies.
- (c) Records of data accumulated by the quality control procedures shall be produced upon request.
- (d) A certified document shall accompany each shipment stating that the contents conform to all applicable requirements. Additionally, the document shall show the producer's name, mill location, carrier number, date loaded, weight contained in carrier, silo number, consignee, destination, Contract number, and type of cement. The signature and title of the signer shall be shown on the document.
- (e) The mill shall, upon request, supply certified chemical and physical test values that can be associated with any sample representing cement drawn from a particular silo on a given date.
- (f) Acceptance of cement by certification will be terminated if test results differ from mill results by more than the precision limits given in the test method. The acceptance procedure will then revert to storage testing and approval prior to shipment.

902.03 HYDRAULIC CEMENT.

902.03.01 Portland Cement. M 85, with the fineness and the time of setting determined using T 153 and T 131, respectively.



902.03.02 Ground Iron Blast Furnace Slag. M 302, Grade 100 or 120. The Contractor may request to substitute a maximum of 50 percent of the weight of cement with ground iron blast furnace slag. When ground iron blast furnace slag is used, the minimum cement factor and water/cement ratio will be determined on the basis of the combined weight of the portland cement and ground iron blast furnace slag. When ground iron blast furnace slag is used to control alkali silica reactivity, see Table 902 B for percentage.

902.04 BLENDED HYDRAULIC CEMENT. M 240, Type I (PM) or a Type IP containing 15 to 25 percent pozzolan by weight of cement. Maximum loss on ignition is 3.0 percent. Do not use ground iron blast furnace slag for blending. The requirement for a manufacturer's written statement of the chemical composition is waived.

902.05 MASONRY CEMENT. C 91, except the water retention and staining tests are waived.

902.06 CONCRETE ADMIXTURES. Do not use concrete admixtures that contribute more than 200 ppm of chlorides based on the cement content when tested per MSMT 610. Use only prequalified admixtures.

Do not use pozzolan and Type I (PM) or Type IP cement in the same mix. Since the strength gains are delayed with these materials, a longer period of time may be required for curing and form removal.

902.06.01 Air Entraining Admixtures. M 154.

902.06.02 Chemical Admixtures. M 194, Type A, D, or nonchloride C.

902.06.03 High Range Water Reducing Admixtures. M 194, except that it shall be a liquid, the water content shall be a maximum of 85 percent of that of the control, and the durability factor shall be a minimum of 90. Use Type F for early strength, which shall produce a minimum compressive strength in 12 hours of 180 percent of that of the control. Use Type G when early strength is not specified. The manufacturer shall furnish certification as specified in TC-1.02. The certification shall include curves indicating the fluid ounces of admixture per 100 lb of cement as related to water reduction and strength gain for 12 hours when used with a minimum cement factor of 700 lb.

902.06.04 Pozzolans. The use of pozzolans may be requested to control alkali silica reactivity or for other reasons. When a pozzolan is used, determine the minimum cement factor and water/cement ratio on the basis of the combined weight cement and pozzolan. See Table 902 B for percentage of fly ash, and microsilica.

(a) **Fly Ash.** M 295, pozzolan Class C or F, except that the maximum permissible moisture content shall be 1.0 percent, and when used in concrete Mix Nos. 3 and 6 the maximum loss on ignition 3.0 percent.

(b) **Microsilica.** C 1240, except that the oversize requirement is waived.



902.06.05 Corrosion Inhibitors. Corrosion inhibitors shall be calcium nitrite based and contain a minimum of 30 percent active ingredients by mass. The gallonage of corrosion inhibitor used in the concrete mixture shall be included as water when determining the water/cementitious materials ratio.

902.07 PORTLAND CEMENT CONCRETE CURING MATERIALS. Use burlap cloth, sheet materials, liquid membrane forming compounds, or cotton mats.

902.07.01 Burlap. M 182, Class 1, 2, or 3.

902.07.02 Sheet Materials. M 171 with the following exceptions:

- (a) **White Opaque Burlap Polyethylene Sheeting.** Tensile strength and elongation requirements are waived. Use sheeting having a finished product weight of not less than 10 oz/yd².
- (b) **White Opaque Polyethylene Backed Nonwoven Fabric.** 902.07.02(a), with the thickness requirement waived. Use material having a finished product weight of not less than 5 oz/yd².
- (c) **White Opaque Polyethylene Film.** Tensile strength and elongation requirements are waived.

902.07.03 Liquid Membrane. M 148. Field control testing of the white pigmented curing compounds is on the basis of weight per gallon. The samples shall not deviate more than ± 0.3 lb/gal from the original source sample.

902.07.04 Cotton Mats. Cotton mats consist of a filling material of cotton bats or bats covered with unsized cloth and tufted or stitched to maintain the shape and stability of the unit under job conditions of handling.

Use coverings of either cotton cloth, burlap or jute having the following properties:

- (a) Cotton cloth covering shall weigh not less than 6.0 oz/yd² and have an average of not less than 32 threads/in. of warp and not less than 28 threads/in. of filling. Use raw cotton, cotton comber waste, cotton card strip waste, or combinations thereof as the raw material used in the manufacture of the cotton cloth.
- (b) Burlap or jute covering for cotton mats shall weigh not less than 6.4 oz/yd² and shall have not less than 8 threads/in. of warp and not less than 8 threads/in. of filling. Use the grade known commercially as "firsts" and they shall be free from avoidable imperfections in manufacture and from defects or blemishes affecting the serviceability.

Use a cotton bat, or bats made of raw cotton, cotton waste, cotton linters, or combinations thereof, as the filling material for the mats. Mats shall weigh not less than 12 oz/yd².

902.08 FORM RELEASE COMPOUNDS. Use form release compounds that effectively prevent the bond of the concrete to the forms. Form release compounds shall not cause discoloration of the concrete or adversely affect the quality or rate of hardening at the interface of the forms.



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The flash point of the form release compound shall not be less than 100 F when tested per T 73.

902.09 PARAFFIN WAX. Use clear paraffin wax for use as a bond breaker for concrete. The flash point shall not be less than 380 F when tested under D 92.

902.10 PORTLAND CEMENT CONCRETE. Section 915 and as specified herein.

902.10.01 Proportioning. Prior to the start of construction, submit to the AME the source and proportions of materials to be used for each concrete mix. The mixture shall meet 902.10.03.

The concrete, with the exception of water and chemical admixtures, shall be proportioned by weight. Water and chemical admixtures may be proportioned by volume or weight. The mix shall be uniform and workable.

902.10.02 Materials.

Coarse Aggregate	901.01
Fine Aggregate	901.01
Cement	902.03 and 902.04
Concrete Admixtures	902.06
Synthetic Fibers	902.15
Water	921.01

902.10.03 Portland Cement Concrete Mixtures.

The concrete mixes shall conform to the following:

TABLE 902 A

PORTLAND CEMENT CONCRETE MIXTURES

MIX NO.	28 DAY SPECIFIED COMPRESSIVE STRENGTH	STANDARD DEVIATION	CRITICAL VALLE	MIN CEMENT FACTOR	COARSE AGGREGATE SIZE	MAX WATER/CEMENT RATIO	SLUMP RANGE	TOTAL AIR CONTENT	CONCRETE TEMPERATURE
	psi	psi	psi	lb/cyd	M 43 / M 195	by wt	in.	%	F
1	2500	375	2430	455	57, 67	0.55	2 - 5	5 - 8	70 ± 20
2	3000	450	3010	530	57, 67	0.50	2 - 5	5 - 8	70 ± 20
3	3500	525	3600	580	57, 67	0.50	2 - 5	5 - 8	70 ± 20
4	3500	525	3600	615	57, 67	0.55	4 - 8	N/A	70 ± 20
5	3500	525	3600	580	7	0.50	2 - 5	5 - 8	70 ± 20
6	4500	675	4770	615	57, 67	0.45	2 - 5	5 - 8	65 ± 15
7	4200	630	4420	580	57	0.50	1½ - 3	5 - 8	70 ± 20
8	4000	600	4180	750	7	0.42	2 - 5	5 - 8	65 ± 15
9	3000 (a)	N/A	N/A	800	57, 67	0.45	4 - 8	5 - 8	70 ± 20
10	4500	675	4770	700	¾" - No. 4	0.45	2 - 5	6 - 9	65 ± 15
11	4200	630	4420	---	57, 67	0.45	2 - 5	5 - 8	65 ± 15
12	4200	630	4420	---	¾" - No. 4	0.45	2 - 5	6 - 9	65 ± 15



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Note 1: When concrete is exposed to water exceeding 15,000 ppm sodium chloride content, Type II cement shall be used. In lieu of Type II cement, a Type I cement may be used in combined form with an amount of up to 50 percent replacement with ground iron blast furnace slag, or an amount of up to 25 percent replacement with Class F fly ash. The Contractor shall submit to the Engineer the proposed mix proportions and satisfactory test results per C 1012 showing a sulfate resistance expansion not exceeding 0.10 percent at 180 days

Note 2: The temperature of Mix No. 6 when used for other than superstructure work as defined in TC-1.02 shall be 70 ± 20 F.

Note 3: Type A or D admixture shall be added to bridge, box culvert, and retaining wall concrete.

Note 4: Nonchloride Type C admixtures may be used when approved by the Engineer.

Note 5: Other Slump Requirements:

When a high range water reducing admixture Type F or Type G is specified, the slump shall be 4 to 8 in.

When synthetic fibers are specified, the slump shall be 5 in. maximum.

When concrete is to be placed by the slip form method, the slump shall be 2-1/2 in. maximum.

When the absorption of the coarse aggregate is greater than 10 percent, the slump shall be 3 in. maximum.

Note 6: Mix 9 shall contain a Type F high range water reducing admixture.

Note 7: Mix 10 and 12 shall be proportioned as specified in 211.2 of the ACI's Recommended Practices for Selection Proportions for Structural Lightweight Concrete. The maximum average Density of Cured Concrete shall be 118 lb/ft³. Control testing for Density of Cured Concrete shall be two companion cylinders for each 100 yd³, or fraction thereof, as specified in M 195.

Note 8: Mix 11 and 12 shall also conform to all requirements as specified in Table 902 C.

(a) Acceptance will be based on a minimum compressive strength of 3000 psi in 24 hours. Design approval will be given based on trial batch obtaining a minimum compressive strength of 2500 psi in 12 hours. Testing shall conform to 902.10.08 except that cylinders shall remain in the molds until tests are conducted.

Coarse and fine aggregate having an expansion up to 0.10 percent when tested for alkali silica reactivity (ASR) MSMT 212 may be used without restriction. Aggregates having an expansion greater than 0.10 but less than 0.35 percent are considered reactive and may only be used when one of the options in table 902 B are employed. Those having an expansion of 0.35 percent and greater are prohibited.

TABLE 902 B

OPTION	ALKALI CONTENT OF CEMENT % max	REPLACE CEMENT WITH		SPECIFICATION
		MATERIAL	% BY WEIGHT	
1	1.50	Class F Fly Ash	15 – 25	M 295
2	1.50	Ground Iron Blast Furnace Slag	25 – 50	M 302 Grade 100 or 120
3	1.50	Microsilica	5 – 7	C 1240
4	—	Blended Cement (a)	100	M 240
5	0.60 (b)	Low Alkali Cement	100	M 85

(a) Pozzolan content of 15 – 25 percent by weight of cement

(b) For mix 9 used for Portland cement concrete pavement repairs; the maximum allowable percentage of alkalis in Portland cement shall be 0.70.

When reactive aggregate is used, designate which option will be used to control the formation of the ASR gel. If an option other than option 5 in Table 902 B above is chosen, conduct tests per MSMT 212 using the reactive aggregate and the proposed cementitious material. The expansion test results shall not be greater than 0.10 percent. When more than one reactive aggregate is used in a concrete mix, each shall be tested individually and the maximum amount of pozzolan required to reduce the expansion of all the aggregates to 0.10 percent or less shall be used. Submit the aggregate source, test results, and the percent and type of replacement cement to the Engineer. The Engineer may withhold source approval pending verification testing.



TABLE 902 C

MIX PHYSICAL PROPERTIES		
TEST PROPERTY	TEST METHOD	SPECIFICATION LIMITS
Minimum Cementitious Materials Factor, lb/yd ³	—	580
Maximum Content of Portland Cement, lb/yd ³	—	550
Water/Cementitious Materials Ratio by Wt.	—	0.45
Corrosion Inhibitor, gal/yd ³	902.06.05	2.0
Synthetic Fibers, lb/yd ³	902.15	1.5
Permeability of Field Concrete, moving average of three tests, coulombs max	T 277 Modified	2500
Permeability of Field Concrete, individual test, coulombs max	T 277 Modified	3000
Shrinkage at 28 days, microstrains	C 157	400

Note 1: Only Type I or II Portland cement shall be used.

Note 2: Mixes shall contain ground iron blast furnace slag, fly ash or microsilica.

Note 3: The water to cement ratio shall be based upon the total water to cementitious materials ratio. The gallonage of the corrosion inhibitor shall be included in the water/cementitious materials ratio.

Note 4: The permeability test value of field concrete shall be the average of two test specimens representing production concrete. Test specimens shall be molded on the project site in 4 x 8 in. molds conforming to M 205. Test specimens shall be handled under same conditions as compressive strength test specimens in conformance with C 31 for the first seven days. When seven days old, they shall be cured in a 100 F water bath for the remainder of the 28 day curing. The 28 day rapid chloride permeability of the specimens will be determined in conformance with T 277. Test for the geometry of test specimens will be waived.

Note 5: Shrinkage tests will be performed on trial mixes only.

Note 6: High range water reducing admixture may be used except the water reducing requirements will be waived.

Note 7: A sealer conforming to 902.12 shall be used on the finished surface.

902.10.04 Trial Batch. A trial batch shall be prepared to certify that each mix meets 902.10.05 and 902.10.06. Approval will be given when the test results meets the minimum required average strength.

Make arrangements with the AME at least two weeks in advance, to have an authorized representative present during the batching and testing. Each trial batch shall consist of at least 3 yd³ of concrete. Supply all equipment, and labor required to produce the trial batches and conduct the required tests at no additional cost to the Administration.

The AME may waive the requirement for a trial batch when past performance records show that the required average strength requirement has been met.



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902.10.05 Design Required Average Strength.

Specified compressive strength, f_c' , psi	Required average compressive strength, f_{cr}' , psi
$f_c' \leq 5000$	Use the larger value computed from Eq. (A-1) and (A-2) $f_{cr}' = f_c' + 1.34s$ (A-1) $f_{cr}' = f_c' + 2.33s - 500$ (A-2)
Over 5000	Use the larger value computed from Eq. (A-1) and (A-3) $f_{cr}' = f_c' + 1.34s$ (A-1) $f_{cr}' = 0.90 f_c' + 2.33s$ (A-3)

where:

f_c' = the 28 day specified compressive strength.

s = the standard deviation as specified in 902.10.06.

A test is defined as the average strength of two companion cylinders.

902.10.06 Standard Deviation.

- (a) When past performance records are available, a standard deviation will be established from documented performance records of the producer consisting of a minimum of 15 consecutive 28 day compressive strength tests obtained within the last 12 months.

The standard deviation will be established as the product of the calculated standard deviation and multiplier.

NUMBER OF TESTS	MULTIPLIER FOR STANDARD DEVIATION
15	1.16
20	1.08
25	1.03
30 or more	1.00

Interpolate for intermediate number of tests.



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(b) When past performance records are not available, the required average strength shall meet to the following:

Specified compressive strength, f_c' , psi	Required average compressive strength, f_{cr}' , psi
$f_c' < 3000$	$f_{cr}' = f_c' + 1000$
$3000 \leq f_c' \leq 5000$	$f_{cr}' = f_c' + 1200$
$f_c' > 5000$	$f_{cr}' = 1.10 f_c' + 700$

902.10.07 Standard of Control. The average of all sets of three consecutive strength tests shall equal or exceed the critical value as specified in 902.10.03 which shall be computed using the following formula:

$$\text{Critical Value} = f_c' + (1.14 \times S) - 500$$

Failure to conform to this criteria shall be cause for immediate investigation and remedial action up to and including suspension of production. A design standard deviation equal to 15 percent of the specified strength shall be used for calculation until a minimum of 15 test results are obtained.

The actual average strength and standard deviation shall be computed upon the availability of 28 day strength data comprising a minimum of 15 tests. Should this determination indicate an excessive margin of safety, the concrete mix may be modified to produce lower average strength as approved by the Engineer. If these calculations indicate a coefficient of variation greater than 15, the quality of the concrete and testing will be evaluated.

902.10.08 Testing. Sampling per T 141. Testing as follows:

TEST	METHOD	MINIMUM TEST FREQUENCY	RESPONSIBILITY
Temperature (e)	T 309	1 per 50 yd ³ (or fraction thereof)	Project Engineer
Slump (a)(e)	T 119	1 per 50 yd ³ (or fraction thereof)	Project Engineer
Air Content (a)(e)	T 152 T 196	1 per 50 yd ³ (or fraction thereof)	Project Engineer
Compression (b)(c)(d)	T 23	1 per 50 yd ³ (or fraction thereof)	Project Engineer
Compression (b)(c)(d) Mix No. 7 Only	T 23	3 per Day	Project Engineer



- (a) A second test will be made when the first slump or air content test fails. Acceptance or rejection will be based on the results of the second test.
- (b) Compressive strength tests are defined as the average of two companion cylinders.
- (c) The Contractor shall be responsible for the making of all early break cylinders and furnishing the molds, stripping, curing/delivery of all cylinders, including 28 day cylinders, to the testing laboratory.
- (d) The Project Engineer will be responsible for making, numbering and signing the 28 day cylinders.
- (e) When constructing plain and reinforced concrete pavements, the testing frequency for slump, air content, and temperature shall be 1 per 100 yd³ or fraction thereof.

902.10.09 Acceptance. Concrete will be acceptable if both of the following requirements are met:

- (a) The average of all sets of three consecutive strength tests equal or exceed the specified design strength.
- (b) No individual strength test (average of two companion cylinders) falls below the specified design strength by more than 500 psi.

902.10.10 Price Adjustment. A price adjustment will be based on the Contract unit price per cubic yard of concrete. If the unit is a lump sum item, the price per cubic yard for the concrete will be determined by dividing the cubic yards into the Contract lump sum price.

- (a) **Test Results More Than 500 psi Below the Specified Design Strength.** Failing strength tests will be considered individually with a price adjustment being applied on the percentage basis as shown below.

(Price per yd³) X (quantity of yd³ represented by the failing concrete strength) X (percent of failure).

Example:

$$\$400.00 \text{ per yd}^3 \times 50 \text{ yd}^3 \times [1 - (3600 / 4500 \text{ psi})] = \$4,000.00$$

No payment will be allowed when the test results fall below 50 percent of the specified design strength for structural concrete or 40 percent for incidental concrete.

The Engineer will determine when the strength of the concrete represented by the failing tests is sufficient to remain in place or whether it must be removed and replaced with Specification concrete.

- (a) **Test Results 500 psi or Less than the Specified Design Strength.** Strength failures 500 psi or less than the specified design strength will be averaged with the next two consecutive tests. If those two tests include a failure greater than 500 psi, those tests will be evaluated as in 902.10.10(a) and replaced with the next consecutive test. If the resulting average falls below the specified design strength, a price adjustment will be applied as specified in the table below. Any failure will only be included in one grouping.



SPECIAL PROVISIONS INSERT

902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS

STRENGTH BELOW THE SPECIFIED (avg of 3 tests) DESIGN LEVEL, psi	ADJUSTMENT FACTOR
MIX NO. 1 THRU MIX NO. 7	
1 – 100	0.005
101 – 200	0.01
201 – 300	0.02
301 – 400	0.04
401 – 500	0.08

Adjustment price equals (price per yd³) X (quantity of yd³ represented by the failing cylinders) X (the adjustment factor).

Example:

$$\$400.00 \text{ per yd}^3 \times 50 \text{ yd}^3 \times 0.01 = \$200.00$$

902.11 MORTAR FOR GROUT. Mortar used for grouting anchor bolts, pipe, handrail posts, and miscellaneous items shall be composed in accordance with one of the following:

- (a) One part Portland cement or blended hydraulic cement and one part mortar sand by dry loose volume.
- (b) Prepared bag mixes consisting of Portland cement or blended hydraulic cement and mortar sand. The prepared mixes shall produce a mortar meeting the strength requirements specified in the Contract Documents.
- (c) Use nonshrink grout when specified. The grout shall have a minimum compressive strength of 5000 psi in seven days when tested as specified per T 106, except that the cube molds shall remain intact with a top firmly attached throughout the curing period. The nonshrink grout shall have a minimum expansion of 0.0 percent after seven days when tested as specified per T 160.
- (d) Epoxy grout shall consist of sand and epoxy mixed by volume in per the manufacturer's recommendations. The grout shall be capable of developing a minimum compressive strength of 6500 psi in 72 hours when tested per MSMT 501. Sand for epoxy grout as specified in 901.01.
- (e) An epoxy or polyester anchoring system may be used when approved by the Engineer in accordance with the manufacturer's recommendations. Strength values shall be as specified in the Contract Documents.

902.12 LINSEED OIL. Shall consist of a 50-50 mixture (by volume) of boiled linseed oil meeting Federal Specification TT-L-190 and kerosene per D 3699.



902.13 LATEX MODIFIED CONCRETE. Portland cement concrete containing prequalified Laboratory approved styrene butadiene latex emulsion is defined as Latex Modified Concrete (LMC).

Latex emulsion shall have a minimum of 90 percent of the nonvolatiles as styrene butadiene polymers. The latex emulsion as specified in Table 902.13 A. The material shall be stored in suitable containers and be protected from freezing and exposure to temperatures in excess of 85 F.

LMC shall be proportioned using volumetric mixing and designed as follows:

LATEX MODIFIED CONCRETE	
MATERIAL	SPECIFICATION LIMITS
Portland Cement, CWT/yd ³ , min	6.6
Latex Emulsion/Cement Ratio	0.31 – 0.34
Water/Cement Ratio, max	0.22
Entrained Air, %	6.0 ± 3
Slump, in.	5 ± 1

The physical properties of LMC shall conform to Table 902.13 B. The Contractor shall furnish the necessary 3 X 6 in. molds per M 205 to be used for the fabrication of compressive strength cylinders.

Control and Acceptance Sampling.

- (a) Submit a two qt minimum sample, of the styrene butadiene latex emulsion to the AME daily for each lot of material used in a day's production.
- (b) A batch for LMC is defined as the capacity of the equipment being used on the project. Slump and air samples will be taken and tested before the placement of a batch is permitted. The slump shall be measured four to five minutes after discharge from the mixer. The test material shall be deposited off the deck and not be disturbed during this waiting period. One additional sample for slump and air will be taken randomly during the placement of each batch. For seven day compressive strength, two tests each per batch are required. A test is defined as consisting of two companion cylinders. The samples for these tests will be taken at random while the placement is in progress.



TABLE 902.13 A

REQUIREMENTS FOR CHEMICAL PROPERTIES OF LATEX EMULSION MATERIALS				
PROPERTY	SPECIFICATIONS		QUALITY ASSURANCE TESTS	
	LIMITS	TOLERANCE	PREQUALIFICATION TESTS	CONTROL AND ACCEPTANCE
Color	White	---	X	X
pH	9.0 - 11.0	---	X	X
Weight, lb/gal	8.40 - 8.47	---	X	X
Solids Content, %	46 - 53	---	X	X
*Butadiene Content, % of polymer	30 - 40	---	---	---
Viscosity @ 10 rpm-cps	Match Original	± 20	X	X
*Surface Tension, dynes/cm max	50	---	---	---
*Mean Particle Size, polymer - Å	1400 - 2500	---	---	---
Coagulum, % max	0.10	---	X	X
*Freeze-Thaw Stability, coagulum, % max	0.10	---	X	X
Infrared Spectra of Latex Film	Match Original	---	X	X
Infrared of Alcohol Soluble Portion of Latex	Match Original	---	X	X
Shelf Life, min	1 yr	---	X	---

Note 1: Quality assurance tests shall be conducted as specified in MSMT 612 except those denoted by an * shall be conducted as specified in FHWA RD - 78-35.

Note 2: The original or prequalification sample shall be accompanied by the producer's certification on all of the tests and properties noted above and as specified in TC-1.02. The certification shall contain actual test values of the product and the infrared spectrograph.

Note 3: A separate certification is required for each lot of material. The certification shall note the date of manufacture, lot size, and whether or not the material is identical to the formulation of the original sample.



TABLE 902.13 B

<i>LATEX MODIFIED CONCRETE PHYSICAL PROPERTIES</i>			
<i>TEST PROPERTY</i>	<i>TEST VALUES</i>	<i>QUALITY ASSURANCE TESTS</i>	
		<i>PREQUALIFIED TESTS</i>	<i>CONTROL AND ACCEPTANCE</i>
7 Day Compressive Strength, psi min	3000	X	X
28 Day Compressive Strength, psi min	3500	X	—
42 Day Compressive Strength, psi min	3500	X	—
7 Day Flexural Strength, psi min	550	X	—
28 Day Flexural Strength, psi min	650	X	—
42 Day Shear Bond Strength, psi min	2000	X	—
Durability Factor, 300 cycles, % min	85	X	—
Chloride Permeability, Ppm max	510	X	—
Scaling Resistance, 50 cycles, max	3	X	—

Note 1: Quality assurance tests shall be conducted as specified in MSMT 721.

Note 2: Seven Day Compressive Strength Test will be used for Control & Acceptance of the material. The minimum specified design strength is 3000 psi at seven days. The mix design approval and acceptance will be based on a coefficient of variation of 10 percent with a probability of 1 in 10 tests falling below the specified strength. Only test values 80% or greater than the specified strength will be accepted

902.14 RAPID HARDENING CEMENTITIOUS MATERIALS FOR CONCRETE PAVEMENT REPAIRS. Materials shall be a dry, packaged cementitious mortar having less than 5 percent by weight of aggregate retained on the 3/8 in. sieve and meet the following requirements:

Classification.

Class I — For use at ambient temperatures below 50 F.

Class II — For use at ambient temperatures of 50 to 90 F.

Class III — For use at ambient temperatures above 90 F.

Chemical Requirements. C 928 except that no organic compounds such as epoxy resins or polyesters as the principal binder.

Physical Requirements. Meet the following when tested per MSMT 725:



SPECIAL PROVISIONS INSERT

902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS

A. COMPRESSIVE STRENGTH, psi min				
CLASSIFICATION	< 2 hr	2-6 hr	6 hr	28 days
Type I — Slow	—	—	2000	4500
Type II — Rapid	—	2000	—	4500
Type III — Very Rapid	2500	—	—	4500

TEST RESULTS	
TEST PROPERTY	LIMITS
Bond Strength, 7 days, psi min	2000
Length Change, increase after 28 days in water, based on length at 3 hr, % max	+ 0.15
Length Change, decrease after 28 days, % max	- 0.15
Freeze Thaw, loss after 25 cycles in 10% CaCl ₂ solution, % max	8
Initial Setting Time, minutes min	10

Marking. All packages delivered to the project shall be marked with the following information:

- (a) Date material was packaged.
- (b) Approximate setting time.
- (c) Recommended dosage of water or liquid component.
- (d) Mixing instructions.
- (e) Class or temperature range.

Certification. The manufacturer shall furnish certification as specified in TC-1.02 showing the actual test results for each class and type of material submitted to the Laboratory.

902.15 SYNTHETIC FIBERS. When synthetic fibers are specified in the Contract Documents, the fibers shall be 1/2 to 1-1/2 in. long and conform to C 1116, Type III. The manufacturer shall furnish certification as specified in TC-1.02. The quantity of fibers used and their point of introduction into the mix shall conform to the fiber manufacturer's recommendations.



**CATEGORY 900
MATERIALS**

**SECTION 904 – PERFORMANCE GRADED
ASPHALT BINDERS AND HOT MIX ASPHALT**

684 **DELETE:** 904.04.02 Mix Design in its entirety.

INSERT: The following.

904.04.02 Mix Design. Develop Superpave mix designs in conformance with R 35, except replace “Table 1, Superpave Gyrotory Compaction” with the following:

DESIGN LEVEL	20-Year Design Traffic, ESALs	Ndesign
1	<300,000	50
2	300,000 to <3,000,000	65
3	3,000,000 to <10,000,000	80
4	10,000,000 to <30,000,000	80
5	≥30,000,000	100

Design HMA Superpave mixes to conform to the specification for Superpave Volumetric Mix Design, M 323, and design the mixes for the Equivalent Single Axle Loading (ESAL) range specified in the Contract Documents.

Crushed, reclaimed asphalt pavement (RAP) and a maximum of 5 percent asphaltic roofing shingles from manufacturing waste may be selected for use. Determine the allowable percentage and its suitability for use in conformance with MSMT 412 and M 323. Binder grade adjustments are not required when using less than 20 percent RAP or RAP/shingle combination.

Test and evaluate surface mixes consisting of 20 percent or more RAP, and base mixes consisting of more than 25 percent RAP in accordance with TP 62 to determine plant mixing capabilities. Demonstration strips or mix verifications may be required before placement.

RAP (not exceeding 15 percent) may be considered for applications where higher polish value aggregates are required or in mixes requiring elastomer type polymer binder. OMT will grant approval for use on an individual project basis and will designate placement areas within the project limits. RAP (between 11 and not exceeding 15 percent) used for these applications shall be from an identified single source and stored in isolated stockpiles. Submit documentation of stockpile management, quality, and traceability for approval prior to use.



Do not use crushed glass in surface mixes. Do not use roofing shingles in gap-graded mixes or mixes requiring elastomer type polymer binder.

**CATEGORY 900
MATERIALS**

**SECTION 904 – PERFORMANCE GRADED
ASPHALT BINDERS AND HOT MIX ASPHALT**

684 **DELETE:** 904.04.02 Mix Design in its entirety.

INSERT: The following.

904.04.02 Mix Design. Develop Superpave mix designs in conformance with R 35, except replace “Table 1, Superpave Gyrotory Compaction” with the following:

DESIGN LEVEL	20-Year Design Traffic, ESALs	Ndesign
1	<300,000	50
2	300,000 to <3,000,000	65
3	3,000,000 to <10,000,000	80
4	10,000,000 to <30,000,000	80
5	≥30,000,000	100

Design HMA Superpave mixes to conform to the specification for Superpave Volumetric Mix Design, M 323, and design the mixes for the Equivalent Single Axle Loading (ESAL) range specified in the Contract Documents.

Crushed, reclaimed asphalt pavement (RAP) and a maximum of 5 percent asphaltic roofing shingles from manufacturing waste may be selected for use. Determine the allowable percentage and its suitability for use in conformance with MSMT 412 and M 323. Binder grade adjustments are not required when using less than 20 percent RAP or RAP/shingle combination.

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Do not use crushed glass in surface mixes. Do not use roofing shingles in gap-graded mixes or mixes requiring elastomer type polymer binder.



**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.

950.03 Permanent Signs Retroreflective Sheeting. Retroreflective sheeting for permanent signs shall conform to ASTM D4956-05, except as modified as below:

MINIMUM REFLECTIVE INTENSITY VALUES FOR RETROREFLECTIVE SHEETING 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

INSERT:

950.03.07 Permanent traffic Signs (PTS) Unless otherwise specified in the Contract Documents, retroreflective sheeting for permanent signs shall conform to 950.03.03.



**CATEGORY 900
MATERIALS**

SECTION 951 — PAVEMENT MARKING MATERIALS

951.01 NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKINGS

All nontoxic lead free waterborne pavement marking materials shall be ready-mixed, pigmented binder, emulsified in water, and capable of anchoring reflective beads that are applied separately.

The pavement marking material shall not contain any hazardous material listed in the Environmental Protection Agency Code of Federal Regulations (CFR) 40, Section 261.24, Table 1.

951.01.01 Waterborne Physical Requirements. The nontoxic lead free waterborne pavement marking material shall conform to the manufacturer's formulations as initially approved for use by the Administration and shall be controlled from batch to batch. All paint shall be evaluated in conformance to the requirements listed below.

Production batch samples will be subject to random tests, such as but not limited to, X-ray spectroscopy, infrared spectroscopy, ultraviolet spectral analysis, and atomic absorption spectroscopy.

The combined total of lead, cadmium, mercury, and hexavalent chromium shall not exceed 100 ppm, when tested by X-ray fluorescence spectroscopy, or other method capable of detection at this level.

For each production batch, the Contractor shall provide the Administration with the manufacturer's certified analysis conforming to TC-1.03 of the Standard Specifications.

- (a) **Viscosity.** The viscosity shall be 85 ± 10 KU when tested in conformance with D 562.
- (b) **Pigment For Yellow Pavement Marking Material.** The colorants used to attain the color of the yellow product shall be one or more of the following, along with titanium dioxide: Pigment Yellow 65, Pigment Yellow 75, and opaque Pigment Yellow 74.
- (c) **Color and Appearance.** Color and appearance shall be evaluated using the following: CIE 1976 $L^*a^*b^*$, illuminant D 65, and standard observer angle 1931 CIE 2 degrees. The geometry shall be 45/0 or 0/45, or d/8, excluding specular gloss. Measurements shall be taken from samples applied to an opacity chart, e.g., Leneta Form 2A, at a wet film thickness of 15 mils \pm 1 mil. The applied sample shall have been allowed to dry for at least 12 hours before measurements are taken. The evaluation shall be as follows:
 - (1) **Production:** The color of the dry paint film of the production sample shall match the $L^*a^*b^*$ values provided, under the specified conditions. For white material the values are: $L^* = 94.80$, $a^* = -2.35$, $b^* = 3.20$. For yellow material the values are: $L^* = 80.70$, $a^* = 19.40$, $b^* = 88.65$. The colors shall match when compared instrumentally.
 - (2) **Control.** The maximum permissible variation from the specified $L^*a^*b^*$ values shall be $2.0 \Delta E_{cmc}$. The measurements shall be taken from a sample applied over the black portion of an opacity chart.



The Administration will approve or disapprove any batch based on a laboratory visual evaluation for blemishes and irregularities in the test specimen (i.e. cracks, flaking, surface depressions, pooling, etc.) that would interfere with the measurement of color and appearance on the opacity chart. The Administration will make the final decision.

- (3) **Reflectance.** The reflectance, without beads, and using CIE XYZ Y_{xy} , shall be a minimum Y of 80 percent for white production batches; and a minimum of 50 percent for yellow production batches with a maximum of 60 percent. The measurement shall be taken from a sample applied over the black portion of an opacity chart.
- (4) **Color Difference over Black and White.** For any production batch the measured color difference between readings taken over the black portion of the opacity chart from those taken over the white portion shall be a maximum value of $1.0 \Delta E_{cmc}$ for white products and $1.3 \Delta E_{cmc}$ for yellow products.
- (5) **Yellowness Index.** The yellowness index of the white material, when determined according to E 313, Using Equation 1 and the coefficients for CIE D 65 illumination, 1931 from Table 1 in that standard, shall not exceed 8.0.
- (d) **Flexibility.** The pigmented binder shall not display cracking or flaking when subjected to the flexibility test of Federal Test Method TT-P 1952D, with the exception that the panels shall be 35 to 31 gauge (0.0078 to 0.0112 in.) tin plate approximately 3 x 6 in. The tin plates shall be lightly buffed with steel wool and thoroughly cleaned with solvent and dried before being used for the test.
- (e) **Weight per Gallon.** The weight per gallon for a production batch, when determined according to D 1475, shall be within ± 0.3 lb/gal of the value obtained by The National Transportation Product Evaluation Program (NTPEP), and reported on a NTPEP deck designated "north". When the Administration waives the NTPEP requirements, another target value will be stipulated.

951.01.03 Glass Bead Physical Requirements. Each lot of glass beads shall be sampled in conformance with the Administration's Frequency Guide and shall be submitted to the Administration's Office of Materials and Technology for testing and approval prior to use.

Glass beads shall be colorless, clean, transparent, and free of milkiness and excessive air bubbles.

Reflective glass beads shall conform to M 247, except that the gradation shall conform to the following:



PERCENT PASSING			
SIEVE SIZE	Standard Beads	Large Beads	Maryland Blend
12 (1.70 mm)	—	100	100
14 (1.40 mm)	—	95 – 100	98 – 100
16 (1.18 mm)	—	80 – 95	88 – 97
18 (1.00 mm)	—	10 – 40	48 – 70
20 (0.85 mm)	100	0 – 5	28 – 50
30 (0.60 mm)	75 – 95	—	—
50 (0.30 mm)	15 – 35	—	5 – 25
80 (0.18 mm)	—	—	0 – 5
100 (0.15 mm)	0 – 5	—	—

Moisture resistance and flotation test are not required.

(a) **Refractive Index.** The refractive index shall be 1.50 minimum, when tested in conformance with MSMT 211.

(b) **Roundness.** Glass beads shall be smooth, spherical in shape, free of sharp angular scars, scratches, or pits, and shall contain a minimum of 60 percent silica. Beads shall have a minimum average roundness of 75 percent when tested in conformance with D 1155.

951.01.04 Qualification. Pavement marking material manufacturers desiring to have their material formulations approved under this Special Provision shall have their formulations evaluated on a NTPEP North Test Deck unless waived by the Administration. Only NTPEP evaluated formulations will be considered candidates for selection, unless the requirement is waived.

951.01.05 Field testing. Materials conforming to this specification shall be field evaluated for performance on a NTPEP North Test Deck. Materials performing satisfactorily throughout the test period will be placed on the Administration’s Qualified Products List. All marking materials supplied under the Contract Documents shall be identical in composition to the materials submitted for initial NTPEP testing. The Office of Materials and Technology will determine conformity with these requirements.

951.01.06 Material Acceptance. Only Administration approved and stamped materials conforming to these Specifications shall be used.

Prior to the shipment of any pavement marking material batch, the manufacturer shall provide access for the Administration’s representative to collect samples of the material from each production batch. The samples shall be sent to the Administration laboratory for QA testing. Each sample shall be accompanied by a certified analysis conforming to TC 1.03, showing compliance with the physical and chemical requirements of this Specification, and a statement certifying that any marking material supplied under the Contract Documents is identical in composition to the material submitted for initial NTPEP testing. The Administration will determine conformity with these requirements. Administration authorization shall be required before a batch or a portion of a batch is shipped.

Paints shall be compatible with cleaning solvents used in equipment cleaning.



Nontoxic waterborne pavement markings shall not skin, curdle, settle or be unusable or difficult to apply within 12 months of the date of manufacture. The supplier, at the Administration's request, shall replace containers of marking material exhibiting an unacceptable level of settling, skinning, or curdling, as determined by the Administration. Marking material from a production batch shall not be used beyond 12 months after the date of manufacture.

951.01.07 Certification. The manufacturer shall explicitly certify in writing that any marking material supplied under the Contract Documents conforms to the formulation identified by the same product code or name placed on the NTPEP test deck from which it was approved. The same code or name as used in the published report from that test deck must identify the product. Failure to certify will be considered grounds for product batch rejection.

The manufacturer shall, in accordance with TC-1.03, explicitly certify, in writing, of any paint batch supplied under the Contract Documents that it complies with all applicable specifications. Failure to so certify will be considered grounds for product batch rejection. Certification for yellow nontoxic lead free waterborne pavement markings shall include, for the purpose of showing compliance with this specification, the name or the type of colorant used to achieve the yellow color. The Administration will keep the paint composition and chemical analysis information confidential.

The Certification shall also, contain the following:

- (a) Manufacturer's name.
- (b) Place (address) of manufacture.
- (c) Color of material.
- (d) Date of manufacture (month-day-year).
- (e) Lot or batch identification.
- (f) Size of lot/batch.
- (g) The recommended paint temperature at the spray gun.
- (h) Material Safety Data Sheets for all materials submitted for testing and application.

The Contractor shall furnish a copy of this certification to the Administration's representative before applying the paint batch it represents.

951.01.08 Production Facility.

- (a) The producer shall have a facility, presently in operation, capable of producing the traffic paint in the quantity and quality required by the Administration. This facility will be subject to the Administration's approval.
- (b) The producer shall have a laboratory, subject to the Administration's approval, that is capable of performing the required tests.



SPECIAL PROVISION

CONTRACT NO. MA-2435-000-002

**951.05 — SNOWPLOWABLE RAISED PAVEMENT MARKERS AND
RECESSED PAVEMENT MARKERS**

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**CATEGORY 900
MATERIALS**

SECTION 951 — PAVEMENT MARKING MATERIALS

**951.05 SNOWPLOWABLE RAISED PAVEMENT MARKERS (SPRPM) AND
RECESSED PAVEMENT MARKERS (RPM).**

Pavement Marker Reflector Lenses. Pavement marker reflector lenses shall conform to the requirements of D 4383 and shall be comprised of materials with adequate chemical, water and UV resistance for the intended use. The reflector lens shall contain one or two prismatic reflective faces to reflect incident light from opposite directions. The reflector lens shall be in the shape of a shallow frustum of a pyramid. The bottom of the reflector lens shall be equipped with an elastomeric pad to permit its attachment to the surface of the casting using the manufacturer's recommended adhesive. The lens faces shall provide extremely hard and durable abrasion resistant surfaces.

Pavement marker reflector lenses shall be 4.00 x 2.00 x 0.46 in. The slope of the reflecting surface shall be 30 degrees and the area of each reflecting surface shall be 1.7in.². The outer surface of the shell shall be smooth except in identification areas.

The pavement marker reflector lens shall be imprinted with the model number and the manufacturer's name.

SPRPM Casting. Both ends of the casting shall be shaped to deflect a snow plow blade. The bottom of the casting shall incorporate two parallel keels and an arcuately shaped web designed to fit into a grooved surface. Casting dimensions shall be a minimum of 9.25 x 5.86 x 1.69 in. and shall not exceed 10.5 x 7.25 x 1.69 in. The installed height shall not exceed 0.25 in. above the road surface.

The casting shall be nodular iron conforming to A 536, Grade 80-55-06, hardened to 51 to 55 R_C. The surface of the keel and web shall be free of scale, dirt, oil, grease or any other contaminant, which may reduce its bond to the epoxy adhesive.

The casting shall be imprinted with the model number and the manufacturer's name.

Recessed Pavement Marker Adhesive. The adhesive used to fasten the pavement marker lens to the pavement surface shall conform to D 4383-05 Table X1.4.2.3 M 237 Type II. Rapid Set Type adhesives shall not be used.

Casting Adhesive. The epoxy adhesive used to fasten the castings to the pavement surface shall conform to D 4383-05 Table X1.1.

Reflector Lens Adhesive in Casting. The adhesive used to fasten the reflector lens to the casting shall conform to the manufacturers' recommendations.



SPECIAL PROVISION

CONTRACT NO. MA-2435-000-002

**951.05 — SNOWPLOWABLE RAISED PAVEMENT MARKERS AND
RECESSED PAVEMENT MARKERS**

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951.05.01 Field Testing. Materials conforming to SPRPM Specification shall be field evaluated at the National Transportation Product Evaluation Program (NTPEP) Northeast test deck for performance. Materials conforming to recessed pavement marker specification shall be field evaluated at any (NTPEP) test deck for performance. Materials performing satisfactorily throughout the test period will be placed on the Administrations Prequalified Materials List. All marking materials supplied during the Contract shall be identical in composition to the materials submitted for initial testing. Random sampling will be performed on projects sites. Conformity with these requirements will be determined by the Office of Materials Technology (OMT).

951.05.02 Facility Sampling. Random testing of samples will be performed by the Administration as Quality Assurance and certification verification. Materials will be periodically sampled at the manufacturer's facility by the Administration. Each sample shall be accompanied by a certification showing compliance with the physical requirements of this Specification. Materials supplied during the Contract shall be identical in composition to the materials submitted for initial testing. Conformity with these requirements will be determined by OMT.

Sources supplying materials shall be submitted by the Contractor to the Engineer for approval in conformance with the Contract Documents.

The material manufacturer shall reimburse the Administration for the cost of sampling and shipment of the samples when sampled by the Administration.

Material Shipment. The components shall be shipped in containers sealed by the manufacturer. The label on each container shall include the following information:

- (a) Manufacturer's Name.
- (b) Place of Manufacture.
- (c) Color of Material and Component Type.
- (d) Date of Manufacture (month-year).
- (e) Batch and Lot Identification Number.
- (f) Size/quantity of lot represented.

951.05.03 Certification. The Contractor shall furnish notarized certification as specified in TC-1.03.

The manufacturer shall certify that any SPRPM materials supplied during the Contract conforms to the identical composition of the samples submitted for evaluation on the NTPEP Northeast Test Deck, and identify the SPRPM materials by referring to the code used on the deck. PRPM materials which fail to conform will be rejected.



SPECIAL PROVISION

CONTRACT NO. MA-2435-000-002

951.05 — SNOWPLOWABLE RAISED PAVEMENT MARKERS AND
RECESSED PAVEMENT MARKERS

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The manufacturer shall certify that any recessed pavement marker materials supplied during the Contract conforms to the identical composition of the samples submitted for evaluation on any NTPEP Test Deck, and identify the recessed pavement marker materials by referring to the code used on the deck. Recessed pavement marker materials which fail to conform will be rejected.

The manufacturer shall also provide the following:

- (a) Material Safety Data Sheets for all materials submitted for testing and use.
- (b) A facility, in operation, capable of producing the materials in the quantity and quality required by the Administration.
- (c) A laboratory capable of performing the required tests. This laboratory will be subject to the Administration's approval.



CATEGORY 900
MATERIALS

SECTION 951 — PAVEMENT MARKING MATERIALS

951.07 PERMANENT PREFORMED PATTERNED REFLECTIVE PAVEMENT (PPRP) MARKING MATERIAL. The material shall be capable of adhering to hot mix asphalt and portland cement concrete surfaces, and to any existing pavement markings in accordance with manufacturer's recommendations by a pre-coated pressure sensitive adhesive. A primer shall be used to precondition the surface if recommended by the manufacturer. The markings shall be capable of being inlaid in new hot mix asphalt surfaces during the paving operation.

The material shall be highly durable and retroreflective and shall be fabricated of a polymeric material designed for longitudinal and legend/symbol markings subjected to high traffic volumes and severe wear conditions, such as shear action from crossover or encroachment on typical longitudinal configurations, and where high levels of reflectivity are required to ensure the safety of the motoring public.

The material shall be of good appearance and free from cracks. Edges shall be true, straight and unbroken. Line marking material shall be in rolls having no more than three splices per 150 ft of length. All marking materials shall be packaged in conformance with accepted commercial standards and shall have a minimum shelf life of one year.

The material shall remain in place on the pavement surface without being displaced by traffic, and shall not be affected by weather conditions.

951.07.01 Permanent Preformed Patterned Reflective Pavement Marking Material Components.

Composition. The material shall consist of a mixture of polymeric materials, pigments and reflective spheres distributed throughout the base cross-sectional area and reflective spheres bonded to the topcoat surface to provide immediate and continuing retroreflection.

Restrictions. The combined total of lead, cadmium, mercury and hexavalent chromium shall not exceed 100 ppm. Diarylide based pigments and non-leachable lead pigmentation are not acceptable. The presence of these compounds shall be tested for compliance to the specification by X-ray diffraction, ICP, or another comparable method, capable of this level of detection.

951.07.02 Permanent Preformed Patterned Reflective Pavement Marking Material Physical Requirements.

- (a) **Reflectance.** The manufacturer shall certify that the white and yellow materials shall have the minimum initial retroreflectance values of 350 mcd/L/m² for white and 250 mcd/L/m² for yellow markings in any 528 ft section. Reflectance shall be measured using a reflectometer with CEN 30-meter geometry (88.76 degree entrance angle and 1.05 degree observation angle).



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(b) **Color.** The color of preformed markings shall essentially match the 37886, 33538 or 37038 color chips for white, yellow or black respectively as shown in Federal Standard 595A.

(c) **Frictional Resistance.** The surface of the retroreflective pliant polymer shall provide a minimum initial average skid resistance value of 45 BPN when tested according to ASTM E 303.

951.07.03 Field Testing. Materials conforming to this specification shall be field evaluated at the National Transportation Product Evaluation Program (NTPEP) Northeast test deck for performance. Materials performing satisfactorily throughout the test period will be placed on the Administration's Prequalified Materials List. All marking materials supplied during the Contract shall be identical in composition to the materials submitted for initial testing. Conformity with these requirements will be determined by the Office of Materials and Technology.

951.07.04 Prequalification. Samples shall be taken by Administration for testing. The manufacturer shall submit any data from AASHTO NTPEP Northeast Test Deck which support material performance. Materials conforming to this Specification will be placed on the Administration's Prequalified List of Patterned Tapes.

951.07.05 Certification. The Contractor shall furnish notarized certification as specified in TC-1.03. The manufacturer shall certify that any reflective thermoplastic materials supplied during the Contract conforms to the identical formulation as the samples submitted for evaluation on the NTPEP Northeast test deck, and identify the formulas by referring to the code used on the deck. Reflective thermoplastic materials which fail to conform will be rejected.

The manufacturer shall also provide the following:

- (a) Material Safety Data Sheets for all materials submitted for testing and use.
- (b) A facility, presently in operation, capable of producing the reflective thermoplastic materials in the quantity and quality required by the Administration.
- (c) A laboratory subject to the Administration's approval which is capable of performing the required tests.