

MARYLAND TRANSPORTATION AUTHORITY
Baltimore, Maryland

Invitation for Bids

BALTIMORE HARBOR TUNNEL FACILITY



Contract No. HT 2025-000-002

**REPLACE WATER LINE FRANKFURST AVENUE
TO FAIRFIELD SERVICE BUILDING**

Baltimore City

September 2008

NOTICE TO BIDDERS

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

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

IMPORTANT INFORMATION REGARDING MBE UTILIZATION AND BIDDING REQUIREMENTS

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

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 after making good faith efforts, you determine you can not achieve the established overall goal or subgoals, you must request a waiver.
- List the percentage(s) of the overall goal(s) that you are able to achieve.
- 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.
- Total contract dollar amount. This amount must match the submitted bid price.
- List the minority firm name, certification number, work to be performed, dollar amount and/or percentage amount.
- Clarify for each sub-contractor if it will provide services, is a supplier or will supply and install.
- 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**. Prime Contractors are strongly encouraged to check the MDOT database at www.mbe.md.state.md.us to see if the subcontractor is certified to perform the work and to make sure the subcontractor has not graduated from the listed NAIC codes. If you have questions after checking the data base, you may contact the Authority MBE Office at 410-537-1048 for further assistance.

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

Please provide details on how you arrived at the 60% on Attachment B under the dollar amount. (i.e. - \$150,000.00 X 60% = \$90,000.00)

- If you are requesting a third tier relationship, you must state that request on the Attachment B form under work to be performed. Please note: Third Tier MBE/DBE subcontracting will be approved by the Authority only when the Authority is satisfied that there is no way except by Third Tier contracting that an MBE/DBE goal can be achieved. Specifics as to why a Third Tier contracting agreement must be included.
- The summary at the bottom of Attachment B must be filled out with the total overall MBE participation, Total African-American MBE participation, and the Total Women-Owned MBE participation.

- Attachment B must be signed by the preparer.
- If you are the apparent low bidder, you will receive a letter from the Authority requesting your MBE Attachment C (Outreach Efforts Compliance) and Attachment D (Subcontractor Project Participation Statement). You will have ten (10) working days to submit the attachments to the Authority. If you requested a waiver at time of bid, all of the back up documentation that complies with COMAR 21.11.03.11, must be submitted within the ten working days with Attachments C & D.
- If the apparent low bidder fails to return the required documentation within the allotted ten (10) days, the Procurement Officer may determine that the apparent low bidder is not responsible and therefore not eligible for contract award.
- When Attachments C & D are submitted they must have the identical subcontractors and dollar amount(s) listed on them as were listed on the previously submitted Attachments A & B. Failure to comply will result in your bid being non-responsive.

Notice to Bidders/Offerors

eMaryland Marketplace

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”).
- (b) Temporary Barrier.
 - (1) Concrete Barrier.
 - (2) Traffic Barrier W Beam and Water Filled Barrier.
- (c) Temporary End Treatments.

Category 4 Devices

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

CONTRACT PROVISIONS
(NCHRP) REPORT 350 IMPLEMENTATION SCHEDULE

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



SPECIAL PROVISIONS
NOTICE TO CONTRACTOR

CONTRACT NO. HT-2025-000-002

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NOTICE TO CONTRACTOR

EARLY SUBMISSIONS. The last sentence of the first paragraph of TC-5.02, “No work shall be started before receipt of the Notice to Proceed” shall not apply to the following:

After notification to the Contractor from the Administration that the Contractor is the apparent low bidder, the Contractor will be permitted to provide a written request to the Engineer to submit documentation for materials sources and working drawings for any items of work that have a long lead time and could jeopardize the project schedule. Upon written approval from the Engineer the Contractor may submit the applicable documentation to the Engineer.

Should the Contract not be awarded to the apparent low bidder who meets the requirements of the Contract, GP-8.10 will apply for all costs accrued for the preparation and approval of the working drawings and any resultant material purchase approved by the District Engineer and steel fabricated in conformance with the approved working drawings between the date the Contractor received notice of apparent low bidder and the date of notice that the apparent low bidder will not be awarded this contract.

Should this contract not be awarded to the apparent low bidder due to failure of the Contractor to comply with all award and execution requirements, all costs accrued for the preparation of the specific items and any resultant material purchased and steel fabrication shall be borne by the Contractor.

Failure of the Contractor to submit the early submissions will not be basis for delaying issuance of the Notice to Proceed or be considered a reason for a time extension.



NOTICE TO ALL HOLDERS OF THIS CONTRACT DOCUMENT

HIGH VISIBILITY SAFETY APPAREL POLICY

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

STATEMENT OF POLICY.

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

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

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



CONTRACT PROVISIONS
HIGH VISIBILITY SAFETY APPAREL POLICY

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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.



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BALTIMORE HARBOR TUNNEL FACILITY



Contract No. HT 2025-000-002

REPLACE WATER LINE FRANKFURST AVENUE TO FAIRFIELD SERVICE BUILDING

Baltimore City

September 2008

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 **11:00 AM** on **September 29, 2008**, in the Conference Room, at the Maryland Transportation Authority, 300 Authority Drive, 2nd Floor, Baltimore, Maryland 21222. While attendance at the Pre-Bid conference is not mandatory, this is the offeror's opportunity to raise questions and/or issues of concern regarding the project.



SP 1-1 PROJECT DESCRIPTION

CONTRACT NO.: HT 2025-000-002

TITLE: Replace Water Line Frankfurst Avenue to Fairfield Service Building

FACILITY: Baltimore Harbor Tunnel

COUNTY: Baltimore City, Maryland

ADVERTISED: September 16, 2008

PRE-BID MEETING: September 29, 2008 at 11:00 AM
in the Conference Room, at the Maryland Transportation Authority, 300 Authority Drive, 2nd Floor, Engineering/Finance Building, Baltimore, MD 21222

PROJECT CONTACT: Project Manager: Larry Thomas at (410) 537-7817
Contract Administration: Maggie Johnson at (410) 537-7807

BIDS DUE: **12 Noon, October 17, 2008**, in the Bid Box on the 1st floor of the Maryland Transportation Authority, Engineering/Finance Building, 300 Authority Drive, Baltimore, MD 21222

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

CONTRACT TIME: 150 Calendar Days

LIQUIDATED DAMAGES: **\$750 per Calendar Day**

MINIMUM MBE GOALS: Overall 25%
Women owned businesses 5%
African-American owned businesses 12%
Other 8%

BID DOCUMENTS: \$ 50.00 Bid documents can be purchased between 7:30 a.m. and 3:30 p.m., Mondays, Wednesdays, Thursdays and Fridays and between 10:00 am 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.



LOCATION AND SCOPE OF WORK

This project is located at the Maryland Transportation Authority Fairfield Service Building, 1700 Frankfurst Avenue, Baltimore, Maryland 21226

Scope of Work Summary includes but not limited to:

1. The installation of new water service piping and abandonment of existing to the Emergency Garage, Service Building and Vent Building.
2. Total length of piping represents approximately 2,560 linear feet of PVC restrained joint piping, valves, fire hydrants and related components.
3. Selective demolition and restoration of hot-mix pavement, concrete curb & gutter, gravel and concrete sidewalk areas are specified on plans.
4. Maintenance-of-traffic along the East and West Service Roads will be necessary.

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 January 2001, revisions thereof, or additions thereto, and the Special Provisions included in this Invitation for Bids.

SP 1-3 ORIGINAL FACILITY PLANS AND SITE VISITS

The original facility plans are on file at the Engineering/Finance Building of the Francis Scott Key Bridge and will be made available for inspection to prospective bidders. Parties interested in viewing the plans should contact Mr. William Kirk, Facilities Engineering Manager at (410) 537-7813.

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 ten (10) days, the Subcontractor shall notify the Project Engineer in writing of the amount in dispute including the item numbers and payment quantity for each. The Project Engineer will then notify the Director of Construction of the dispute. The Director of Construction or his representative will verbally contact the prime Contractor within 48 hours to ascertain whether or not a performance dispute exists which necessitates non-payment to the Subcontractor. If a performance dispute exists, the prime Contractor must demonstrate that there is a valid basis to withhold payment from the Subcontractor. If the prime Contractor withholds payment from a Subcontractor, the prime Contractor shall provide to the Subcontractor written notice of the withholding of payment. The notice shall detail the reasons for withholding payment as well as the amount. A copy of the notice shall be provided to the Surety and the Authority. If no valid dispute exists, the prime Contractor will be directed to make immediate payment to the Subcontractor. The Subcontractor will be responsible for notifying the Director of Construction if this payment is not made. Upon receipt of notification, the Director of Construction will schedule a meeting with the Contractor and Subcontractor to verify and discuss the non-payment issue. This meeting will be held at the Authority's offices within two (2) working days of the Authority's contact with the Subcontractor. If it is determined that the prime Contractor has withheld payment to the Subcontractor without cause, further progress payments to the prime Contractor will be withheld until the Subcontractor is paid. In addition, the Authority may order a suspension of work or other administrative actions as it sees fit.

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

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

SP 1-5 WORK HOURS

The Contractor will be permitted to work Monday through Friday 7:00 a.m. until 4:00 p.m. All utility outages shall be coordinated with the Owner. Additional hours may be permitted if approved by the owner.

SP 1-6 INSURANCE

TC-5.01 INSURANCE

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



1. The Contractor shall not commence work under this contract until it has obtained all of the minimum amounts of insurance required by these Special Provisions and the insurance has been approved by the Engineer. The Contractor shall furnish to the Maryland Transportation Authority ("Authority") duly executed certification of all required insurance on forms satisfactory to the Authority. The certificates of insurance shall state that it is in force and cannot be cancelled, release or non-renewed except upon thirty (30) days prior written notice, registered mail to the Authority. All Contractors' insurance policies, with the exception of the Worker's Compensation and Employer's Liability, shall be endorsed to provide as additional insured the Maryland Transportation Authority and the State of Maryland.
2. The Contractor shall purchase and maintain such insurance as is specified herein which will protect 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 for which any of them may be held 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) Combined Single Limit for bodily injury and property damage.

d) Additional Insurance

The Contractor shall also procure and keep in effect:

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

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

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

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

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

The Contractor shall:

1. Identify specific work categories appropriate for subcontracting;
2. At least ten (10) days before bid opening, solicit Minority Business Enterprises, through written notice that:
 - a) describe the categories of work: and,



- b) provide information regarding the type of work being solicited and specific instructions on how to submit a bid.
3. Attempt to make personal contact with Minority Business firms:
4. Assist Minority Business Enterprises to fulfill bonding requirements or to obtain a waiver of these requirements:
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/offeror is unable to achieve the specified overall contract goal or subgoals for each certified MBE classification, the bidder/offeror must request, in writing, on Attachment A, (Certified MBE Utilization and Fair Solicitation Affidavit), a waiver at time of bid.

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

Criminal Fraud Provisions:

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

SP 1-8 PROGRESS SCHEDULE REQUIREMENTS

Refer to Section 109 of the Standard Specifications

SP 1-9 CORPORATE REGISTRATION



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

Subtitle 2, Title 7, of the Corporations and Associations Article of the Annotated Code of Maryland. Compliance is required of the successful vendor as well as the proposed subcontractors.

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

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 the 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 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 Project 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 on the transportation facility projects of the Authority, Contractor's personnel shall have an ID decal displayed on their hardhat. These decals will be provided by the



Authority. All Contractor's 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. Request for hardhat and rearview mirror decals shall be made to the Construction

Division before the beginning of construction and should include the number required of each type.

All costs associated with ID's will not be paid for separately and shall be incorporated under other items of payment in the contract.



SP 1-11 PROGRESS PHOTOGRAPHS

On or about the last day of each month, at important stages of the work, and upon final completion, the Contractor shall take color photographs of the work under construction as directed by the Engineer. An average of six views per month will be required for the Contract.

The Contractor shall use a digital camera and furnish to the Engineer the compact disks and three prints of each photograph, linen mounted, to a uniform standard size of approximately 8 inches by 11 inches with at least one inch margin for binding on the left hand side. Each print shall show inconspicuously on the face, the name of the Contract, followed by the Contract number, subject of the photograph, date of the exposure, "Maryland Transportation Authority", and the name of the Contractor. The furnishing of the progress photograph prints, including disks will not be measured for payment, but cost thereof shall be included in the Lump Sum Pay Item 401.



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

GP 1.03 – ORGANIZATIONAL DEFINITIONS

Revise the definitions of Administration to read as follows:

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

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



GENERAL PROVISIONS

GP-SECTION 1 DEFINITIONS AND TERMS

GP-1.04 ABBREVIATIONS

GP3 **ADD:** The following after SAWP

SSPC Steel Structures Painting Council

GP-1.05 DEFINITIONS

GP7 **ADD:** The following after State.

Subcontract—Any agreement entered into by the Contractor or a subcontractor for a portion of the construction or any other part of the work in connection with, and under the terms of, the Contract.

DELETE: The Subcontractor definition in its entirety.

INSERT: The following.

Subcontractor—Any person undertaking a portion of the construction or any other part of the work under the terms of the Contract, by virtue of an agreement with the Contractor or a subcontractor, who prior to such undertaking has received the approval of the Administration. Subcontractor does not include an employee with an employment contract, or an employee organization with a collective bargaining agreement.

ADD: The following after Surety.

Third Tier Contracting—The process in which the Contractor subcontracts a portion of the Contract to a subcontractor who in turn subcontracts a portion of a subcontract to a third party. This latter action is termed entering into a third tier Contract.



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

GP 1.05 - DEFINITIONS

Add the following definitions:

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



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

GP 2.04 SITE INVESTIGATION

Revise the paragraph to read as follows:

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

GP-2.06 PREPARATION OF THE BID

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

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

- (1) State Contract No.
- (2) State Item Nos.
- (3) State's Proposed Quantities
- (4) Description of Items
- (5) Unit Price



- (6) Total Cost of Each Item
- (7) Total Bid Amount

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

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

Sample forms shall be submitted to:

Mr. Benjamin Mondell
Chief of Engineering Procurement
Maryland Transportation Authority
300 Authority Drive
Baltimore, MD 21222

GP 2.23 - BID PROTESTS

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

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

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

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



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

GP 4.10 - WARRANTY OF CONSTRUCTION

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

Delete: The first paragraph in its entirety.

Insert: The following:

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



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

GP 5.12 - FAILURE TO MAINTAIN ENTIRE PROJECT

Delete Section GP 5.12 in its entirety

Insert: Revise the paragraph to read as follows:

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



GENERAL PROVISIONS

GP-SECTION 8 PROSECUTION AND PROGRESS

GP56 **DELETE:** GP-8.01 SUBCONTRACTING in its entirety.

INSERT: The following.

GP-8.01 SUBCONTRACTING

Except as may be provided elsewhere in the Contract, the Contractor to whom a Contract is awarded shall perform with his own organization and with the assistance of workmen under his immediate supervision, work of a value of not less than 50 percent of the total original value of the Contract.

No portion of the Contract shall be subcontracted, assigned or otherwise disposed of except with the written consent of the procurement officer. Any assignment, subcontract or other disposition of all or part of this Contract without the express written consent of the procurement officer shall be null and void. Consent to subcontract, assign or otherwise dispose of any portion of the Contract shall not be construed to relieve the Contractor or surety of any responsibility for the fulfilling of all the requirements of the Contract.

The Contractor shall incorporate by reference or otherwise include these General Provisions in every subcontract issued pursuant to or under this Contract, and shall require that the same reference or inclusion be contained in every subcontract entered into by any of its subcontractors.



**GENERAL PROVISIONS
GP SECTION 8
PROSECUTION AND PROGRESS**

GP 8.09 - LIQUIDATED DAMAGES

Delete Section GP 8.09 in its entirety

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

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

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



GENERAL PROVISIONS

GP-SECTION 9 PAYMENT

GP70 **DELETE:** GP-9.01 SCOPE OF PAYMENT in its entirety.

INSERT: The following.

GP-9.01 SCOPE OF PAYMENT

Payment to the Contractor will be made for the actual quantities of Contract items performed in accordance with the Plans and Specifications and if, upon completion of the construction, these actual quantities show either an increase or decrease from the quantities given in the bid schedule, the Contract unit prices will still prevail, except as provided in GP-4.04 Variations in Estimated Quantities.

The payment of any partial estimate or of any retained percentage except by and under the approved final estimate and voucher, in no way shall affect the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damages due to such defects.

When requested in writing by the Contractor and approved by the procurement officer, payment allowance will be made for nonperishable material to be incorporated in the work delivered and stockpiled at the work site or other approved site. Material for which payment has been made, wholly or partially, shall not be removed from the worksite or other approved site.

Payment to the Contractor under this section for materials on hand in no way will be construed as acceptance by the Administration of title to the material. Title shall remain with the Contractor until the project has been completed and accepted in accordance with GP-5.13.

The Contractor shall indicate his Federal Tax Identification or Social Security Number on the face of each invoice billed to the State.

On Contracts in excess of \$25,000, the Contractor and any subcontractor with a lower tier subcontract, prior to receiving a progress or final payment under this Contract, shall first certify in writing that he has made payment from proceeds of prior payments, and that he will make timely payments, from the proceeds of the progress or final payment then due him, to his subcontractors and suppliers in accordance with his contractual arrangements with them.

The Contractor shall also obtain from each subcontractor a certification that it has made payment from proceeds of prior payments to any of its lower tier subcontractors, and will make timely payments to its lower tier subcontractors and suppliers in accordance with its



contractual arrangements with them. This certification is not required from subcontractors who have no lower tier subcontracts. These certifications may be required by the procurement officer for contracts of \$25,000 or less.

In addition to any other remedies provided by law or this Contract, any Contractor or subcontractor of any tier who fails to make payments as required by the certifications set forth in the above paragraphs within thirty (30) days from the date such payment is due shall be obligated to include with such payment interest at the rate of 10 percent per annum from the date the payment was due to the date the payment was actually made to the subcontractor or lower tier subcontractor.



**GENERAL PROVISIONS
GP SECTION 9
PAYMENT**

GP 9.05 LATE PAYMENTS

ADD the following:

- (e) Payments will be made within thirty (30) days of the date when the Contract amount becomes due and payable or the date of receipt of a proper invoice, whichever is later. The State's failure to remit payment within forty-five (45) days from that date may entitle the Contractor to interest at the rate of 10 percent per annum beginning on the 31st day.



TERMS AND CONDITIONS

TC SECTION 1 REFERENCES AND DEFINITIONS

TC-1.01 REFERENCES.

- 1 **ADD**: As the third paragraph.

References to all specifications and procedures shall be understood to be the most recently published standard at the time of advertisement unless otherwise specified in the Contract Documents.

TC-1.02 DEFINITIONS.

- 5 **ADD**: After **Special Provisions**.

Special Provisions Inserts — Additions and revisions to the Standard Specifications that have not been officially approved as an Interim Specifications Addenda (“ISA”).



TERMS AND CONDITIONS

TC SECTION 2
BIDDING REQUIREMENTS AND CONDITIONS

87 **DELETE:** TC-2.01 PROJECT CLASSIFICATION in its entirety.

INSERT: The following.

TC-2.01 PROJECT CLASSIFICATION

The Administration will estimate the cost of the Contract and classify it within one cost group and letter designation as follows:

COST GROUP ESTIMATE	COST GROUP LETTER CLASS
Up to \$ 100 000	A
\$ 100 001 to \$ 500 000	B
\$ 500 001 to \$ 1 000 000	C
\$ 1 000 001 to \$ 2 500 000	D
\$ 2 500 001 to \$ 5 000 000	E
\$ 5 000 001 to \$ 10 000 000	F
\$ 10 000 001 to \$ 15 000 000	G
\$ 15 000 001 to \$ 30 000 000	H
\$ 30 000 001 to \$ 50 000 000	I
\$ 50 000 001 to \$ 75 000 000	J
\$ 75 000 001 to \$ 100 000 000	K
Over \$ 100 000 000	L

The letter designation will be published as part of the Notice to Contractors.



TERMS AND CONDITIONS

TC SECTION 3 SCOPE OF WORK

TC-3.01 GOVERNING ORDER OF CONTRACT DOCUMENTS.

11 **DELETE**: The first paragraph in its entirety.

INSERT: The following.

The Contract Documents, including but not limited to the Standard Specifications, the Interim Specifications Addenda, the Special Provisions Inserts, the Plans, Special Provisions, and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In the event of any discrepancy between the drawing and figures written thereon, the figures, unless obviously incorrect, will govern over scaled dimensions. In the event of any discrepancy between the various Contract Documents, the governing order from highest to lowest shall be Special Provisions, Plans, Special Provisions Inserts, Interim Specifications Addenda, Standard Specifications and Technical Specifications.

TC-3.03 CONTINGENT ITEMS.

12 **DELETE**: In the second paragraph the last sentence "Neither party shall . . . of such items."

INSERT: The following.

The requirements of GP-4.04 (Variations in Estimated Quantities) and TC-7.07 (Eliminated Items) shall apply.



**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
300 Authority Drive
Baltimore, Maryland 21222-2200
ATTN: Larry Thomas

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:

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.

TC-4.02 - FAILURE TO ADEQUATELY MAINTAIN PROJECT.

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

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

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

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

The deduction will be equal to the daily prorated share of the lump sum price bid for Maintenance of Traffic or **\$150.00** 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.



TC-4.05 DISPUTE MEDIATION

When a dispute arises out of or relates to the Contract or breach thereof, and if the dispute can not be settled through negotiation or the partnering issue resolution process, either party may first elect to try in good faith to settle the dispute by non-binding mediation administered by a mutually agreed upon qualified mediator before proceeding with other dispute resolution procedures including litigation



TERMS AND CONDITIONS
TC SECTION 5
LEGAL RELATIONS AND PROGRESS

TC-5.01 INSURANCE.

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

INSERT: The following.

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

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

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



TERMS AND CONDITIONS

**TC SECTION 6
RESTRICTIONS AND PERMITS**

TC-6.03 COMPLIANCE WITH MARYLAND VEHICLE LAWS.

The Maryland Vehicle Law requires each motor vehicle, trailer, semitrailer and pole trailer driven on a highway to be registered.

There are some exceptions to this general requirement concerning nonresidents. If a nonresident is operating a vehicle(s) in Maryland as described below, the nonresident exemption is not applicable and the vehicle(s) being operated shall be titled and registered in conformance with the applicable Motor Vehicle Laws.

The vehicle is:

- (a) Used for transporting persons for hire, compensation, or profit
- (b) Regularly operated in carrying on business in this State
- (c) Designed, used, or maintained primarily for the transportation of property, or
- (d) In the custody of any resident for more than 30 days during any registration year.

In addition to the titling and registration requirements for vehicles being operated in Maryland, all equipment being used shall be properly identified. Maryland classifies this equipment as "Special Mobile Equipment" which is defined as a vehicle that:

- (a) Is not used primarily for highway transportation or property; and
- (b) Is operated or moved on highway only as an incident to its nonhighway use.

Special mobile equipment includes a road construction or maintenance machine, mobile crane, ditch digger, well driller, concrete mixer, jobsite office vehicle or portable power generator.

An interchangeable license plate is issued to special mobile equipment. However, titling is not required.

For additional information concerning the requirements for titling and registering your vehicles in Maryland, please contact the Motor Vehicle Administration, Chief, Division of Vehicle Registration.

The Contractor shall adhere to all State Motor Vehicle laws and safety regulations.



TERMS AND CONDITIONS

TC SECTION 6 RESTRICTIONS AND PERMITS

25 **DELETE:** TC-6.09 HAZARDOUS MATERIAL in its entirety.

INSERT: The following.

TC-6.09 HAZARDOUS MATERIAL.

(a) If the Contractor encounters or exposes during construction any abnormal conditions which indicate the presence of a hazardous material or toxic waste, work in the area shall immediately be suspended and the Engineer notified. The Contractor's operations in this area shall not resume until permitted by the Engineer, however, the Contractor may continue working in other areas of the project, unless directed otherwise.

Abnormal conditions shall include, but not be limited to the presence of barrels, obnoxious or unusual odors, excessively hot earth, smoke, or any other condition which could be a possible indicator of hazardous material or toxic waste.

Where the Contractor performs necessary work required to dispose of these materials and no items have been identified in the Contract Documents, the work shall be performed under an extra work order.

(b) For any material furnished on the project by the Contractor suspected to be hazardous or toxic the Engineer may require the Contractor to have it tested and certified to be in conformance with all applicable requirements and regulations. Material found to be hazardous or toxic shall not be incorporated into the work. The required testing will be determined by the Engineer and may include, but not be limited to, the EPA Toxicity Characteristic Leaching Procedure ("TCLP") or its successor. The evaluation and interpretation of the test data will be made by the Engineer. Testing and certification shall be at no additional cost to the Administration.

(c) Disposition of the hazardous material or toxic waste shall be made in conformance with all applicable requirements and regulations.



TERMS AND CONDITIONS

TC SECTION 6 RESTRICTIONS AND PERMITS

26 **DELETE:** TC-6.10 RECYCLED OR REHANDLED MATERIALS in its entirety.

INSERT: The following.

TC-6.10 RECYCLED OR REHANDLED MATERIALS.

The Contractor shall submit to the Engineer, using MD SHA Form TC-6.09, the specific type and quantity of recycled materials (a) through (h) anticipated for use on the project prior to receipt of the Notice to Proceed. This submission does not preclude the normal materials process. Recycled materials shall conform to all applicable Specifications.

Typical recycled materials are:

- (a) **Crumb Rubber.** Any rubber derived from processing whole scrap tires or shredded tire materials from automobiles, vehicles or other equipment owned and operated in the United States, provided the processing does not produce waste casings or other round tire material that can hold water when stored or disposed above ground. Rubber tire buffings produced by the retreading process qualify as a source of crumb rubber.
- (b) **Recycled Asphalt Pavement.** Existing asphalt pavement milled or otherwise removed. Recycled in-place material is excluded.
- (c) **Glass.** Waste glass crushed to be used as aggregate.
- (d) **Blast Furnace Slag.** The nonmetallic by-product of iron production.
- (e) **Recycled Concrete Pavement.** Existing concrete pavement crushed to be used as aggregate.
- (f) **Mining Waste Rock.** The coarse material removed during the ore mining process.
- (g) **Coal Fly Ash.** Fine material collected from the stack gases after coal combustion.
- (h) **Other.** Any materials not listed above which are recycled as the original product or incorporated into other products.



For recycled or rehandled material furnished on the project by the Contractor for use in embankment, base, subbase or drainage media, the Engineer may require the Contractor to have the material tested and certified to be in conformance with all applicable environmental requirements. The required testing will be determined by the Engineer and may include, but not be limited to, the EPA Toxicity Characteristic Leaching Procedure (“TCLP”) or its successor. The evaluation and interpretation of the test data will be made by the Engineer and be based on the project environment. Testing and certification shall be at the Contractor's expense.

TC-6.11 CONSTRUCTION AND WASTE MATERIAL.

All wood, trash debris and other foreign matter shall be removed from the right-of-way and disposed of by the Contractor. The Contractor shall make all necessary arrangements to obtain suitable disposal locations and shall furnish the Engineer with a copy of resulting agreements. Disposal shall be in conformance with all Federal, State and local ordinances.

TC-6.12 STRUCTURE UNDERCLEARANCES AND OVERHEAD CLEARANCES

General. The requirements for underclearances at structures shall apply to the entire usable roadway areas including shoulders. Unless otherwise specified in the Contract Documents or directed by the Engineer, the Contractor shall ensure that the following underclearances are maintained.

- (a) All bridges (except pedestrian bridges) over Interstate, United States, or State highways shall have a 16.0 ft. minimum vertical underclearance.
- (b) All bridges (except pedestrian bridges) over secondary/ county roads, and local roads and streets shall have a 14.5 ft minimum vertical underclearance.
- (c) Pedestrian bridges shall have a minimum vertical underclearance 1 ft higher than those specified above. However, if there are bridges in the general vicinity of the proposed pedestrian bridge that have an underclearance greater than the minimum required underclearance of the pedestrian bridge, then the pedestrian bridge will have its underclearance increased to equal the highest overpass bridge.



- (d) Removal of existing pavement under an existing pedestrian bridge to conform to the 1 ft higher requirement will not be required unless specified in the Contract Documents. All bridges with overhead structural elements (e.g. through truss bridges, movable bridges with overhead bracing for counterweights, etc.) shall have a 17.5 ft minimum overhead vertical clearance.

When the above requirements are not met, the Contractor shall take remedial actions as directed by the Engineer. When remedial actions are required, and there are no pay items for the work in the Contract Documents, the provisions of GP-4.06 (Changes) and GP-4.07 (Negotiated Payment Provisions) shall apply. The cost of measurements to determine clearance heights will be incidental to other pertinent items in the Contract Documents.

A minimum of 14.5 ft underclearance shall be maintained at all bridges throughout construction over each lane or shoulder open to traffic. No portion of formwork, temporary protective shields, etc. including connection devices shall encroach on this underclearance. If less than 16.0 ft vertical underclearance is provided on bridges specified in (a) or (d) above, the Engineer will notify the Director of Construction of the exact reduced minimum clearance and the effective dates of the reduction. The Contractor shall furnish and erect signs indicating the exact minimum underclearance. The signs and their locations shall be approved by the Engineer. Signs shall be removed and become the property of the Contractor when the intended underclearance is restored.

Resurfacing. These minimum underclearances shall be maintained whenever resurfacing a roadway. This may require grinding the existing pavement prior to placing the resurfacing material. Whenever highway overpass bridges are in the general vicinity of a pedestrian and grinding is not required to maintain the specified clearances, the roadway under the pedestrian bridge shall be ground to provide a higher underclearance than the adjacent bridges. This requirement will be waived whenever the Engineer contacts the Director of Construction and determines that the grinding would have an adverse effect on drainage, utilities, etc.



TERMS AND CONDITIONS

**TC SECTION 7
PAYMENT**

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

INSERT: The following.

TC-7.02 PAYMENT ALLOWANCES FOR STORED MATERIALS.

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

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

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

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

- (d) Material for which an allowance is requested shall be stored in an approved manner in areas within the State of Maryland where damage is not likely to occur. If any of



the stored materials are lost or become damaged in any manner, the Contractor shall be responsible for repairing or replacing the damaged materials. The value of the lost or damaged material will be deducted from the Contractor's subsequent estimates until replacement has been accomplished. The request for allowances for any materials stored on private property within the State of Maryland shall be accompanied by a release from the owner and/or tenant of such property agreeing to permit the removal of the materials from the property without cost to the State of Maryland.

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

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

When storage of the materials within the State of Maryland is not practical, approval shall be obtained from the District Engineer for storage elsewhere. Storage of materials outside the State of Maryland will be subject to the conditions set forth in this provision and limited to materials exceeding Twenty-Five Thousand dollars (\$25,000), which are designed and fabricated exclusively for use on a specific project.

- (e) Material for which payment has been made, either wholly or partially, shall not be removed from the approved location until such time that it is to be incorporated into the work unless authorized by the Engineer.
- (f) The Contractor shall submit a written request for payment to the District Engineer at least two weeks prior to the estimate cutoff date established by the District Engineer. The following items shall accompany the written request for payment:
 - (1) Consent of surety specifying the material type and the item(s) in which the material is to be used.
 - (2) Validated invoices with the signature of an officer of the company supplying the material showing actual cost.
 - (3) A notarized statement from the Contractor attesting that the invoices as submitted do not include charges or fees for placing, handling, erecting or any other charges or markups other than the actual material cost, sales tax(es), if applicable, and freight charges.



- (4) Bills of lading showing delivery of the material. The request for allowances for any materials stored on property outside the State of Maryland shall be accompanied by a release from the owner or tenant of such property agreeing to permit verification by the Inspector that the material is stored at the approved location, and to permit the removal of the materials from the property without cost to the State of Maryland.
- (5) Inspection test reports, certifications and/or a written statement from the Inspector attesting to the inspection and approval of the material.

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

- (6) A statement explaining why the material can not be stored on the project, if the Contractor is requesting to store material at a location other than the project site. The statement shall include the methods of storage, separation, and identification to be used by the Contractor. The Contractor shall provide a method of inventory control and withdrawal satisfactory to the Administration which shall be used by the Contractor to monitor materials not stored on the project.
- (7) A breakdown of the Contract line item bid unit price showing the relationship of the cost of the stored material to the costs of all other materials, labor, and components of the work included in the Contract line item unit price bid by the Contractor.

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

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

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



TC-7.03 FORCE ACCOUNT WORK.

(e) Subcontracting.

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

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

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

INSERT: The following.

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

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

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

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

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

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



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

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



TC SECTION 7
PAYMENT

TC-7.06 FINAL ACCEPTANCE AND FINAL PAYMENT

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

INSERT: The following.

- (b) The Contractor shall then have a period of thirty (30) days, dating from the date upon which it 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 thirty (30) days in which to notify the Administration of its decision. In the event the Contractor notifies the Administration that it protests final payment on such a basis, that notification shall outline the reasons for said protest.



**CATEGORY 100
 PRELIMINARY**

SP 104 - MAINTENANCE OF TRAFFIC

104.00 GENERAL:

INSERT: The following:

This project involves the complete replacement of the existing underground water service from the water meter at Frankfurst Avenue to the Emergency Garage, Service Building and Vent Building.

AGENCY CONTACTS

CONTACT	TITLE	PHONE NUMBER
Dave Roehmer	Administrator, MdTA	(410) 537-1310
John Monk	Chief Facility Maintenance Officer, BHT	(410) 537-1315
Don Smith	Maintenance Operations Manager, MdTA	(410) 537-1285
Roxane Y. Mukai	Traffic Manager, MdTA	(410) 537-7848
William Kirk	Facilities Engineering Manager, MdTA	(410) 537-7813

Section 104.01 TRAFFIC CONTROL PLAN (“TCP”)

Section 104.01.01 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.

**ALLOWABLE LANE CLOSURE SCHEDULES
 Baltimore Harbor Tunnel**

TIME OF DAY	DAYS OF THE WEEK	ALLOWED CLOSURES
7:00A.M.-4:00P.M.	Monday-Friday	Single Lane on Service Road

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.

The Traffic Control Plan (“TCP”) for work consists of a staged Maintenance of Traffic (“MOT”) Plan (included in the contract drawings) which will be employed to perform all work in the contract. 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 be in writing and shall require written approval from the



Engineer at least seventy-two (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.

When a temporary lane or shoulder closure is in effect, work shall begin within one (1) hour after the lane or shoulder is closed. Any delay longer than one hour with no work in progress shall require the Contractor to remove the lane or shoulder closure at no additional cost to the Authority. The Contractor's Traffic Manager shall attend pre-construction meetings and shall discuss traffic control and the TCP including procedures to be implemented for lane/shoulder 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. No travel lanes shall be reduced to less than 11 feet (3.4 meters).

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 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 fifteen (**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 a lane shoulder closure setup no earlier than fifteen (**15**) minutes prior to the actual time lane/shoulder closure or restriction is permitted.

When closing or opening a lane on freeways, expressways and roadways with posted speeds greater than or equal to **50 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, approved truck-mounted attenuator ("TMA") with support structure designed for attaching the system to the work vehicle, and approved 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 specifications as tested under NCHRP 350 Test Level 3.

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 to 5	\$75.00
Over 5	\$75.00 per minute (in addition to the original 5 minutes)

104.01.04 MEASUREMENT AND PAYMENT.

INSERT: The following:

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

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



**CATEGORY 100
PRELIMINARY**

SECTION 104 — MAINTENANCE OF TRAFFIC

**104.04 TEMPORARY CONCRETE TRAFFIC BARRIER (“TCB”)
FOR MAINTENANCE OF TRAFFIC.**

104.04.03 CONSTRUCTION.

ADD: The following after the last paragraph.

Temporary Concrete Traffic Barriers. On all Contracts, the Precast 32 Inch F Shape Temporary Concrete Traffic Barrier will be the Concrete Traffic Barrier for Maintenance of Traffic.

Connections. The “TCB” joint connections shall be the pin and loop connection as specified in the Standards. The channel splice, vertical I beam, and lapped joint connections specified in the AASHTO Roadside Design Guide, the proprietary T-Lok and J-J Hook Systems will be allowed provided only one type of joint connection is used for the length of the barrier.



**CATEGORY 100
 PRELIMINARY**

SECTION 104 — MAINTENANCE OF TRAFFIC

104.08 TEMPORARY TRAFFIC SIGNS (“TTS”)

162 **DELETE:** 104.08.02 MATERIALS in its entirety.

INSERT: The following.

Wood Sign Supports	921.05 and 921.06
Reflectorization	950.03.04
Signs	950.08
Portable Sign Supports, Composite Aluminum Signs, Plastic Signs, and Flexible Roll Up Signs	As approved by the Office of Traffic and Safety

104.08.03 CONSTRUCTION.

163 **DELETE:** The fourth paragraph on this page, “Fabricated wood signs...of 0.125 in. thick.” in its entirety.

INSERT: The following.

Fabricated aluminum signs to be mounted on wood posts shall have the following minimum thickness.

LONGEST DIMENSION OF SIGN in.	MINIMUM THICKNESS in.
≤ 12	0.040
12+ to 24	0.063
24+ to 36	0.080
36+ to 48	0.10
> 48	0.125

Composite aluminum, plastic, or flexible roll up signs shall only be used on those portable supports that are approved to hold that sign material by the Office of Traffic and Safety. The minimum thickness of composite aluminum signs, supported on portable sign supports, shall be 0.08 in.



TTS for this project shall be fabricated with fluorescent orange high performance wide angle retro-reflective sheeting as specified in Sections 950.03.03 and 950.08.01. Fabricated wood signs shall not be used. Sheet aluminum signs shall not be used on portable sign supports.

All TTS backing material used on this project shall be on the Maryland State Highway Administration, Office of Traffic and Safety's approved products list for temporary traffic control devices and miscellaneous items

For TTS mounted on existing or temporary concrete barrier, the Contractor shall design and build barrier/parapet mounted supports for TTS. Temporary support designs shall be submitted to the Engineer for approval prior to fabrication and use.

104.08.04 MEASUREMENT AND PAYMENT. Temporary traffic signs will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for furnishing the signs and supports, wood posts, erection, relocation, maintenance, cleaning, replacement due to nontraffic damage or normal wear, removal, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Where signs have been set and are subsequently damaged by traffic, and the Engineer determines that they are not repairable, they shall be replaced and will be measured and paid for at the Contract unit price.

Temporary traffic signs and all associated hardware, fittings, posts, brackets, and incidentals shall be removed from the project site when no longer needed and become property of the Contractor.



SECTION 104 — MAINTENANCE OF TRAFFIC

104.12 Drums for Maintenance of Traffic

170 **DELETE:** Section 104.12 DRUMS FOR MAINTENANCE OF TRAFFIC in its entirety.

INSERT: The following.

104.12 DRUMS FOR MAINTENANCE OF TRAFFIC.

104.12.01 DESCRIPTION. This work shall consist of furnishing and placing drums and maintaining in like new condition. The drums shall be located as specified in the Contract Documents or as directed by the Engineer.

104.12.02 MATERIALS.

Reflectorization	950.03
Plastic Drums	As approved by the Office of Traffic and Safety

Drums shall be manufactured of low density polyethylene (PE) to withstand impact without damage to themselves or vehicles. The drum shall have a height of 36 in. and a minimum diameter of 18 in. Drums may have one or more flat sides as long as the minimum 18 in. diameter is satisfied. The reflective stripes shall be horizontal, circumferential, orange and white, 6 in. wide, two each of white and orange alternating with the top stripe being orange.

High performance wide angle white and fluorescent orange sheeting shall be used on drums.

All drums shall conform to NCHRP Report 350 criteria for test Level 3.

104.12.03 CONSTRUCTION. Drums shall be adequately weighted with bags of sand or sand filled bases to keep them from moving. Sandbags, with no other attachments, shall rest on the base of the drum.

The Contractor will be permitted to neatly stencil their name or identification mark at the bottom of the nonreflective portion of the drum in maximum 2 in. high letters. No other markings or writings will be permitted on the vertical side of the drum.

Drums shall always be placed to form the taper and the tangent on roadways that have a posted speed greater than 55 MPH for nighttime lane or shoulder closures where no overhead lighting is present, unless otherwise approved by the Project Engineer.

Drums damaged by traffic shall be replaced within four (4) hours after the Contractor is notified.



104.12.04 MEASUREMENT AND PAYMENT. Drums for Maintenance of Traffic will not be measured but will be paid for at the Contract lump sum price. The payment will include reflectorization, setting, resetting, removing, sandbags, maintenance, cleaning of drums to like new condition, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Where drums have been set and are subsequently damaged by traffic, and the Engineer determines that they are not repairable, they shall be replaced and will not be measured but will be paid for at the Contract lump sum price.



**CATEGORY 100
PRELIMINARY**

SECTION 107 — CONSTRUCTION STAKEOUT

107.03 CONSTRUCTION.

107.03.04 Control Stakes.

186 **ADD:** The following as the second paragraph.

The Engineer as specified in 107.03.01 will provide control stakes and preserve those stakes for the correct layout and inspection activities. When the Contractor utilizes construction equipment guided by Global Positioning System (“GPS”) and Robotic Total Station (“RTS”), the Contractor shall set additional stakes directed by the Engineer for horizontal and vertical controls as necessary for the correct layout and inspection of the work.

107.03.08 Subgrade, Subbase and Base Controls.

187 **ADD:** The following after the second paragraph.

(a) Automated Machine Control. The Contractor may elect to use construction equipment guided by a Global Positioning System (“GPS”) or Robotic Total Station (“RTS”) equipment in the placement of subgrade, subbase, base courses, and other roadway materials.

(1) The Contractor utilizing this approach shall develop and submit a Digital Terrain Model (“DTM”) to the Engineer for review. The Contractor using the Contract Documents and any Authority furnished DTM data, if available, shall independently develop the DTM. To use any Authority furnished DTM data, the Contractor shall release the Authority and its designers from all liability for the accuracy of the data and its conformance to the Contract Documents furnished by the Authority.

(2) The Contractor shall establish primary control points at appropriate intervals and at locations along the length of the project and outside the project limits and where project work is performed by the Contractor beyond the project limits as required at intervals not to exceed one thousand (1000) ft. The horizontal position of these points shall be determined by static GPS sessions or by traverse connection from the original base line control points. The elevation of these control points shall be established using differential leveling from the project benchmarks, forming closed loops where practical. A copy of all new control point information shall be provided to the Engineer prior to construction activities. The Contractor shall be responsible for all errors resulting from their efforts and shall correct the deficiencies to the satisfaction of the Engineer and at no additional cost to the Authority.



- (3) The Contractor shall provide control points and conventional grade stakes at critical points such as, but not limited to, all PC's, PT's and super elevation points begin full super, half-level plane inclined, etc., along with other critical points required for the construction of structures and utility relocation or coordination. The Engineer will determine whether additional control points and stakeout are necessary.
- (4) The Contractor shall provide adequate control points, stationing and stakes for coordination activities involving environmental agencies, utility companies and Contractors on adjacent projects at no additional cost to the Authority.
- (b) **Real-Time Kinematic ("RTK") GPS.** RTK GPS may be utilized to control equipment and shall be within tolerances of ± 0.1 ft.
- (c) **"RTS" Positioning.** RTS positioning shall be utilized where grade tolerances are less than ± 0.1 ft. The index error of the vertical circle of the RTS shall be checked and adjusted as necessary prior to each day's operations. Each work session shall begin and end by checking between adjacent control points.
- (d) **Grade Busts.** Grade busts and all associated quantity adjustments or errors resulting from the Contractor's activities shall be corrected by the Contractor to the satisfaction of the Engineer at no additional cost to the Authority.
- (e) **Utilizing Automated Controlled Equipment.** When the Contractor chooses to utilize automated controlled equipment, the Contractor shall furnish a GPS Rover instrument for Authority use during the project, along with eight (8) hours of formal training on GPS/RTS and the Contractor's systems. The Contractor shall provide a surveyor to perform verification when discrepancies arise.
- (f) **Test Sections.** The Contractor shall perform test sections with both GPS and RTS systems to demonstrate they have the capability, knowledge, equipment, and experience to properly operate the systems and achieve acceptable tolerances. If the Contractor fails to demonstrate this ability, the Contractor shall conform to the requirements for the conventional stakeout.



**CATEGORY 100
PRELIMINARY**

SECTION 108 MOBILIZATION

Delete Section 108 in its entirety and insert the following:

108.01 Description

Mobilization shall consist of all work and operations necessary for the assembling and setting up for the Project, including the initial movement of personnel and equipment to the project site, the establishment of the Contractor's offices, shops, plants, storage areas, sanitary and other facilities required by the Specifications and Special Provisions of the contract as well as by local or State Law or regulation, and all other work operations which must be performed prior to beginning work on compensable items 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. The determination of the adequacy of the Contractor's facilities shall be made by the Contractor.

108.02 Materials

Such materials as are required that are not to be a part of the completed contract shall be determined by the Contractor.

108.03 Construction Methods

All work done in providing the facilities and services under this item shall be done in a safe and workmanlike manner.

108.04 Method of Measurement & Basis of Payment

This item will not be measured, but will be paid for at the Contract lump sum bid for mobilization.

Basis of payment will be 50 percent of the lump sum bid price payable on the first monthly estimate subsequent to the Contractor's moving in of all necessary facilities, as indicated under "Description" above, that would enable him to satisfactorily begin work on the preliminary Contract item. The remaining 50 percent will be prorated over the remaining monthly estimates. Payment as directed above will be full compensation for all labor, materials, equipment, tools and incidentals necessary to complete the item.

Payment of the Contract lump sum price for "Mobilization" will not be made more than once, regardless of the fact that the Contractor may have, for any reason, shut down its work on the project or moved equipment away from the project and then back again.



**CATEGORY 100
PRELIMINARY**

SECTION 111 – DIGITAL CAMERA

111.01 DESCRIPTION. This work shall consist of furnishing a new or like new digital camera for use by Authority personnel. The digital camera shall be delivered to the Engineer at the time of the Notice to Proceed. They shall remain operational and not be returned to the Contractor until final acceptance of the entire project, in conformance with GP-5.13.

111.02 MATERIALS.

(a) **Digital Camera.** The digital camera shall meet the following requirements and be furnished with the specified accessories.

- (1) Windows 2000, ME, XP compatible operating system
- (2) Photo Suite, Photo Deluxe, Picture Works, Photo Shop, or similar Photo Managing Software
- (3) 4.0 megapixel image resolution (minimum)
- (4) 3X optical zoom (minimum)
- (5) Two (2) sets of rechargeable batteries
- (6) SmartMedia Card or memory stick (512 MB minimum)
- (7) Pop-up or built-in flash modes
- (8) All items required for quick downloading
- (9) Auto-quick focus
- (10) Lens Cover, Shoulder Strap, and Carrying Case
- (11) AC adapter and Battery Charger

111.03 CONSTRUCTION. Not applicable.

111.04 MEASUREMENT AND PAYMENT. The Digital Camera will not be measured but the cost will be incidental to the Contract price for Maintenance of Traffic unless otherwise specified in the Contract Documents. If the digital camera or printer becomes defective, is stolen, or for any other reason does not function as intended, it shall be replaced with an approved camera or printer at no additional cost to the Authority. A nonfunctioning or stolen camera or printer shall be replaced within eight hours after the Engineer notifies the Contractor.



Ownership of the camera and printer will remain with the Contractor. The Authority assumes neither responsibility nor liability for the condition of the camera when returned.

LIST OF APPROVED DIGITAL CAMERAS

Approved Cameras	Approx. Cost
Kodak EasyShare Z730	\$375.00
Kodak EasyShare Z760	\$300.00
Kodak EasyShare DX7630	\$300.00
Canon PowerShot A700	\$325.00
Canon PowerShot SD500	\$450.00
Canon PowerShot S60	\$400.00
HP Photosmart R727	\$300.00
Olympus Camedia C-7000 Zoom	\$525.00
Olympus Camedia C-770 Ultra Zoom	\$350.00
Olympus Stylus 800	\$450.00
Nikon Coolpix S6	\$400.00
Nikon Coolpix P3	\$450.00
Fujifilm FinePix E550	\$350.00
Fujifilm FinePix F810	\$475.00
Panasonic Lumix DMC-TZ1	\$300.00
Samsung Digimax V700	\$375.00
Sony Cyber-Shot DSC-H5	\$500.00
Sony Cyber-Shot DSC-T30	\$500.00
Casio EXILIM Pro EX-P700	\$475.00
Casio EXILIM Pro EX-P505	\$475.00
Pentax Optio A10	\$350.00

NOTE: Contractors may submit cameras not appearing on list for approval to the Office of Construction as indicated in the contract documents.

Requirements

- Windows 2000, ME, XP compatible (Compatible with operating system on project)
- Photo managing software compatible with operating system selected for each project. (Photo Suite, Photo Deluxe, Picture Works, Photo Shop)
- 4.0 megapixel image resolution (minimum)
- 3x optical zoom (minimum)
- Two (2) sets of rechargeable batteries
- SmartMedia card or memory stick (512 MB Minimum)



SmartMedia / memory stick not required if CD or CDRW or other recording media is used

- Pop-up or built-in Flash modes
- All items required for quick downloading.
- Auto – quick focus
- Lens cover or cap
- Shoulder strap
- AC Adapter
- Battery Charger
- Carrying case



**CATEGORY 300
DRAINAGE**

**SECTION 308 — EROSION AND SEDIMENT
CONTROL**

308.01 DESCRIPTION.

242 **DELETE:** The third paragraph, “The Contractor shall...Control Manager (“ESCM”).”

INSERT: The following.

The Contractor shall assign an employee to the project to serve in the capacity of Erosion and Sediment Control Manager (“ESCM”). The ESCM and the superintendent shall have a Certificate of Training from a Maryland Department of the Environment (“MDE”) approved training program for the control of erosion and sediment and have successfully completed the State Highway Administration’s Erosion and Sediment Control Certification Training for Contractors and Inspectors. These certifications shall be current at all times. If either certification is expired or revoked for either person, the Contractor shall immediately replace the person with an appropriately certified person acceptable to the Authority.

243 **DELETE:** 308.01.02 Quality Assurance Ratings in its entirety.

INSERT: The following.

308.01.02 Quality Assurance Ratings. All Authority projects requiring Erosion and Sediment Control measures will be inspected by a Quality Assurance Inspector to ensure compliance with the approved Erosion and Sediment Control Plan. The Contractor shall obtain all appropriate permits and approvals; demarcate Limits of Disturbances, wetland and wetland buffers, floodplains and tree protection areas as specified in Section 107; and shall proceed in conformance with the approved Erosion and Sediment Control Plan and schedules. Projects will be inspected at least every two (2) weeks and the scores reported on Form No. ESC1, Erosion and Sediment Control Field Investigation report. The Quality Assurance Inspector will use the scores to determine the following ratings:

RATING	SCORE
A	≥ 90
B	80 - 89.9
C	70 - 79.9
D	60 - 69.9
F	< 60

Rating A. The project is in compliance. Minor corrective action may be necessary.

Rating B. Indicates that the project is in compliance; however, corrective action is needed



Rating C. Indicates that the project is in compliance; however, deficiencies noted require correction. Shutdown conditions as described elsewhere herein could arise quickly. Project will be reinspected within seventy-two (72) hours.

Rating D. Indicates that the project is in noncompliance. The Authority will shut down all earthwork operations. All work efforts shall focus on correcting erosion and sediment control deficiencies. The project will be reinspected within seventy-two (72) hours. All required corrective actions shall be completed within the seventy-two (72) hour period for the project to be upgraded to a 'B' rating. Failure to upgrade the project to a 'B' rating will result in the project being rated an 'F'. Daily penalties will be imposed for each day the project has a 'D' rating. Refer to Shutdowns elsewhere in this Specification for additional requirements.

Rating F. Indicates a score less than sixty (60) or the appropriate permits and approvals have not been obtained; demarcated limits of disturbances, wetland and wetland buffers, floodplains, and tree protection areas as specified in Section 107; or is not proceeding in conformance with the approved Erosion and Sediment Control Plan and schedules. An 'F' rating indicates that the project is in noncompliance. The Authority will shut down the entire project until the project receives a 'B' rating. All work efforts shall focus on correcting erosion and sediment control deficiencies. Daily penalties will be imposed for each day the project has an 'F' rating.

Shutdowns. When a 'C' rating is given to a project, the Contractor shall have all deficiencies corrected within seventy-two (72) hours. The project will be reinspected at the end of this period. If it is found that the deficiencies have not been satisfactorily corrected, a 'D' rating will be given and all earthwork operations will be shut down until the project receives a 'B' rating.

When a consecutive 'C' rating is given for other deficiencies and the original deficiencies were corrected, the Contractor will be alerted that their overall effort is marginal and a shut down of all earthwork operations is imminent if erosion and sediment control efforts do not substantially improve within seventy-two (72) hours. The project will be reinspected at the end of this period. If it is found that the deficiencies have not been satisfactorily corrected or other deficiencies are identified by the Quality Assurance Inspector that results in a score of less than eighty (80) on Form No. ESC1, a 'D' rating will be given and all earthwork operations will be shut down until the project receives a 'B' rating.

When a disregard for correcting these deficiencies is evident, an 'F' rating will be given and the entire project will be shut down until the project receives a 'B' rating. When degradation to a resource could occur, or if the Contractor is unresponsive to direction to take corrective action, the Authority may elect to have these corrective actions performed by another contractor or by Authority maintenance staff. All costs associated with this work will be billed to the original Contractor in addition to daily penalties.

Noncompliance Penalty.

When a 'D' or 'F' rating is given to the project by the Quality Assurance Inspector for any inspections; the Authority will impose noncompliance penalties on the Contractor. Payment of the daily penalties shall be made within thirty (30) days from imposition of the daily penalties and shall not be allowed to accrue for consideration at final project close-out.



When the project receives two 'F' ratings the erosion and sediment control certification issued by the Authority shall be revoked from the project superintendent and the Erosion and Sediment Control Manager for a period of not less than six (6) months and until successful completion of the Authority's Erosion and Sediment Control Certification Program. Neither the project superintendent nor the Erosion and Sediment Control Manager shall be allowed to oversee the installation and maintenance of erosion and sediment controls during the period the certification is revoked on any project of the Authority. The Contractor shall immediately provide certified personnel to replace the project superintendent and the Erosion and Sediment Control Manager. Work may not commence until the certified personnel are in place.

308.01.03 Noncompliance Penalty Payments. For each day that the project has a 'D' rating, the Contractor and/or his surety shall be liable for noncompliance penalties in the amount of One Thousand dollars (\$1000.00) per day. Failure to upgrade the project to a minimum of a 'B' rating within seventy-two (72) hours will result in the project being rated 'F'.

For each day that the project has an 'F' rating, the Contractor and/or his surety shall be liable for noncompliance penalties in the amount of Two Thousand dollars (\$2,000.00) per day.

308.03 CONSTRUCTION.

245 **DELETE:** 308.03.01 Contractor Responsibilities its entirety.

INSERT: The following.

308.03.01 Contractor Responsibilities. The Contractor shall demarcate all wetlands, wetland buffers, floodplains, tree protection areas, and the Limit of Disturbance ("LOD") as specified in Section 107. Prior to beginning any earth disturbing activity, the Contractor shall have all demarcated wetlands, wetland buffers, floodplains, tree protection areas, and LOD inspected and approved by the Engineer. The Contractor shall construct all erosion and sediment control measures in conformance with 308.01.01. The Contractor shall have all control measures inspected and approved by the Engineer prior to beginning any other earth disturbing activity. The Contractor shall ensure that all runoff from disturbed areas is directed to the sediment control measures. The Contractor shall not remove any erosion or sediment control measure without the approval of the Engineer and MDE. Refer to GP-7.12 for unforeseen conditions.

246 **DELETE:** 308.03.04 Schedule in its entirety.

INSERT: The following.

308.03.04 Schedule. Within fourteen (14) days after the Notice of Award, the Contractor shall submit an Erosion and Sediment Control Schedule to implement the E & S Plan to the Authority and the MDE. The schedule shall indicate the sequence of construction, implementation and maintenance of controls, temporary and permanent stabilization, and the various stages of earth disturbance. After the schedule is approved by the Authority, it will be forwarded to MDE for approval. The schedule shall, at least include the following:



- (a) Demarcation of all wetlands, wetland buffers, floodplains, tree protection areas, and the LOD prior to any earth disturbing activity.
- (b) Clearing and grubbing of areas necessary for installation of perimeter controls specified in the Contract Documents.
- (c) Construction of perimeter controls specified in the Contract Documents.
- (d) Remaining clearing and grubbing.
- (e) Roadway grading (including off-site work).
- (f) If applicable, utility installation and whether storm drains shall be used or blocked after construction.
- (g) Final grading, landscaping, and stabilization.
- (h) Removal of perimeter controls.

No work shall be started on-site or off-site until the Erosion and Sediment Control schedules and methods of operation have been accepted by the Authority and MDE.

DELETE: 308.03.28 Silt Fence in its entirety.

INSERT: The following.

308.03.28 Silt Fence. The geotextile shall be embedded a minimum of eight (8) in. vertically into the ground and extend a minimum of twenty-two (22) in. above the ground. The fence post shall be driven a minimum 16 in. into the ground and extend a minimum twenty-six (26) in. above the ground.

Silt fence shall be removed and reset when and as directed by the Engineer. All of the requirements for the original placement of the silt fence shall be strictly adhered to when the fence is reset.

308.03.35 Maintenance of Stream Flow.

253 **ADD:** The following after the second paragraph "Upon completion of...to the Engineer."

The Contract Documents may include stream diversion details for maintenance of stream flow. These details show the locations of the stream diversion system and a system that is approved by the Maryland Department of the Environment.

The Contractor is alerted that the stream diversion system as shown may not be capable of blocking the flow of water through the soil beneath the stream diversion system. The Contractor shall be responsible for designing and providing an effective means of diverting the water away from the designated areas, even though it may require more elaborate diversion systems. The Contractor shall also ensure that all excavation performed within the stream diverted area shall be maintained in a dewatered condition, which may require additional pumps, sheeting, shoring, cofferdams, etc. Should the proposed system not perform satisfactorily or additional material and equipment be



required to dewater the site and excavated areas, the Contractor shall remedy the stream diversion system at no additional cost to the Authority.

The Contractor shall securely anchor the stream diversion system in place to prevent movement during high water events. Prior to placing the stream diversion system, the Contractor shall submit the proposed method of anchoring to the Engineer and the MDE field inspector for approval. Anchors shall not go beyond the limits of disturbance shown on the Plans or infringe on the channel area available for stream flow. Placing the stream diversion system in the stream without the approval of both the Engineer and the MDE inspector is prohibited. All cost associated with the anchoring of the stream diversion system shall be incidental to the Maintenance of Stream Flow item.

The Contractor shall have the option of proposing an alternate stream diversion system. All conditions stated in the Contract Documents shall apply to the alternate stream diversion system. Any alternate stream diversion system shall be submitted to the Maryland Department of the Environment through the Authority for approval prior to implementation.

308.04 MEASUREMENT AND PAYMENT.

257 **DELETE:** 308.04.26 in its entirety.

INSERT: The following.

308.04.26 Maintenance of Stream Flow will not be measured but will be paid for at the Contract lump sum price. The payment will also include designing and providing diversion structures regardless of the type required to satisfactorily divert the stream flow, excavation, backfill, dewater the site and excavated areas within the stream diversion area, maintenance of the diversion system, sandbags, polyethylene sheeting, diversion pipes, pumps, hoses, connections, and portable sediment tanks. This price will not be adjusted when consideration is given to an alternative stream diversion system regardless of any changes in quantities from that shown in the Contract Documents. The provisions of GP-4.05 will not apply to this work.



CATEGORY 500
PAVING

SECTION 504 — HOT MIX ASPHALT PAVEMENT

504.04.01 Price Adjustment for Asphalt Binder

462 **ADD:** The following after the first paragraph.

The prevailing index price of PG 64-22 Asphalt Binder for this project is \$ 778.00 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.



SPECIAL PROVISIONS
HOT MIX ASPHALT PATCHES

CONTRACT NO. HT 2025-000-002

SECTION 505 — HOT MIX ASPHALT PATCHES

505.01 DESCRIPTION. This work shall consist of repairing rigid, flexible, or composite pavements by removing part or all of the section of the existing pavement and replacing the removed materials using hot mix asphalt (HMA) paving material. The locations of the repairs will be as specified in the Contract Documents or as directed by the Engineer.

Partial Depth Patching (PDP). PDP shall consist of the removal of areas of unsound pavement material, up to a 50 percent maximum of the pavement thickness in depth, and replace with HMA as specified in the Contract Documents or as directed by the Engineer. The pavement thickness is defined as the thickness of all bound materials in the pavement structure including HMA, portland cement concrete (PCC), and any other asphalt or cement modified materials.

Full Depth Patching (FDP). FDP shall consist of the removal of specified areas of the full thickness of the pavement sections to the top of the aggregate base material and replace with HMA as specified in the Contract Documents or as directed by the Engineer. FDP shall be used whenever the 50 percent maximum pavement thickness for PDP has to be exceeded.

505.02 MATERIALS.

Graded Aggregate Base	901.01
Aggregates for HMA	901.01
Aggregates for Superpave Mixes	901.01 and MP2
Performance Graded Asphalt Binders and Hot Mix Asphalt	904
Crack Filler	911.01
Production Plant	915

505.03 CONSTRUCTION. The existing pavement shall be removed with a minimum disturbance to the base material and the faces of the remaining pavement shall be plane without ragged edges. The use of equipment that could damage the existing pavement is prohibited.

505.03.01 Weather Restrictions. Refer to Section 504.

505.03.02 Existing Pavement. Each day the Contractor shall complete all repairs for which excavation has been completed. Open excavated areas at the end of the work day are prohibited.

Removal of Pavement for PDP. For PDP the existing pavement shall be removed by milling, grinding, or saw cutting and removal to the specified depth for the full perimeter of the designated area. Where concrete is encountered prior to reaching the specified depth, the depth of the patch shall then be limited to the top elevation of the PCC. Prior to application of the patch, the bottom of the excavation of all PDP shall be inspected and cleaned of all loose and foreign materials. For PDP of composite pavements, the PCC shall not be damaged during removal of the existing HMA and all spalled cracks and joints shall be tack coated, filled, and tamped with HMA before the patch is to be placed. When the material at the bottom of the PDP



SPECIAL PROVISIONS
HOT MIX ASPHALT PATCHES

CONTRACT NO. HT 2025-000-002

is determined to be unsuitable and not structurally adequate, additional material shall be removed until sound material is encountered. When PCC is encountered in a composite pavement and determined to be unsuitable, the removal and replacement of the patch shall follow the description and specification of a FDP.

Removal of Pavement for FDP. For FDP the existing pavement shall be removed by making a perpendicular saw cut full depth for the full perimeter of the designated area. The repair shall be excavated to the top of the aggregate base material. Refer to the applicable portions of 522.03.03 for the concrete portion of a composite pavement. The boundaries of the patch shall have square vertical faces after saw cutting.

505.03.03 Base and Subgrade Preparation. The Engineer will evaluate the aggregate base of the FDP area to determine if it is suitable as a foundation for the repair. When the Engineer determines that the aggregate base material is not stable, it shall be compacted as specified in 501.03.10 to the satisfaction of the Engineer. When no aggregate base is present under the pavement, the subgrade foundation shall be constructed as specified in Section 208, and as directed by the Engineer. When the Engineer determines that the aggregate base or subgrade material is unsuitable, the material shall be replaced with graded aggregate base conforming to Section 501. This operation is defined as removal and replacement of unsuitable material. The replacement aggregate material shall be compacted in layers of 4 in. maximum depth. The existing pavement materials that are removed shall be disposed of site immediately by the Contractor.

The Contractor shall protect the aggregate base or subgrade after preparation. No payment will be made for removal and replacement of subgrade that was not protected.

505.03.04 Subgrade Drains. The Engineer may direct that subgrade drains be constructed in areas of wet underlying subgrade or areas where there may be a future drainage problem as determined by the Engineer.

505.03.05 Emergency Filler. The Contractor shall have readily available sufficient cold patch material to completely fill the void of the repair area. This material shall be subject to the approval of the Engineer and shall be placed and compacted in the void when directed by the Engineer. At the beginning of the next day's work, this material shall be completely removed as directed by the Engineer.

505.03.06 Steel Plates. The Contractor shall have an ample supply of 12 X14 ft by 1 in. thick steel plates available on the project to cover the emergency filler.

505.03.07 Patch Construction. Patch construction shall conform to the applicable portions of Section 504. Manual operation will be permitted for placement of the HMA. Cores, control strip, and pavement profile measurements are waived. Equipment, placement, compaction, and quality control procedures shall be as approved by the Engineer.

505.03.08 Patch Placement. Prior to placing the HMA, the exposed vertical surface of all adjacent pavement shall be thoroughly cleaned and all vertical surfaces shall be tack coated in conformance with 504.03.04. The HMA mixture may be spread by shovel, rake or other method approved by the Engineer. Placing HMA on a frozen base is prohibited.



SPECIAL PROVISIONS
HOT MIX ASPHALT PATCHES

CONTRACT NO. HT 2025-000-002

Minimum and maximum lift thickness for HMA Superpave mixes shall be maintained during patching in conformance with the following:

HMA SUPERPAVE LIFT THICKNESS		
MIX DESIGNATION (mm)	MINIMUM (in.)	MAXIMUM (in.)
9.5	1.0	2.0
12.5	1.5	2.5
19.0	2.0	3.0
25.0	3.0	4.0
37.5	4.0	5.0

505.03.09 Testing and Acceptance. Acceptance shall be determined by in place density gauge test data and witnessed by the Engineer. The density gauge shall be calibrated per the manufacturer’s recommendation. The Contractor shall take one test from each lift of each patch. Test locations shall be randomly selected within the patch.

In place density gauge test data shall be expressed as a percentage of the maximum specific gravity determined for each day’s production. An in place density of 92.0 to 97.0 percent is required for each patch.

Compliance will be determined for each patch separately by averaging all density tests performed within each specific patch.

505.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for saw cutting, milling, grinding, removal, disposal, trimming of the existing pavement, subgrade preparation, placing all materials including tack coat, steel plates, emergency filler, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

All steel plates and emergency filler after removal shall remain the property of the Contractor.

505.04.01 Partial Depth Patching and Full Depth Patching will be measured and paid for at the Contract unit price per square yard or per ton as specified in the Contract Documents. The payment will be full compensation for furnishing, hauling, placing all material, additional removal of pavement above the aggregate base, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

505.04.02 Removal of Unsuitable Material and Refill will be measured and paid for at the Contract unit price per cubic yard. The payment will also include excavation and disposal of unsuitable material, backfilling with aggregate, and compaction.



CATEGORY 500
PAVING

SECTION 550 — PAVEMENT MARKING PAINT

550.01 DESCRIPTION. This work shall consist of furnishing and applying 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 549.03.01.



SPECIAL PROVISIONS
550 — PAVEMENT MARKING PAINT

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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.

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.



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SPECIAL PROVISIONS
550 — PAVEMENT MARKING PAINT

CONTRACT NO. HT-2025-000-002

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- (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.



SPECIAL PROVISIONS INSERT
603 — SIDEWALKS

CONTRACT NO. HT-2025-000-002

Page 1 of 1

CATEGORY 600
SHOULDERS

SECTION 603 — SIDEWALKS

603.02 MATERIALS.

511 **DELETE:** Concrete Mix No. 2 in its entirety.

INSERT: The following.

Concrete Mix No. 3

902.10



CATEGORY 700
LANDSCAPING

528 **DELETE:** SECTION 701 — TOPSOIL AND SUBSOIL in its entirety.

INSERT: The following.

SECTION 701 — TOPSOIL AND SUBSOIL

701.01 DESCRIPTION. This work shall consist of salvaging, furnishing, and placing topsoil and subsoil as specified in the Contract Documents or as directed by the Engineer.

701.02 MATERIALS.

Salvaged Topsoil	920.01.01
Furnished Topsoil	920.01.02
Salvaged Subsoil	920.01.03
Furnished Subsoil	920.01.04
Limestone	920.02
Gypsum	920.03.05
Sulfur	920.03.06
Miscellaneous Landscaping Items	920.08
Compost	920.08.05

701.03 CONSTRUCTION. Topsoil and subsoil operations shall be performed when soil moisture or weather conditions are suitable and cease when conditions are unsuitable, or as directed by the Engineer.

701.03.01 Salvaging Topsoil and Subsoil.

(a) **Evaluation of Weeds.** The Engineer and the Landscape Operations Division will evaluate topsoil and subsoil for the presence of seed, rhizomes, stolons or roots of Johnsongrass, Canada Thistle, and Phragmites prior to the salvaging operations to determine the severity of any infestation. The evaluation will determine how the topsoil and subsoil are to be used, and how to prevent the spread of these weeds.

(b) **Soil Testing.** The Engineer will verify that the topsoil and subsoil have been tested in conformance with MSMT 356 by the Office of Materials Technology, and that a Nutrient Management Plan has been developed by the Landscape Operations Division.



- (c) **Removal.** All vegetation shall be mowed or removed from the areas to be salvaged as specified in the Contract Documents. Topsoil and subsoil shall be removed to the depth as directed by the Engineer, and transported separately from other materials.
- (d) **Storage.** Storage areas for topsoil and subsoil shall be constructed on well drained land, away from streams, drainage areas, and floodplains as specified in Section 308.

Prior to placing stockpiles, silt fence shall be installed and maintained around the perimeter of the stockpile area as specified in 308.03.28.

Topsoil and subsoil shall be kept in neat, separate piles away from other excavated material. The piles shall be stabilized with temporary mulching or temporary seeding immediately after final shaping as specified in Section 704.

- (e) **Excess.** Excess topsoil and subsoil is the property of the Administration and removal will require written approval from the Engineer.

701.03.02 Placing Salvaged Topsoil and Subsoil.

- (a) **Evaluation.** The Engineer and the Landscape Operations Division will reevaluate topsoil and subsoil infested with seed, rhizomes, stolons or roots of Johnsongrass, Canada Thistle, or Phragmites before the soil is transported to the project.
- (b) **Debris Removal.** Grass, weeds, brush, and other objectionable material shall be removed from the surface of stockpiles before the soil is transported to the project.
- (c) **Grading and Surface Preparation.** Final grading in preparation for the placement of topsoil or subsoil shall provide a uniform surface true to line and cross sections.

When topsoil will not blend with the prepared substrate material, the surface of the substrate shall be roughened to provide a bond for the topsoil layer.

When topsoil will blend with the prepared substrate material, the topsoil shall be worked into that material.

- (d) **Placing, Spreading, and Compacting Subsoil.** Subsoil shall be placed, spread, and compacted in maximum layers of 8 in. to produce a firm and uniform layer of subsoil. Slopes 4:1 to 2:1 shall be tracked with cleated track-type equipment operated perpendicular to the slope.



The completed work shall be in conformance with the thickness, lines, grades, and elevations specified in the Contract Documents. Stones and other foreign material longer or larger than 4 in. diameter shall be removed from the soil surface before topsoil is spread.

- (e) **Placing and Spreading Topsoil.** The topsoil shall be placed and spread over the designated areas to the specified depth to ensure the completed work conforms to the thickness, lines, grades and elevations specified in the Contract Documents after any settlement. Final smoothing shall provide a uniform surface true to line and cross sections.

Slopes 4:1 to 2:1 shall be tracked with cleated track-type equipment operated perpendicular to the slope. Stones and other foreign material longer or larger than 3 in. diameter shall be removed from the soil surface when spreading operations are completed.

- (f) **Amending Topsoil and Subsoil.** Salvaged topsoil and salvaged subsoil shall be amended (adding limestone, sulfur, gypsum, or compost) as specified in the Contract Documents.

701.03.03 Placing Furnished Topsoil and Subsoil. Refer to 701.03.02 and the following:

- (a) **Responsibility.** The Contractor shall make all arrangements and assume all responsibility for consents, agreements, and payments with property owners who may be involved with providing, preparing, or transporting topsoil and subsoil.
- (b) **Storage.** If the material is stockpiled at the project for future use, the stockpiling shall conform to 701.03.01(d).

701.04 MEASUREMENT AND PAYMENT. Topsoil and subsoil will be measured and paid for at the Contract unit price for one or more of the items specified in the Contract Documents. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

701.04.01 Salvaging Topsoil will not be measured but the cost will be incidental to the Contract unit price for Class 1 Excavation.

701.04.02 Salvaging Subsoil will not be measured but the cost will be incidental to the Contract unit price for Class 1 Excavation.

701.04.03 Placing Salvaged Topsoil will be measured and paid for at the Contract unit price per square yard for the depth specified.



701.04.04 Placing Salvaged Topsoil for Grading Adjustment will be measured and paid for at the Contract unit price specified in the Contract Documents.

701.04.05 Placing Salvaged Subsoil will be measured and paid for at the Contract unit price per cubic yard.

701.04.06 Placing Furnished Topsoil will be measured and paid for at the Contract unit price per square yard for the depth specified.

701.04.07 Placing Furnished Topsoil for Grading Adjustment will be measured and paid for at the Contract unit price specified in the Contract Documents.

701.04.08 Placing Furnished Subsoil will be measured and paid for at the Contract unit price specified in the Contract Documents.



CATEGORY 700
LANDSCAPING

SECTION 705 — TURF ESTABLISHMENT

532 **DELETE: SECTION 705 — TURF ESTABLISHMENT** in its entirety.

INSERT: The following:

SECTION 705 — TURFGRASS ESTABLISHMENT

705.01 DESCRIPTION. This work shall consist of preparing soil and establishing turfgrass as specified in the Contract Documents or as directed by the Engineer. Application rates for fertilizer and soil amendments shall be as specified in the Nutrient Management Plan.

705.01.01 Regional Areas. Maryland is divided into Regions by counties as follows:

REGION 1 — Garrett, Allegany and Washington (West of Clear Spring, MD).

REGION 2 — Washington (East of Clear Spring, MD), Frederick, Carroll, Baltimore, Harford, Cecil, Howard, Montgomery, and Baltimore City.

REGION 3 — Anne Arundel, Prince George's, Calvert, Charles, St. Mary's, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester and Somerset.



SPECIAL PROVISIONS INSERT
705 — TURFGRASS ESTABLISHMENT

705.01.02 Seeding Seasons and Seed Mixes. SHA Turfgrass Seed Mix shall be seeded according to the following schedule.

SEEDING SEASONS AND SEED MIXES				
SEASONS	SPRING MONTH/DAY	SUMMER MONTH/DAY	FALL MONTH/DAY	LATE FALL MONTH/DAY
REGIONS	SHA Turfgrass Seed Mix			
1	4/1 to 6/15	6/16 to 7/31	8/1 to 10/1	10/2 to 11/1
2	3/1 to 5/15	5/16 to 7/31	8/1 to 10/20	10/21 to 11/20
3	3/1 to 5/1	5/2 to 7/31	8/1 to 10/31	11/1 to 11/30
1, 2, and 3	–	Plus Additive A or B	–	Plus Additive C
	Plus Additive D when seeding: <ul style="list-style-type: none"> • Areas 30 ft and greater from the pavement edge • Slopes 4:1 and steeper 			
	When seeding areas within 4 miles of a State airport: <ul style="list-style-type: none"> • Areas flatter than 4:1 - Use no Additives • Slopes 4:1 and steeper - Use SHA Special Purpose Seed Mix in lieu of SHA Turfgrass Seed Mix 			
ADDITIVES	A = Weeping Lovegrass B = Foxtail Millet		C = SHA Temporary Seed Mix D = Sericea Lespedeza	

705.02 MATERIALS.

Limestone	920.02
Fertilizer	920.03.01
Gypsum	920.03.05
Sulfur	920.03.06
Seed	920.04.01
SHA Seed Mixes	920.04.02
Mulch (straw or hay)	920.05.03
Wood Cellulose Fiber (mulch binder)	920.05.04
Water	920.08.01
Compost	920.08.05

705.02.01 Soil Testing. The Engineer will verify that the soil has been tested as specified in MSMT 356 by the Office of Materials Technology and that a Nutrient Management Plan has been developed by the Landscape Operations Division.

705.03 CONSTRUCTION. Turfgrass establishment shall be performed when the temperature is above 32 F and the soil is not frozen.



705.03.01 Establishment. Turfgrass establishment shall consist of preparing soil, fertilizing, seeding, and mulching. In addition, the application of soil amendments (limestone, sulfur, gypsum, and compost), and overseeding shall be performed in conformance with the Contract Documents.

705.03.02 Final Grading. Final grading shall provide a uniform surface true to line and cross sections after which topsoil is placed evenly and uniformly to meet the final depth and grade requirements. Gullies, washes, or disturbed areas that develop shall be repaired prior to soil loosening, seedbed preparation, or seeding operations.

705.03.03 Preparing Soil. Immediately prior to seeding, topsoiled and nontopsoiled areas shall be loosened by disking, raking or rototilling to the following depths:

- (a) **Topsoiled Areas 4 In. and Greater Thickness.** The topsoil shall be loosened to a minimum depth of 3 in.
- (b) **Topsoiled Areas 2 In. Thickness.** The topsoil shall be loosened to a depth of 2 in.
- (c) **Nontopsoiled Areas.** The subsoil shall be loosened to a depth of 1 in.
- (d) **Slopes 4:1 to 2:1.** The soil shall be tracked with cleated track-type equipment operated perpendicular to the slope.
- (e) **Serrated Cut Slopes.** The soil shall not be loosened.

705.03.04 Preparing Seedbed. Seedbed shall conform to the specified finished grade and be tilled to provide a uniform, porous surface able to receive and support the growth of turfgrass seed. The finished seedbed shall be free of weed or plant growth.

- (a) **Areas Flatter than 4:1.** Bulldozer cleat marks shall be removed and the line and cross sections shall be evenly and uniformly leveled to establish a fine seed bed.

Clods, stones, and other foreign material longer or larger than 1-1/2 in. diameter shall be removed from the surface of areas within 15 ft of the pavement edge, or areas adjacent to commercial and residential properties.

In all other areas, stones and other foreign materials longer or larger than 2-1/2 in. diameter shall be removed from the soil surface.

- (b) **Slopes 4:1 and Steeper.** Clods, stones, and other foreign materials longer or larger than 3.0 in. diameter shall be removed from the soil surface.



705.03.05 Application Equipment. Equipment shall consist of spreaders, drills, hydroseeders, or other application equipment approved by the Engineer. Equipment shall be calibrated before application to the satisfaction of the Engineer so that materials are applied accurately and evenly to avoid misses and overlaps.

Hydroseeders shall display maximum capacity in gallons and be equipped with an agitation system capable of keeping all solids in suspension. The mixture shall be directed so the droplets produce a uniform spray to avoid erosion or runoff.

Mechanical seeders shall be capable of placing seed at the specified rate.

Use of hydroseeders and spinner spreaders is prohibited during windy periods when the materials could land on sensitive areas or on sensitive structures.



705.03.06 Application Rates.

APPLICATION RATES - TURFGRASS ESTABLISHMENT		
MATERIAL	LB PER 1000 FT²	LB PER ACRE
LIMESTONE All Areas Regions 1 and 2: Limestone Region 3: Dolomitic Limestone	0 to 200* 0 to 185*	0 to 8700* 0 to 8050*
SULFUR All Areas	0 to 30*	0 to 1300*
GYPSUM All Areas except Serrated Cut Slopes	0 to 92*	0 to 4000*
COMPOST All Areas except Serrated Cut Slopes	0 to 1.4 yd ³ compost per 24 yd ³ of topsoil*	
SHA TURFGRASS SEED MIX Areas less than 30 ft from the pavement edge flatter than 4:1, and at facilities	4.6	200
SHA TURFGRASS SEED MIX & SERICEA LESPEDEZA Areas 30 ft and more from the pavement edge, and slopes 4:1 and steeper SHA Turfgrass Seed Mix Sericea Lespedeza	2.3 0.46	100 20
SHA SPECIAL PURPOSE SEED MIX Slopes 4:1 and steeper within four miles of a State airport	4.6	200
ADDITIVE SEED A = Weeping Lovegrass B = Foxtail Millet C = SHA Temporary Seed Mix D = Sericea Lespedeza	0.046 0.23 0.57 0.46	2 10 25 20
FERTILIZER AT SEEDING Topsoiled Areas 20-16-12 (83% UF nitrogen, 100% SOP potassium) 38-0-0 (UF) 0-0-50 (SOP) Nontopsoiled Areas 20-16-12 (83% UF nitrogen, 100% SOP potassium) 38-0-0 (UF) 0-0-50 (SOP)	4.6 to 23.0* 0 to 9.2* 0 to 5.7* 4.6 to 23.0* 8.0 to 17.2* 0 to 5.7*	200 to 1000* 0 to 400* 0 to 250* 200 to 1000* 350 to 750* 0 to 250*
MULCH Straw or Hay Secured with Wood Cellulose Fiber Straw or Hay Secured with Mulch Anchoring Tool Wood Cellulose Fiber	92 115 34	4000 5000 1500
MULCH BINDER Wood Cellulose Fiber	17	750
REFERTILIZING 5-20-20 38-0-0 (UF)	4.6 11.5	200 500

* Actual amount will be specified in the Nutrient Management Plan. Note: UF = Ureaform SOP = Sulfate of Potash



705.03.07 Incorporating Soil Amendments. Soil amendments (limestone, sulfur, gypsum, and compost) shall be incorporated as follows.

- (a) **Topsoiled Areas Flatter than 4:1.** The amendments shall be incorporated into the soil to a depth of 3 in. when the depth of the topsoil to be placed is 4 in. and greater, and into the soil to a depth of 2 in. when the depth of the topsoil to be placed is 2 in.
- (b) **Topsoiled Areas 4:1 and Steeper.** The amendments (limestone, sulfur, and gypsum) shall be applied to the slopes before the tracking or immediately after the tracking operation is performed. Compost shall be incorporated into the topsoil in a separate operation before topsoil is spread on the slopes.
- (c) **Nontopsoiled Areas and Serrated Cut Slopes.** The amendments shall be applied to the soil surface after soil loosening operations are completed.

705.03.08 Fertilizing and Seeding. These materials shall only be applied to previously prepared sites.

Fertilizer and seed mixtures that are applied with hydraulic seeders shall be used within eight hours after mixing. Seed and fertilizer that are applied with mechanical seeders shall be incorporated to a depth not less than 1/8 in. or more than 1/4 in.

Sericea lespedeza seed shall be inoculated as specified on the inoculant package label.

When sericea lespedeza is sown by hydraulic seeders, 10 times the quantity of inoculant required for dry seeding shall be used. Seed not sown within one hour shall be reinoculated.

When sericea lespedeza is sown by mechanical seeders, the seed shall be dampened with water and mixed with the inoculant. The inoculated seed shall then be mixed with the other seed to be sown. Inoculated seed not sown within 24 hours shall be reinoculated.

On slopes 4:1 and steeper, including serrated cut slopes, the areas shall be seeded, fertilized, and mulched in 15 ft. maximum vertical increments.

705.03.09 Mulching. Mulch shall be applied immediately after seeding as follows.

- (a) **Mulch.** Mulch shall be applied so that 90 percent of the soil surface is covered. Mulch applied by blowers shall provide a loose depth of 1/2 to 2 in. and mulch applied by hand shall provide a loose depth of 1-1/2 to 3 in.



- (b) **Wood Cellulose Fiber Mulch.** Wood cellulose fiber may be approved by the Engineer as a substitute for straw or hay mulch on slopes 1-1/2:1 and steeper where the use of straw or hay application equipment is not feasible. During the summer seeding season at least 70 percent of the hydromulch shall be applied after and separately from the seed and fertilizer.

705.03.10 Securing Mulch. Mulch shall be secured immediately following application by either of the following methods.

- (a) **Mulch Binding.** This method shall consist of applying wood cellulose fiber uniformly without displacing the mulch.
- (b) **Mulch Anchoring Tool.** This method shall be used for the summer seeding season on areas flatter than 4:1 and median areas on highways under traffic. Mulch shall be incorporated into the soil to a minimum depth of 2 in.

705.03.11 Overseeding. Overseeding shall consist of applying seed and fertilizer to previously seeded and mulched areas where turfgrass establishment has not been successful and where sufficient mulch remains from the previous mulch application. Additional soil preparation and mulch will not be required. Fertilizer shall not be applied to sites that received fertilizer within the previous 2 months unless approved by the Landscape Operations Division.

705.03.12 Fertilizer Reporting. A record of the fertilizer analysis, the square yards covered, and the pounds of fertilizer applied shall be provided to the Engineer on the Administration Fertilizer Reporting Form within 24 hours of applying fertilizer.

705.03.13 Acceptance. At the time of acceptance, turfgrass color and coverage will be assessed by the Engineer and the Landscape Operations Division. When it is not possible to assess turfgrass color and coverage, acceptance will be delayed until assessment is possible.

Turfgrass will be accepted as established at the semi-final and final inspections when it exhibits dark green color and the percent coverages as specified below.

TURFGRASS ESTABLISHMENT COVERAGE		
AREAS	SHA TURFGRASS SEED MIX or SHA SPECIAL PURPOSE SEED MIX	OTHER DESIRABLE VEGETATION
	Percent Coverage	
Areas flatter than 4:1; and slopes 4:1 and steeper not tracked with bulldozer	95% minimum	up to 5%
Slopes 4:1 and steeper tracked with bulldozer	50% minimum	up to 50%

705.03.14 Mowing. This work shall consist of mowing as specified in the Integrated Vegetation Management Manual for Maryland Highways and as specified below.



MOWING HEIGHT IN INCHES				
AREAS	TRACTOR CUTTING		HAND CUTTING	
	Maximum Height Before Mowing	Height of Cut	Maximum Height Before Mowing	Height of Cut
General Areas	18	4 - 5	10	3 - 4
In Medians or Adjacent to Commercial or Residential Areas	12	4 - 5	8	3 - 4

705.03.15 Refertilizing. Refertilizing shall consist of applying 5-20-20 and 38-0-0 (UF) fertilizer in April or September or combination thereof 4 to 12 months after seeding, as directed by the Landscape Operations Division.

REFERTILIZING TURFGRASS AREAS		
AREAS	REGIONS	NUMBER OF APPLICATIONS
Topsoiled	1 and 2	1
Nontopsoiled and Serrated Cut Slopes	1 and 2	1
	3	2

705.04 MEASUREMENT AND PAYMENT. Turfgrass establishment will be measured and paid for at the Contract unit price for one or more of the items specified in the Contract Documents. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

705.04.01 Turfgrass Establishment. Turfgrass Establishment including preparing soil, applying fertilizer, applying seed mixes and additives, overseeding, mulching, securing mulch, and repairing unacceptable areas will be measured and paid for at the Contract unit price per square yard. Payment will be made according to the following schedule when construction requirements are met.

PAYMENT SCHEDULE	
CONSTRUCTION REQUIREMENTS	PERCENT OF CONTRACT UNIT PRICE PER SQUARE YARD
705.03 through 705.03.12	70
705.03.13	30
Total Payment	100%

705.04.02 Applying Limestone to Salvaged Topsoil and Nontopsoiled Areas per ton.



SPECIAL PROVISIONS INSERT
705 — TURFGRASS ESTABLISHMENT

705.04.03 Applying Sulfur to Salvaged Topsoil and Nontopsoiled Areas per ton.

705.04.04 Applying Gypsum to Salvaged Topsoil and Nontopsoiled Areas per ton.

705.04.05 Applying Compost to Salvaged Topsoil and Nontopsoiled Areas per cubic yard.

705.04.06 Applying 38-0-0 Ureaform Fertilizer to Nontopsoiled Areas per pound.

705.04.07 Refertilizing per pound.

705.04.08 Tractor and Hand Mowing per hour.

705.04.09 Amending furnished topsoil and furnished subsoil will not be measured but the cost will be incidental to the Contract unit price for the item Placing Furnished Topsoil and/or Placing Furnished Subsoil as specified in the Contract Documents.



SECTION 875 - UTILITY STATEMENT

DESCRIPTION. The Contractor's attention is called to requirements of Sections GP-5.05, GP-7.13 and GP-7.17

MATERIALS. Not Applicable.

CONSTRUCTION.

- (a.) Attention of the Contractor is directed to the presence of water, sewer, storm drain, electrical wires, conduit, communications cables (both overhead and underground), poles and service connections in which the construction project is to be performed. Contractor shall exercise special care and extreme caution to protect and avoid damage to utility company facilities as described in the preceding sentence. Contractor shall take into consideration the adjustments and installations by public utilities in areas within the limits of this contract. Existing utilities have been generally located and shown on the plans, as they are believed to exist; however the Authority assumes no responsibility for the accuracy of these locations.
- (b.) Contractor shall locate all existing utilities and be responsible for their safety. Should any existing utilities be damaged or destroyed due to the operations of the Contractor, the damaged or destroyed components shall be immediately replaced or repaired as necessary to restore the utility to a satisfactory operating condition. These repairs or replacements shall be at no additional expense to the Authority.
- (c.) The existing utilities requiring relocation or adjustment shall be relocated or adjusted by the agency responsible for their maintenance of the utility or by the Authority unless otherwise indicated in the Contract Documents. Contractor shall inform the respective utility companies at least five (5) days prior to working in any area where utility facilities are maintained or operated. In addition, Contractor shall give sufficient notice to the specific utilities of the Contractor's overall plan for construction. The utility companies will establish the lead-time necessary to meet the applicable utility work schedule and coordinate with the Contractor's work operations based upon the Contractor's overall plan.



(d.) No gas mains are known to exist within the Limit of Disturbance. The following known utility companies have existing facilities within the limits of the Contract:

Representative BGE (Gas, Electric) Room 400 1068 N. Front Street Baltimore, MD 21202 (410) 291-3322	Mr. Bill Blomeier Verizon (Telephone, Comm.) 99 Shawan Road, Room 212 Hunt Valley, MD 21031 (410) 393-6370
Design/Construction Dept. Comcast Cable (Television) 5801 Metro Drive Baltimore, MD 21215 (410) 649-4900	Baltimore City DPW (Water 410-396-1483) (Sanitary 410-396-3440) (Storm Drains 410-396-4700) (Conduit 410-396-6806) 300 Abel Wolman Building 200 N. Holiday Street Baltimore, MD 21202

(e.) All notifications to the above utility companies shall be given five (5) working days, in advance of working in the area of each specifically affected utility. Notification to “MISS UTILITY 1-800-257-7777” is required 48 hours (2 full working days) whenever any excavating or similar work is to be performed.

(f.) No utility relocations are anticipated to accomplish this project.

(f.) If an adjustment is required, it is necessary that the existing facilities remain in service until the new construction is complete and placed in service. Also, when adjustments are required, establishments of lead times are necessary to meet the applicable utility schedule and coordination with the Contractor’s work operation.

(h.) Any submittal by the Contractor to vary the sequence of work and/or perform concurrent work in multiple phases differing from the recommended must be accompanied by an updated schedule reflecting all utility relocations and adjustments. The Contractor shall be responsible, upon gaining approval, for coordinating utility relocations and adjustments with the Authority. All requirements and lead times as stated in the Utility Statement and Special Provisions will remain in effect unless written approval from the Authority is received by the Contractor prior to commencing any requested work.



MEASUREMENT AND PAYMENT. Working around or protecting utilities, removal of temporary materials from the adjusted utilities prior to placement of the proposed hot mix asphalt, and cooperation with the Authority and with other Contractors will not be measured but the cost will be incidental to the items specified in the Construction Documents.



CATEGORY 900
MATERIALS

SECTION 901 — AGGREGATES

602 **DELETE:** Table 901 A in its entirety.

INSERT: The following.



SPECIAL PROVISIONS INSERT
901 — AGGREGATES

CONTRACT NO. HT 2025-000-002

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TABLE 901 A

AGGREGATE GRADING REQUIREMENTS TEST METHOD T 27

MATERIAL		SIEVE SIZE															
		2-1/2"	2"	1-1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50	No. 100	No. 200
CRUSHER RUN AGGREGATE CR -6 (f)(g)		—	100	90–100	—	60–90	—	—	30–60	—	—	—	—	—	—	—	0–15
BANK RUN GRAVEL — SUBBASE		100	—	—	90–100	—	60–100	—	—	—	35–90	—	—	20–55	—	—	5–25
GRADED AGGREGATE — BASE DESIGN RANGE (a)		—	100	95–100	—	70–92	—	50–70	35–55	—	—	—	12–25	—	—	—	0–8
TOLERANCE (b)		—	-2	±5	—	±8	—	±8	±8	—	—	—	±5	—	—	—	±3(c)
BANK RUN GRAVEL — BASE		100	—	—	85–100	—	60–100	—	—	—	35–75	—	—	20–50	—	—	3–20
COARSE AGGREGATE — PORTLAND CEMENT CONCRETE	57 and UNDERDRAIN(h)	—	—	100	95–100	—	25–60	—	0–10	0–5	—	—	—	—	—	—	—
	67	—	—	—	100	90–100	—	20–55	0–10	0–5	—	—	—	—	—	—	—
	7	—	—	—	—	100	90–100	40–70	0–15	0–5	—	—	—	—	—	—	—
FINE AGGREGATE — PORTLAND CEMENT CONCRETE, UNDERDRAIN, and PNEUMATIC MORTAR (d)		—	—	—	—	—	—	100	95–100	—	—	45–85	—	—	5–30	0–10	—
COARSE AGGREGATE — LIGHTWEIGHT PORTLAND CEMENT CONCRETE		—	—	—	100	90–100	—	10–50	0–15	—	—	—	—	—	—	—	—
FINE AGGREGATE — LIGHTWEIGHT PORTLAND CEMENT CONCRETE (d)		—	—	—	—	—	—	100	85–100	—	—	40–80	—	—	10–35	5–25	—
FINE AGGREGATE/SAND MORTAR and EPOXIES (d)		—	—	—	—	—	—	—	100	95–100	—	—	—	—	—	0–25	0–10
MINERAL FILLER		—	—	—	—	—	—	—	—	—	—	—	100	—	95–100	—	70–100
CRUSHED GLASS (e)		—	—	—	—	100	—	—	0–55	—	—	45–85	—	—	—	0–10	—

(a) To establish target values for design.

(b) Production tolerance.

(c) ±2 for field grading. (omitting T 11)

(d) Fine aggregate includes natural or manufactured sand.

(e) Crushed glass shall not contain more than one percent contaminants by weight.

(f) Not to be used in the structural part of any Administration project.

(g) Recycled asphalt pavement may be used as a component not to exceed 15 percent and is not subject to aggregate physical property requirements in TABLE 901 B.

(h) When this material is used for drainage applications, recycled concrete shall not be used.



TABLE 901 D

608 **DELETE:** Note (b) in its entirety.

INSERT: The following.

(b) PV shall be 5.5 when any aggregate being blended has a PV less than 5. Aggregate from no more than two sources may be blended. Proportions of blended aggregate shall be determined as specified in MSMT 416. Not applicable for Gap Graded surface mixes or any other surface mix requiring high polish aggregate.

DELETE: Note (e) in its entirety.

INSERT: The following.

(e) PV shall be 9.0 when any aggregate being blended has a PV less than 8. When carbonate rock is used, it shall have a minimum of 25 percent insoluble residue retained on the No. 200 sieve.



SPECIAL PROVISIONS INSERT

CONTRACT NO. HT-2025-000-002

902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS

**CATEGORY 900
MATERIALS**

**SECTION 902 — PORTLAND CEMENT
CONCRETE AND RELATED PRODUCTS**

612 **DELETE:** 902.03 PORTLAND CEMENT in its entirety.

INSERT: The following.

902.03 PORTLAND CEMENT. Portland cement shall conform to M 85, with the fineness and the time of setting determined in conformance with T 153 and T 131, respectively.

902.10.03 Portland Cement Concrete Mixtures.

616 **DELETE:** Table 902 A in its entirety.

INSERT: The following.

TABLE 902 A

PORTLAND CEMENT CONCRETE MIXTURES									
MIX NO.	28 DAY SPECIFIED COMPRESSIVE STRENGTH	STANDARD DEVIATION	CRITICAL VALUE	MIN CEMENT FACTOR	COARSE AGGREGATE SIZE	MAX WATER/ CEMENT RATIO	SLUMP RANGE	TOTAL AIR CONTENT	CONCRETE TEMPERATURE
	psi	psi	psi	lb/yd ³	M 43	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	1-1/2 — 3	5 — 8	70 ± 20
8	4000	600	4180	750	7	0.42	2 — 5	5 — 8	65 ± 15

Note 1: When concrete is exposed to water exceeding 15 000 ppm sodium chloride content, Type II cement shall be used. In lieu of a 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 in conformance with 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.



SPECIAL PROVISIONS INSERT

CONTRACT NO. HT-2025-000-002

902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS

621 **DELETE:** 902.10.08 TESTING in its entirety.

INSERT: The following.

902.10.08 Testing. Sampling shall conform to T 141. Testing shall be performed 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.



CATEGORY 900
MATERIALS

SECTION 905 — PIPE

638 **DELETE:** SECTION 905 — PIPE in its entirety.

INSERT: The following.

905.01 CERTIFICATION. The manufacturer shall furnish certification for all pipe as specified in TC-1.02

MATERIAL	SPECIFICATION	REMARKS
Non-reinforced Concrete Pipe	M 86, Class 3	—
Reinforced Concrete Pipe (RCP)	M 170, Class 4 & 5	All sizes - load bearing option only
Concrete End Sections	M 170	Class 3 pipe reinforcement required
Reinforced Concrete Elliptical Pipe	M 207	Load bearing option Horizontal installation only.
Reinforced Concrete Arch Culvert	M 206	—
Corrugated Polyethylene Pipe	M 294	12 in. to 48 in. diameter
Corrugated Polyethylene Drainage Pipe	M 252	Perforated underdrain and underdrain outlet pipe.
Polyvinyl Chloride (PVC) Profile Wall Pipe	M 304	4 in. to 48 in. diameter
Polyvinyl Chloride (PVC) Pipe	AASHTO Bridge Section 18 PVC Ribbed Pipe	—
	M 278	Underdrain outlet pipe
	M 278 (a)	Perforated underdrain
Preformed Rubber Joint for Circular Pipe	M 198, Type A	—
Corrugated Steel Pipe, Pipe Arches & Underdrain	M 36 (b), (c)	End finish shall be annular corrugations
Corrugated Aluminum Alloy Pipe	M 196 (b)	End finish shall be annular corrugations
Structural Plate for Pipe, Pipe Arches & Arches	M 167	—
Copper Pipe	Fed Spec WW – T-799, Type K	—
Polyethylene (PE) Precoated Corrugated Steel Pipe	M 245 & M 246	Minimum thickness 10 mil on each of the surfaces.
Concrete Drain Tile	M 178	—
Non-Asbestos Fiber-Cement Storm Drain Pipe	C 1450	12 in. to 48 in. diameter
Reinforced Concrete Low-Head Pressure Pipe	C 361	Pond spillways

(a) Perforations shall meet the requirements of F 758.

(b) Bands with dimples are prohibited.

(c) All Corrugated Steel Pipe shall be aluminum-coated Type 2 per M 274 unless otherwise specified.



905.02 CERTIFIED REINFORCED CONCRETE PIPE PLANTS. RCP meeting the Specifications will be accepted on the manufacturer's certification based on the requirements outlined below. This includes the sampling, testing, documentation, and certification of the product by the manufacturer in combination with an Administration Monitoring Program.

Initial Inspection. Any plant initially setting up and starting production will be subjected to a comprehensive inspection to determine whether plant equipment and personnel meet all applicable Specifications and that suitable testing facilities are available. As a prerequisite to the comprehensive inspection the concrete pipe producer shall submit a Quality Control Plan (QCP) to the Administration for review and approval. The Administration will accept certification by a professional engineer registered in the State of Maryland that the plant facilities meet all applicable Specifications; however, final acceptance will be determined at the sole discretion of the Administration.

905.02.01 Responsibilities of the Concrete Pipe Producer. The concrete pipe producer shall be responsible for quality control of plant operations to insure that the component materials and finished product meet Specifications. The quality control process will be subject to unannounced periodic verification by representatives of the Engineer and annual comprehensive inspections. The plant's quality control personnel shall fully cooperate with the verification and annual comprehensive inspections. Failure of the plant's quality control personnel to fully cooperate with the verification and annual comprehensive inspections could result in the refusal of the Administration to accept for use or payment any of the products covered under this section.

The concrete pipe producer shall resubmit its QCP to the Engineer for approval prior to the annual comprehensive inspection. Any changes occurring after the QCP has been approved for any given year, shall be submitted as a supplement to the plan for approval before such changes may be implemented. The plan shall include the following items:

- (a) A statement that RCP shall meet the applicable portion of the pipe table under Section 905.
- (b) A thorough description of how the component materials and finished product will be stored and handled.
- (c) A description of quality control procedures that shall include the following:
 - (1) The names, qualifications, and responsibilities of the quality control personnel and the designation of a quality control manager.
 - (a) The list of quality control personnel shall also identify which persons will be responsible for final inspection and stamping of finished product prior to shipment.



- (b) Each quality control person responsible for final inspection and stamping shall be assigned an identification number that they will stamp on each unit of finished product.
- (c) A copy of each stamp as it will appear on the finished product.
- (2) Sampling and testing methods and frequencies.
- (3) Method used for inspecting reinforcement cages prior to and during production.
- (4) Method of curing.
- (5) Method of maintaining accurate quality control records.
- (6) Samples of forms approved by the Administration.
- (7) Patching procedure.
- (8) Method of preparation of units for shipping.
- (9) Method of identification of each unit as tested and approved.
- (10) Procedures for conducting internal audits to verify that quality control personnel are adhering to QCP.

A lot is defined as a production run of concrete pipe, all being of like size, material, and strength designation and manufactured by the same process. The lot size may include up to 1000 units for 12 to 36 in. or 500 units for 42 in. and larger produced in not more than 14 days. The 14 days need not be consecutive, as long as they occur within a 30 consecutive day period and the process is not altered in any way between production days.

A three-edge bearing test to produce a 0.01 in. crack is required for each lot per M 170 section 5.1.1.

A minimum of one three-edge bearing test per year to ultimate load shall be performed on each size and class of pipe manufactured and shipped to Administration projects to verify that the applicable specified ultimate load can be achieved.

A minimum of one absorption test per year shall be performed on each size and class of pipe manufactured and shipped to Administration projects.

Additional absorption tests may be required at the sole discretion of the Engineer whenever there is a change in component material sources.



The ultimate load test and absorption test shall be completed on the first lot of the year of that size and class pipe shipped to Administration projects.

The year may commence at any time the producer chooses; said date shall be stated in the QCP and may not occur any later than 90 calendar days after conclusion of the prior year as stated in the QCP for that year.

905.02.02 Test Facilities. The producer's facilities, equipment and quality control personnel shall be capable of conducting the tests per T 280 and shall be approved by the Engineer.

The producer shall maintain yearly calibration certificates on all equipment used for testing and produce said certificates for the Engineer's representative upon request.

The producer may elect to use the services of an independent commercial testing laboratory that is acceptable to the Engineer in lieu of conducting their own tests.

905.02.03 Shipment. Pipe may be shipped to the Administration's projects when the required testing for all pipes in the lot has been completed with acceptable results and all of the pipes to be shipped are at least the age of the test specimens at testing.

Each pipe shall be marked on the inside with the following information when shipped:

- (a) Plant name.
- (b) Plant location.
- (c) Size of pipe.
- (d) Class of pipe.
- (e) Date of manufacture.
- (f) Quality control stamp.
- (g) Quality control personnel number.

The quality control stamp shall be affixed to each unit shipped.

905.02.04 Certification. A manufacturer's certification shall accompany each shipment of pipe. A copy of the certification shall be delivered to the Engineer, the Administration's laboratory, and the Contractor for each shipment. One copy shall remain at the plant. The certification shall include the following:



- (a) The plant name, address, and location.
- (b) Size and class of the pipe.
- (c) Date of manufacture and shipment.
- (d) Number of units.
- (e) Administration Contract number.
- (f) Statement of Specification compliance.
- (g) Signature and identification number of the quality control personnel that inspected the shipment. In the event that the certification document is signed by someone other than the person(s) who stamped any of the individual units, the name and identification number of those persons shall be shown on the certification.

905.02.05 Records. All testing and inspection documents shall be maintained at the production plant for a minimum of three (3) years from the manufactured date and shall be made available to the Administration upon request. These records shall also include all compliance certificates and mill test reports for aggregates, cement, fly ash, joint material, reinforcing steel, and any other materials intended for use in products used on Administration projects.

905.02.06 Quality Control Forms. The producer shall maintain an Administration approved quality control form for all pipe produced for use on Administration projects. Each form, for each lot shall contain the following:



PIPE DIMENSIONS	REINFORCEMENT	TESTS	GENERAL INFORMATION
Diameter Length Wall Thickness Joint Style	Size Spacing Area-Spec & Test Results Adequacy & Quality of Welds & Splices	Absorption Spec & Test Results Once per year Visual Inspection	Plant Name Technician Signature Lot Identification Production Dates Pipe Class Units Per Lot Material Sources Cement Fine Aggregate Coarse Aggregate Reinforcement
THREE EDGE BEARING			
0.01 in. Crack Strength Spec & Test Results	Ultimate Strength Spec & Test Results Once per year		

905.02.07 Responsibilities of the Administration. Verification of certification will be performed at the discretion of the Administration a minimum of once per year.

The Administration reserves the right to discontinue acceptance of reinforced concrete pipe if its verification process indicates that the component materials, test procedures or finished pipe do not comply with the Contract Documents or QCP. In the event any verification inspection finds deficiencies in the finished pipe or the performance of the QCP the Administration will provide the producer a copy of a Non-Compliance Report (“NCR”) detailing the deficiencies and any remedial action the Administration may require that the producer undertake to resolve those deficiencies noted. The Administration will provide a period of up to ten (10) business days for the producer to address any deficiencies noted in the NCR; however, the sufficiency of any remedial action on the part of the producer will be at the sole discretion of the Administration to determine.

905.03 CERTIFIED CORRUGATED POLYETHYLENE PIPE PLANTS. Pipe meeting the Specifications will be accepted on the manufacturer’s certification based on the requirements outlined below. This includes the sampling, testing documentation, and certification of the product by the manufacturer in combination with an Administration Monitoring Program.

905.03.01 Responsibilities of the Corrugated Polyethylene Pipe Producer. Submit a quality control plan to the Engineer for approval. The plan shall indicate the following:

- (a) The plan may be general, but shall be site specific.



- (b) The plan shall detail how the producer proposes to control the equipment, materials, and the production methods to ensure that products produced, meets the Specifications.
- (c) The plan shall list the personnel responsible for production and quality control at the site and include information on how to contact each person.
- (d) Identification of the physical location of the plant.
- (e) The method of identification of each lot of material during manufacture, testing, storage, and shipment.
- (f) The method of sampling and testing of raw materials and of the finished product, including lot sizes, type of material tests performed, and a description of equipment modifications or equipment developed in-house to perform the tests.
- (g) A plan for dealing with quality control sample failures, that shall include how the producer plans to initiate an immediate investigation and what corrective action will be implemented to remedy the cause of the problem.
- (h) A lot is defined as a production run of polyethylene pipe, all being of like size, material, and manufactured by the same process. What determines lot size shall be stated in the Quality Control Plan (i.e. single day's production, 15 000 linear feet, etc.)

905.03.02 Test Facilities. The Certification Program requires all tests to be conducted at laboratories that are accredited by AASHTO or approved by the Administration. Each source may establish and maintain its own laboratory for the performance of quality control testing or may request to utilize an approved independent laboratory. The producer shall make a written request and have written approval from the Administration prior to having material tested off site. The equipment required for all approved laboratories shall be sufficient to perform the required test procedures as required by the applicable specification and standards such as M 252, M 294, and D 2412.

905.03.03 Certification. A manufacturer's certification shall accompany each shipment of pipe. A copy of the certification shall be delivered to the Engineer and the Contractor for each shipment. One copy shall remain at the plant. The certification shall include the following:

- (a) Plant name, address, and location.
- (b) Lot or production identification.
- (c) Date of manufacture and shipment.
- (d) Number of units of each size pipe or total linear feet of each size pipe.



- (e) Administration Contract number.
- (f) Statement of Specification compliance.
- (g) Signature of the quality control manager, or authorized representative (name shall be designated in the Quality Control Plan).

905.03.04 Records. All testing and inspection documents shall be maintained at the manufacturing facility for a minimum of three (3) years from the manufactured date, and shall be made available to Administration personnel upon request.

905.03.05 Quality Control Forms. The manufacturer shall maintain an Administration approved quality control form for all pipe produced on Administration projects that contain the following:

GENERAL INFORMATION	TESTS
Plant Identification QC Technician's Signature Lot Identification Production Dates Tubing/Pipe Dimension Perforation Dimensions Workmanship Identification Markings	Pipe Stiffness Pipe Flattening Elongation* Environmental Stress Cracking Brittleness Low Temperature Flexibility*

*Type C or CP only.

905.03.06 Responsibilities of the Administration. The Administration will randomly conduct a minimum of one plant inspection per year with the cooperation and assistance of the producer to ensure compliance with the specifications and quality control requirements. Visual inspection will be made by the Engineer when pipe is received on the project. The Administration will verify the manufacturer's certification test results by sampling in accordance with the Administration's Frequency Guide.



CATEGORY 900
MATERIALS

SECTION 915 — PRODUCTION PLANTS

915.01 GENERAL. These specifications are applicable to all batching and proportioning plants.

668 **DELETE:** 915.01.01 Approval in its entirety.

INSERT: The following.

915.01.01 Approval. The plant from which the Contractor proposes to obtain material shall be approved by the Office of Materials Technology before starting deliveries.

667 **DELETE:** 915.01.02 Lead Time in its entirety.

INSERT: The following.

915.01.02 Lead Time. The Contractor shall notify the Office of Materials Technology at least two working days prior to the start of operations. The Office of Materials Technology shall be kept informed of plant operational procedures and notified when a change is planned. Inspectors shall have safe access to all areas of the plant for the performance of their duties. All equipment, tools, machinery, and parts of the plant shall be maintained in a satisfactory working condition at all times.

669 **DELETE:** 915.01.04 Measuring Devices in its entirety.

INSERT: The following.

915.01.04 Measuring Devices. Measuring devices shall conform to the current edition of the National Institute of Standards and Technology Handbook 44, except as modified by Table 915. The producer shall be responsible for providing all personnel and equipment for calibrating measuring devices.

Before any proportioning plant starts operation, and at least once each year thereafter, all measuring devices, meters, dispensers, test weights, and other measuring devices shall be inspected, tested, and certified to be in proper operating condition by competent testing agencies approved by the Engineer. During the period of operation, all measuring devices, meters, dispensers, and other measuring devices shall be tested monthly and certified for accuracy and operating condition by the producer or an approved testing agency. Any weighing device by which materials are sold by weight as a basis of payment shall be tested monthly and certified by an approved testing agency. The Engineer shall be notified at least two working days in advance of monthly scale inspections. The certifications shall state capacities, minimum graduations, loads applied, degree of accuracy, and magnitude.



Balance and zero conditions of scales shall be checked daily, and at any other time requested by the Office of Materials Technology. The Engineer may, at any time, direct that any measuring device be tested by the producer or an outside agency if there is any doubt about the accuracy of the measuring device. Certificates of inspection shall be posted in a prominent place in the plant, and a copy shall be promptly submitted to the Engineer.

Production plant tolerances shall conform to the following table:

TABLE 915

MATERIAL	*MAINTENANCE TOLERANCE	UNIT OF MEASURE
Aggregate	0.2%	Weight
Portland Cement or Blended Hydraulic Cement of Ground Iron Blast Furnace Slag or Fly Ash	0.2%	Weight
Asphalt	0.2%	Weight or Volume
Water	1.5%	Weight or Volume
Additives	0.5%	Weight or Volume

*Maintenance tolerance shall be the specified percent of the total capacity of the scale or the smallest scale graduation, whichever is greater.

If during the monthly check, the measuring devices are found to deviate from the allowable tolerance, they shall be suspended from use until recalibrated to the Specification requirements. A price adjustment will apply to materials sold and accepted by weight that are supplied during the measuring device malfunction period when the malfunction resulted in an overpayment. The measuring device malfunction period is defined as the elapsed time between the two successive monthly checks.



671 **DELETE:** 915.02 Hot Mix Asphalt (HMA) Plants in its entirety.

INSERT: The following.

915.02 HOT MIX ASPHALT (HMA) PLANTS. All plants shall conform to M 156, and be equipped with Automatic Batching and Recording of Batching, except as modified in 915.01 and the following:

- (a) **Dryer.** The fuel used for drying aggregates shall be compatible with the plant manufacturer's recommendations.
- (b) **Hot Aggregate Bins.** Plants shall conform to M 156.
- (c) **Mixer Unit for Batch Method.** Minimum dry and wet mixing times shall be 5 seconds and 15 seconds, respectively.
- (d) Truck scale weighing shall conform to the National Institute for Standards and Technology (NIST), except as follows:
 - (1) A plant summary shall be kept by the producer showing the Contract number, truck identification (I.D.) number, I.D. of the type of mix being produced, the number of truck loads, and the total tons of mix.
 - (2) The producer shall supply a delivery ticket with the I.D. number, Contract number, I.D. of the type of mix, date, truck I.D. number, time loaded, gross and tare weights, and net weight of the mix for each load. When requested by the Engineer, the temperature of the mix shall also be shown on the delivery ticket.
- (e) **Automatic Weighing and Printout.** The producer shall use an approved plant automatic weighing and printing system. A printed delivery ticket for each load shall be provided with the cumulative total weighed into the truck, Contract number, time loaded, I.D. of the type of mix, and net weight of mix. When requested by the Engineer, the temperature of the mix shall also be shown on the delivery ticket. The temperature may be handwritten on the delivery ticket.
- (f) **Hauling Units.** The mixture shall be transported to the work site in units previously cleaned of all foreign material and the contents of each load completely covered with suitable material of sufficient size to protect it from the weather. Each unit shall have convenient access from ground level to insert thermometers to determine mix temperature.

The inside surface of all hauling units shall be treated with an approved release agent that will not contaminate or alter the characteristics of the mixture. Petroleum derivatives shall not be used. Approval will be based on results from tests performed in conformance with MSMT 414.



- (g) Drum mixer plants shall be calibrated per MSMT 453 and approved by the Engineer. A monitoring station for the purpose of controlling the entire operation shall be provided. If any part of this control system fails, an alternative control system approved by the Engineer may be used for a maximum of two working days.

The producer shall determine the moisture content of all aggregates per MSMT 251.

672 **DELETE:** 915.02.01 Certified Hot Mix Asphalt (HMA) Plant in its entirety.

INSERT: The following.

915.02.01 Certified Hot Mix Asphalt (HMA) Plant. The producer shall be responsible for quality control of plant operations to ensure that the material conforms to Specifications. The quality control process will be subject to unannounced periodic inspection by representatives of the Engineer when Authority projects are in progress. The plant's certified technician shall fully participate in the inspections.

Initial Inspection. Any plant initially setting up and starting production will be subject to a comprehensive inspection to determine whether the plant equipment and personnel conform to all applicable Specifications. The Authority will accept certification by a professional engineer registered in the State of Maryland that the plant facilities conform to all applicable Specifications; however, final acceptance will be determined by the Authority.

Responsibilities of the HMA Producer.

- (a) **Notification.** The producer shall notify the Engineer one working day prior to producing materials for Authority projects. Total tons shipped to Authority projects shall be reported within one business day of completed daily shipments.
- (b) **Quality Control.** The minimum sampling and testing frequencies and criteria necessary for quality control of the HMA is the responsibility of the producer. The producer shall develop and use a quality control plan acceptable to the Engineer which addresses all elements necessary for quality control in the plant.

The producer shall conduct the minimum sampling and testing as specified in MSMT 735, Table 2. The producer shall perform any additional sampling and testing when directed by the Engineer. The producer shall offer to the Engineer the opportunity to witness all sampling and testing.

- (c) **Reports.** The producer's test results shall be furnished to the Engineer on documents approved by the Authority.



Responsibilities of the Authority.

- (a) **Split Samples to Evaluate the Effectiveness of the Plant Quality Control Operation.** A minimum of once during five days of plant shipments that require behind the paver Quality Assurance (QA) mixture box samples, a required QA sample shall be properly split and used to evaluate the effectiveness of the plant Quality Control (QC) operation. The plant QC operation shall test and submit results to the Authority in accordance with MSMT 735, Table 2, within 48 hours after receiving and properly splitting the sample.
- (1) **Effective Plant Quality Control Operation.** When QC and QA split sample results compare within AASHTO Acceptable Range of Two Test Results, Multi-Laboratory Precision parameters for binder content and percent passing the #4, #8, and #200 gradation sieves, the QC operation will be evaluated as effective.
- (2) **Ineffective Plant Quality Control Operation.** When QC and QA split sample results do not compare within AASHTO Acceptable Range of Two Test Results, Multi-Laboratory Precision parameters for all the indicated tests, the QC operation will be evaluated as ineffective. Three consecutive ineffective evaluations shall be cause to discontinue shipments to Authority projects. An investigation will be conducted to determine the cause of the differences. After a cause is determined and three consecutive split samples are within the precision parameters, the QC operation shall be re-evaluated as effective and shipments may resume. If the plant QC operation disagrees with the Authority's decision, the dispute may be resolved as specified in (e) below.
- (b) **Recertification of HMA Plant.** Documentation of corrective action shall be resubmitted to the Engineer by a professional engineer registered in the State of Maryland. When this documentation is approved by the Engineer, a comprehensive inspection will be conducted to recertify the HMA plant.
- (c) **Independent Assurance Audits (IAA).** The Authority will evaluate the proficiency and equipment of QC/QA Technicians through audits performed on a random basis as outlined in the Quality Assurance Manual. The technician being audited shall cooperate with the IAA Technician in the evaluation of their proficiency and equipment.
- (d) **Technician Certification.** Technician certification will be in conformance with MSMT 731 and the Mid-Atlantic Region Certification Program (MARTCP).
- (e) **Dispute Resolution System.** This is a general procedure to resolve conflicts resulting from discrepancies between test results from the Engineer and producer, and nontest related disputes of sufficient magnitude to impact payment.



When a dispute arises, the producer or Engineer will file a written complaint to the Chief Engineer describing the nature of the dispute along with the pertinent information. The Chief Engineer will appoint a panel of three members to resolve the conflict. The panel will include a member selected by the asphalt industry. The panel will make recommendations to the Chief Engineer. The Chief Engineer will decide the disposition of the dispute based on the panel's recommendations.

A written report from the panel describing all subsequent actions and final disposition of the dispute shall be included in the project records.

If subsequent disputes arises on the same issue, the written report will be included as a resource during the resolution process.

915.03 PORTLAND CEMENT CONCRETE PLANTS

675 **DELETE:** 915.03.03 Load Tickets in its entirety.

INSERT: The following.

915.03.03 Load Tickets. An Authority approved, computer generated batch ticket indicating the pertinent information as designated in M 157 shall be provided in duplicate for each load. The ticket shall also indicate maximum allowable water, and maximum water allowed for jobsite slump adjustment. Distribution shall be made as specified in 915.03.05 (c)(2). The producer's copy shall be readily available for inspection upon request by the Engineer. A completed Authority Form 116 shall be issued for each load in the event a computer generated batch ticket cannot be provided.

678 **ADD:** The following after 915.03.05 Certified Concrete Plant.

915.03.06 Moisture Probes. Moisture probe readings may be used in place of actual daily moisture testing of fine aggregate. When used, moisture probes shall be calibrated and maintained in conformance with the manufacturer's recommendations. Actual moisture tests for the fine aggregate shall be performed weekly and as directed by the Engineer. When the actual tests of the fine aggregate indicate a difference of greater than 0.5 percent free moisture than the moisture probe readings, a second actual test shall be performed immediately. When the second test indicates a moisture difference of greater than 0.5 percent, then the moisture probe shall be recalibrated in conformance with the manufacturer's recommendations and verified. Records of all calibrations and weekly tests shall be maintained and made available to the Engineer.

915.05 CERTIFIED PRECAST CONCRETE PLANTS.

681 **DELETE:** The first paragraph, "The producer shall...in the inspections."

INSERT: The following.



All plants producing precast concrete items shall be certified by the National Precast Concrete Association. The producer shall be responsible for quality control plant operations to ensure that the material conforms to Specifications. The quality control process will be subject to unannounced periodic inspection by representatives of the Concrete Technology Division. The plant's certified technician shall fully participate in the inspections.

915.05.01 Responsibilities of the Precast Concrete Producer.

683 **DELETE:** (d) Quality Control Technician, in its entirety.

INSERT: The following.

(d) Quality Control Technician. The Quality Control Technician may be approved if certified from at least one of the following:

- (1)** The Precast/Prestressed Concrete Institute Plant Certification Program, PCI Technician Level I, minimum.
- (2)** American Concrete Institute, ACI Field Technician Level I.



CATEGORY 900
MATERIALS

SECTION 916 — SOIL AND SOIL-AGGREGATE BORROW

684 **DELETE:** 916.01.02 Capping Borrow in its entirety.

INSERT: The following.

916.01.02 Capping Borrow. Capping borrow shall conform to the select borrow requirements except when A-3 material has less than 10 percent retained on the No. 10 sieve, at least 15 percent shall pass the No. 200 sieve. Sieve analysis shall be determined in conformance with T 88.



CATEGORY 900
MATERIALS

SECTION 920 — LANDSCAPING

920.01 TOPSOIL AND SUBSOIL.

688 **DELETE:** 920.01.02 **Furnished Topsoil** in its entirety.

INSERT: The following:

920.01.02 Furnished Topsoil. Furnished topsoil shall be a homogenous mixture that has been stockpiled, sampled and tested as specified in MSMT 356, and stored as specified in 308.03.28 and 701.03.01 (d).

A copy of the soil test report shall be forwarded to:

State Highway Administration
Soils & Aggregates Technology Division

The Soils and Aggregates Division (“SATD”) will review the soil test report to determine eligibility for Administration testing. When the soil test report is approved by SATD, a sample will be obtained by the Engineer for certification testing and recommendations.

Furnished topsoil shall be natural, friable surface soil uniform in color and texture, and shall not be supplied from the project. Furnished topsoil shall be free from any parts of Johnsongrass, Canada thistle, or Phragmites.

The Contractor shall submit certification to the Engineer that the furnished topsoil is delivered from a stockpile approved for the project, and such certification shall accompany the first load of topsoil delivered each day.

Furnished topsoil shall have an organic content between 1.5 to 10.0 percent by weight when tested as specified in T 194 and a corrected pH value of not less than 6.0 nor more than 7.5.

Grading analysis shall be as follows:

SIEVE SIZE	MIN PERCENT PASSING BY WEIGHT
2 in.	100
No. 4	90
No. 10	80



Topsoil shall be analyzed for sand, silt, and clay as specified in T 88. Textural analysis shall be as follows:

SOIL PARTICLE SIZES mm	PERCENT PASSING BY WEIGHT
Sand (2.0 – 0.050)	20 – 75
Silt (0.050 – 0.002)	10 – 60
Clay (less than 0.002)	5 – 30

689 **DELETE: 920.01.03 Salvaged Subsoil** in its entirety.

INSERT: The following.

920.01.03 Salvaged Subsoil. Salvaged subsoil shall be the subsurface material directly below the topsoil to be salvaged from project, and which has been classified as subsoil as specified in the Contract Documents.

690 **DELETE: The title: 920.02 AGRICULTURAL LIMESTONE**

INSERT: New title: **920.02 LIMESTONE**

DELETE: 920.03 FERTILIZER in its entirety.

INSERT: The following.

920.03 FERTILIZER.

920.03.01 Fertilizer. Fertilizer shall be commercial grade conforming to State and Federal regulations and the standards of the Association of Official Analytical Chemists. All analyses are subject to approval by the Engineer prior to application.

Standard analyses shall be:

STANDARD FERTILIZER ANALYSES		
Analyses	Type	Composition
0-0-50	Granular	100% potassium sulfate (SOP)
5-20-20	Granular	Nitrogen, phosphorus and potassium
14-14-14	Granular	100% polymer-coated, controlled release nitrogen, phosphorus, and potassium with minor nutrients
15-30-15	Granular	Nitrogen, phosphorus and potassium
20-10-5	Tablet	Slow-release nitrogen with phosphorus, potassium and minor nutrients. 21 to 23 grams per unit.
20-16-12	Granular	83% of nitrogen from ureaform, 100% of phosphorus from monoammonium phosphate, and 100% of potassium from potassium sulfate
20-20-20	Soluble	100% water soluble nitrogen, phosphorus, and potassium with minor nutrients formulated for liquid application.
38-0-0	Granular	100% ureaform (UF) slow-release nitrogen fertilizer
11-52-0	Granular	100% monoammonium phosphate (MAP)



920.03.02 Gypsum. Gypsum shall be an approved agricultural product manufactured and labeled for desalinizing and improving soil structure. Gypsum labeled as a fertilizer may also be used to supply calcium or sulfur as a plant nutrient.

920.02.03 Iron Sulfate. Iron sulfate shall be an approved horticultural product manufactured and labeled for increasing soil acidity (reducing soil pH). Iron sulfate labeled as a fertilizer may also be used to supply sulfur or iron as a plant nutrient.

920.03.04 Sulfur. Sulfur shall be an approved agricultural product manufactured and labeled for increasing soil acidity (reducing soil pH). Sulfur labeled as a fertilizer may also be used to supply sulfur as a plant nutrient. Sulfur shall be supplied as a granule or powder with a minimum purity of 90% elemental sulfur (S).

920.04 SEED, SEED MIXES, AND SOD.

694 **DELETE:** 920.04.02 Seed Mixes in its entirety.

INSERT: The following.

(a) SHA Turfgrass Seed Mix

- 90% Tall Fescue (Certified Seed Only)
- 5% Kentucky Bluegrass (Certified Seed Only)
- 5% Perennial Ryegrass (Certified Seed Only)

(b) SHA Special Purpose Seed Mix

- 75% Hard Fescue (Certified Seed Only)
- 20% Chewings Fescue (Certified Seed Only)
- 5% Kentucky Bluegrass (Certified Seed Only)

(c) SHA Temporary Seed Mix

- 95% Barley or Rye
- 5% Foxtail Millet

(d) SHA Cover Companion Seed Mix. Cover Companion Seed Mix for use with Woody Shrub Seed Mix shall conform to 705.01.01 Regional Areas.

- REGION 1**
- 35% Tall Fescue
- 35% Canada Bluegrass
- 15% Redtop
- 15% Birdsfoot trefoil (inoculant required)



REGIONS 2 & 3 30% Chewings Fescue
 30% Canada Bluegrass
 10% Redtop
 30% Sericea Lespedeza (inoculant required)

696 **920.04.03 Sod**

DELETE: The title: **920.04.03 Sod.**

INSERT: New title: **920.04.03 Turfgrass Sod.**



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

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

MINIMUM REFLECTIVE INTENSITY VALUES FOR RETROREFLECTIVE SHEETING Minimum Coefficient of Retroreflection (R_A) cd/(lx · m²) 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

950.03.02 Temporary Traffic Signs (“TTS”).

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

950.03.03 Black Sheeting. Black sheeting shall be nonreflective.

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



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951.01 — NONTOXIC WATERBORNE PAVEMENT MARKINGS

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**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-1.02 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.



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- (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:



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951.01 — NONTOXIC WATERBORNE PAVEMENT MARKINGS

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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 1.02, 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



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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-1.02, 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.



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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.



SUMMARY OF WORK

PART 1 – GENERAL

1.01 Sections 01010 through 03301 of this Invitation for Bids includes the Technical Specifications for all work related to the Replace Water Line Frankfurst Avenue to Fairfield Service Building, Baltimore, Maryland. General Provisions, Terms and Conditions and Section 110 of the Specifications shall also apply to the work specified in these Sections.



MISCELLANEOUS CONTINGENCIES

PART 1 – GENERAL

A contingent allowance of Forty Thousand Dollars (**\$40,000.00**) has been included in the Proposal Form (Schedule of Prices) for miscellaneous work that may be determined necessary by the Architect during the construction period.

This work shall be performed only upon written direction of the Architect. Upon the directions from the Architect, the Contractor shall submit a written time and material cost for this task for the Architect's review and/or approval prior to commencing any work. The Contractor shall allow two (2) weeks turn around time for review and approval. In lieu of this method, the Architect may direct the Contractor to perform the work in accordance with the requirements of "Force Account Work" Section GP 9.02 of the Specifications.

Refer also to TC 3.03 "Contingent Items" in the Standard Specifications.

PART 2 – MEASUREMENT AND PAYMENT

All work performed under this item "Miscellaneous Contingencies" will be paid for on the basis of approved price proposal and/or force account record submitted in accordance with Section GP 9.02 of the Standard Specifications and with the authorization of the Architect. The approved amount shall be full compensation for all labor, equipment, materials and incidentals complete in place as directed by the Architect.

At the completion of the entire project, the Contract award amount shall be adjusted based on the remaining amount of the contingency allowance.
(Schedule of Prices Item No. 402)

SECTION 01010 – GENERAL

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work consists of the following:
 - 1. This contract comprises of the installation of new water service piping and abandonment of existing to the Emergency Garage, Service Building and Vent Building.
 - 2. Total length of piping represents approximately 2,560 linear feet of 6” & 8” PVC mechanical joint piping and 2” soft copper tubing, connection to existing-to-remain building service piping, valves, fire hydrants and related components.
 - 3. Selective demolition and restoration of hot-mix pavement, concrete curb & gutter, gravel and concrete sidewalk areas are specified on plans.
 - 4. Seeding and mulching to restore grassy areas.
 - 5. Maintenance-of-traffic along the East and West Service Roads.

1.3 USE OF PREMISES

- A. Confine equipment, the storage of materials and equipment, and operations of workmen to within the defined project site. Equipment & materials shall be returned to designated staging/storage site at the conclusion of working hours.
- B. Assume full responsibility for materials and equipment stored on-site.
- C. The Contractor shall limit the use of the premises to the Work indicated, so as to allow for the Authority occupancy and operation at all times.
 - 1. Keep the existing driveways and entrances serving the premises clear and available to the Authority and its employees at all times. Do not use these areas for parking or storage of materials.
 - 2. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and locations of storage sheds to the areas designated by the Authority. If additional storage is necessary, obtain and pay for such storage off site.

1.4 WORK RESTRICTIONS

- A. On-Site Work Hours:

1. Work shall be generally performed during normal business working hours of 7:00 a.m. to 4:00 p.m., Monday through Friday, except as authorized by the Authority.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by the Authority or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify the Authority not less than two (2) days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without the Authority’s written permission.

1.5 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

A. This provision specifies the procedure for determination of time extensions for unusually severe weather, for weather dependant contracts, in accordance with Section 110 – Activities Chart Project Schedule, Paragraph D, and GP-8.08, Termination for Default -Damages for Delay -Time Extensions, Paragraph D.1. In order for the Engineer to award a time extension under this clause, the Engineer must be satisfied that the following conditions exist:

1. The weather experienced at the project site during the Contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.
2. The unusually severe weather must actually cause a delay to the completion of the Contract. The delay must be beyond the control and without the fault or negligence of the Contractor.
3. Time extensions for unusually severe weather occurring beyond the contractual completion date will not be granted if the Contract duration has extended beyond the contractual completion date due to Contractor delay.

B. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (“NOAA”) or similar data for the project location and will constitute a baseline for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependant activities.

Monthly Anticipated Adverse Weather Delays											
Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
8	7	7	8	8	7	5	6	4	6	5	5

C. Upon issuance of the NTP and continuing throughout the Contract, the Contractor will record daily the occurrence of adverse weather and resultant impact to normally

scheduled work. Actual adverse weather delay days must prevent work on critical activities for fifty percent (50%) or more of the Contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather to be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated above, the Engineer will convert any qualifying delays to calendar days and issue a time extension in accordance with the General Provisions Section GP-8.08, Termination for Default - Damages for Delay - Time Extensions and Section 110 Activities Chart Project Schedule. Time extensions for unusually severe weather shall not be compensable.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01010

SECTION 01095 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Standard Provisions.
- B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. Location is not limited.
- C. Regulations: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- D. Furnish: The term furnish means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
- E. Install: The term install describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- F. Provide: The term provide means to furnish and install, complete and ready for the intended use.
- G. Installer: An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. The term experienced, when used with the term Installer, means having a minimum of five (5) previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
 - 2. Trades: Using terms such as carpentry does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that

requirements specified apply exclusively to tradespersons of the corresponding generic name.

3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

- a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

H. Project Site is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

I. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-Division format and MASTERFORMAT numbering system.

B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

- a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

3. Method of measurement and basis of payment as stated in these technical specifications shall govern over references to measurement and basis of payment in SHA Standards and Specifications for Construction and Materials.

1.4 INDUSTRY STANDARDS

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.
- C. Conflicting Requirements: Where compliance with 2 or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and uncertainties to the Engineer for a decision before proceeding.
 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Engineer for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

1.5 RELATED DOCUMENTS

- A. Permits, Licenses, and Certificates: For the Authority's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01095

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SECTION 01310 – PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination Drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Project meetings.
 - 6. Project Administration and contract control.
- B. Each Contractor shall participate in coordination requirements.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in various sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different sections, which depend on each other for proper installation, connection, and operation.
- B. Coordination: The Contractor shall coordinate the construction operations with its subcontractors and vendors and other entities to ensure efficient and orderly installation of each part of the work. The Contractor shall coordinate its operations with the requirements included in different sections, which depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the work depends on installation of other components.
 - 2. Coordinate installation of different components to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.

- C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other entities to avoid conflicts and to ensure orderly progress of the work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Pre-installation conferences.
 - 7. Project closeout activities.
- E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.4 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
 - 1. Indicate relationship of components shown on separate Shop Drawings.
 - 2. Indicate required installation sequences.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the work. Include special personnel required for coordination of operations with other Contractors.
- B. Contractor's Staff: The Contractor shall submit in writing the names and qualifications of all individuals assigned to the Contract (including principals of the company, Project Managers, and superintendents) for the approval of the Authority. In the event the Project Manager does not approve an individual offered by the Contractor, the Contractor shall offer a suitable substitute. At any time during the course of the work, if in the judgment of the Project Manager, any individual is deemed unacceptable, upon written notification of the Project Manager, the Contractor shall promptly offer a

replacement for the Project Manager's approval. The Contractor shall be responsible for any and all cost arising from the action of the Project Manager relative to this provision.

1.6 PROJECT ADMINISTRATION

- A. General: The Contractor will coordinate the project administration and Contract control with the Authority.
- B. Progress Meetings: Initially the Authority will conduct progress meetings at regular bi-weekly intervals.
 - 1. Attendees: The Authority, Engineer, Contractor, Subcontractors, Suppliers, and other entities concerned with current progress or involved in planning, coordination, or performance of future activities may be invited to attend these meetings. All participants at the conference shall be familiar with the project and authorized to conclude matters relating to the work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule indicating actual progress verses planned progress. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Sequence of operations.
 - c. Access.
 - d. Site utilization and phasing.
 - e. Temporary facilities and controls.
 - f. Current status of work hours and Contractor staffing.
 - g. Hazards, risks and safety.
 - h. Progress cleaning.
 - i. Quality and work standards.
 - j. Change Orders status.
 - k. Review of work progress and/or payment progress.
 - l. Field observations, problems, and decisions.
 - m. Identification of problems, which impede planned progress.
 - n. Review of submittals schedule and status of submittals.
 - o. Review of off-site fabrication and delivery schedules.
 - p. Corrective measures to regain projected schedules.

- q. Planned progress during succeeding 2 week work period as defined in Contractor's two week look ahead schedule.
- r. Coordination of projected progress.
- s. Effect of proposed changes on progress schedule and coordination.
- t. As-Built Development.
- u. Other business relating to work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

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SECTION 01330 – SUBMITTAL PROCEDURES

PART 1 - GENERAL RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.
- B. Refer to Terms and Conditions TC 4.01 – Shop Plans and Working Drawings for additional requirements.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.
 - 1. Submittal Register Shall be Submitted within fourteen (14) calendar days after the Notice to Proceed, the Contractor shall submit a complete submittal register to the Engineer for review and approval. This submittal register shall be developed in Microsoft Excel and an electronic copy shall be submitted to the Authority. The submittal register shall include related specification section and article number, submittal number, product description, anticipated date to be submitted, and actual date submitted. The Contractor shall be responsible to update the submittal register continuously and submit a copy to the Authority monthly. The updated submittal register will be reviewed and discussed at the Monthly Schedule Update Meeting.
 - 2. Pre-Submittal Meeting within twenty-one (21) calendar days after receipt of Notice to Proceed, the Contractor shall arrange a pre-submittal meeting with the Authority. The meeting will discuss the content of the submittal register as well as the requirements for acceptable submittals. The meeting shall be attended by the Contractor's Project Manager, Project Engineer, Site Superintendent, Project Scheduler, and Critical Subcontractor Project Managers. Meeting minutes will be developed by the Authority.

1.3 DEFINITIONS

- A. Informational Submittals: Written information that does not require Engineer or the Authority's approval. Submittals may be rejected for not complying with requirements of applicable sections.

1.4 SUBMITTAL PROCEDURES

- A. General: Contractor may assume that one (1) electronic copy of CAD Drawings of the Contract Drawings will be provided by the Authority for Contractor's use in preparing submittals.
- B. Product Warranty Submittals: Product Warranties shall be submitted with the technical submittals. Failure to submit the product warranty with the technical submittal shall be cause for the entire technical submittal to be rejected.
- C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the work so processing will not be delayed because of the need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- D. Submittals Schedule: Comply with requirements of the Activities Chart Project Schedule which provides a list of submittals and time requirements for scheduled performance of related construction activities.
- E. Processing Time: Refer to Standard Provisions for processing time.
 - 1. Number of Samples for Initial Selection: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.
- F. Identifications: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate the name of the firm or entity that prepared each submittal on the label or title block.
 - 2. Provide a space approximately 4 by 5 inches on label or beside title block to record contractor's review and approval markings and action taken by the Engineer.
 - 3. Include the following information on the label for processing and recording action taken:
 - a. Project Name;
 - b. Date;
 - c. Name and address of Engineer;
 - d. Name and address of Contractor;
 - e. Name and address of Subcontractor;

- f. Name and address of Supplier;
 - g. Name of Manufacturer;
 - h. Unique identifier, including revision number;
 - i. Number and title of appropriate Specification Section;
 - j. Drawing number and detail references, as appropriate; and
 - k. Other necessary identification.
- G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. The Authority will return submittals without review received from sources other than Contractor.
- 1. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
 - 2. Transmittal Form: Provide locations on Contractor's typical transmittal form for the following information:
 - a. Project Name;
 - b. Date;
 - c. Destination (To);
 - d. Source (From);
 - e. Names of subcontractor, manufacturer, and supplier;
 - f. Category and type of submittal;
 - g. Submittal purpose and description;
 - h. Submittal and transmittal distribution record; and
 - i. Remarks.
- H. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

PART 2 – PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- 1. Number of copies: Submit to the Authority seven (7) copies of each submittal, unless otherwise indicated. The Authority will return four (4) copies. Mark up and retain one (1) returned copy as a Project Record Document.
- B. Product Data. Collect information into a single submittal for each element of construction and type of product or equipment.
- 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data

2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable;
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Printed performance curves.
 - g. Operational range diagrams.
 - h. Mill reports.
 - i. Standard product operating and maintenance manuals.
 - j. Compliance with recognized trade association standards.
 - k. Compliance with recognized testing agency standards.
 - l. Application of testing agency labels and seals.
 - m. Notation of coordination requirements.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Shopwork manufacturing instructions.
 - f. Templates and patterns.
 - g. Schedules.
 - h. Design calculations.
 - i. Compliance with specified standards.
 - j. Notation of coordination requirements.
 2. Notation of dimensions established by field measurement.
 3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
- D. Coordination Drawings: Refer to "Technical Provisions – General Information" for requirements associated with Coordination Drawings.
- E. Samples: Prepare physical units of materials or products, including the following:

1. **Samples for Initial Selection:** Submit manufacturer’s color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
2. **Samples for Verification:** Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials, complete units of repetitively used materials; swatches showing color, texture, and pattern’ color range sets; and components used for independent testing and inspection.
3. **Preparation:** Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Engineer’s same where so indicated. Attach label on unexposed side that includes the following:
 - a. Generic description of Sample.
 - b. Product name or name of manufacturer.
 - c. Sample source.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to the Engineer.
- B. **Approval Stamp:** Stamp each submittal with a uniform, approval stamp. Include project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

END OF SECTION 01330

SECTION 01400 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.

1.2 SUBMITTALS

- A. Quality Control Plan: Within twenty-one (21) calendar days after notice to proceed, the Contractor shall develop and submit a project Quality Control Plan. This plan shall be approved by the Engineer prior to the performance of any on-site construction activities. The plan shall include the following:
 - 1. Log of all required and specified testing including, but not limited to specification section, description of test, organization performing the test and acceptable limits or ranges of test results. The log shall be developed in a Microsoft Excel spreadsheet.
- B. Work requiring Quality Control testing, monitoring or analysis shall not occur until the Quality Control Plan has been submitted, reviewed and approved by the Engineer and the Authority.

1.3 QUALITY CONTROL PROGRAM REQUIREMENTS

- A. The Contractor shall provide and maintain a Quality Control Program for this project.
- B. The Contractor shall schedule a Quality Control Program Meeting within thirty (30) days of Notice to Proceed to discuss the Quality Control Plan developed by the Contractor and to discuss the requirements of this Specification Section.
- C. The Quality Control Program shall schedule, monitor, record and analyze all required testing and installation certification activities associated with the following:
 - 1. Reinforced concrete and asphalt structures.
 - 2. Soils sampling and analysis.
- D. The Contractor shall provide written notification to the Engineer three (3) business days in advance of upcoming tests.

1.4 MATERIALS AND WORKMANSHIP

- A. All materials and equipment required for the work shall be new, unless otherwise specified, and shall conform with the Contract Specifications.
- B. Minor deviations from the Drawings may be made to allow for better accessibility, but changes of significant magnitude or changes involving extra cost shall not be made without approval of the Engineer.
- C. The Contractor shall locate and install all equipment which must be serviced, operated, or maintained in fully accessible positions. Such equipment shall include, but not be limited to:
 - 1. Valves and fire hydrants.
- D. Inasmuch as the Drawings are generally diagrammatic, it is not possible to indicate on the Drawings all fittings or offsets in piping, valves, or other specialties required.

1.5 STANDARDS

- A. Any reference to standards in the Contract Documents shall always imply the latest issue in effect including **all** amendments and errata at the time bids are taken, of said standard unless otherwise stated.
- B. Abbreviations for various organizations which may be used in these Specifications are as follows:

<u>Abbreviation</u>	<u>Organization</u>
AA	Aluminum Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACS	American Concrete Society
AGMA	American Gear Manufacturers Association
AHDGA	American Hot Dip Galvanizers Association
AICHE	American Institute of Chemical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association

<u>Abbreviation</u>	<u>Organization</u>
BGE	Baltimore Gas & Electric Company
BIA	Brick Institute of America
CBRA	Copper and Brass Research Association
C&P	Chesapeake and Potomac Telephone Company
CIPRA	Copper and Brass Research Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard (U.S. Dept. of Commerce)
EPA	U.S. Environmental Protection Agency
FM	Factory Mutual
FS	Federal Specification
MBE	Minority Business Enterprise
MBMA	Metal Building Manufacturers Association
MOMR	Mayor's Office of Manpower Resources
MOSHA	Maryland Occupational Safety and Health Administration
MSSFI	Manufacturers Standardization Society of the Valve and Fittings Industry
NBFU	National Bureau of Fire Underwriters
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NFPA	National Fire Protection Association -
NIOSH	National Institute for Occupational Safety and Health
OFCCP	Office of Federal Contracts Compliance Programs
OSHA	Occupational Safety and Health Act of 1970
SMSA	Standard Metropolitan Statistical Area
SSPC	Steel Structures Painting Council
TEMA	Tubular Exchanger Manufacturers Association
UL	Underwriter's Laboratories
USGS	United States Geological Survey

1.6 TESTING LABORATORY SERVICES

- A. All tests which require the services of licensed and certified testing personnel or a laboratory to determine compliance with the Contract Documents shall be performed by the Contractor with samples prepared by the Contractor under the direction, supervision and monitoring of the Authority.
- B. Testing Laboratory Services Furnished by the Contractor.
 - 1. The Contractor shall be responsible for the preparation of samples for testing in connection with:
 - a. Concrete materials and mix designs;

- b. The design of asphalt mixtures;
 - c. Gradation tests for embedment;
 - d. Fill, and backfill materials; and
 - e. Other tests and engineering data required for Engineer's review of materials and equipment proposed to be used in the Work.
 2. Field testing will be performed by the Contractor's Testing Agency or its designated testing-laboratory personnel, in the general manner indicated in the specifications. The Contractor's Testing Agency shall determine the exact time and location of field sampling and testing, and may require such additional sampling and testing as necessary to determine that materials and equipment conform with data previously furnished by Contractor and with the Contract Documents.
 3. Samples of concrete and other materials to be tested shall be obtained by the Contractor at the direction of the Authority. Samples shall be prepared in the presence of the Authority.
 - a. The Contractor shall furnish the appropriate molds and containers for the storage, transport and delivery of samples of the materials to be tested.
 - b. The Contractor shall take all precautions to properly label, store and cure the samples in the field at its expense.
 4. If laboratory analysis indicates that materials placed, or intended to be placed, by the Contractor fail to meet the specified standards:
 - a. The Authority may require additional testing before ordering more stringent action.
 - b. At the Authority's direction, the Contractor shall obtain such additional samples as the Authority requires, label, store and deliver them to the test location designated at no cost to the Authority.
 5. Contractor shall furnish all sample materials and cooperate in the sampling and field testing activities as necessary. When sampling or testing activities are performed in the field by Testing Agency or testing laboratory personnel, Contractor shall furnish personnel and facilities to assist in the activities.
- C. The Contractor shall furnish to the Authority at no additional cost to the Authority, duplicate certified copies of all routine tests made by mill, shop or factory at which material or equipment is fabricated or manufactured for the Work. The Authority will select at its own discretion, materials to be tested at the Authority's Laboratory. Testing at the Testing Laboratory will be performed at the Authority's expense, except the retesting of unacceptable materials, the cost of which shall be reimbursed to the Authority by the Contractor.
- D. The Contractor shall be responsible for and include all systems, operational, control testing as per the Contract Documents, at no additional cost to the Authority.

- E. The Contractor shall pay all costs and expenses incurred by the Authority in connection with performing factory witness tests.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - a. List of detrimental conditions, including substrates.
 - b. List of unacceptable installation tolerances.
 - c. Recommended corrections.
 - 2. Verify compatibility with and suitability of substrates.
 - 3. Examine roughing-in for mechanical systems to verify actual locations of connections before equipment and fixture installation.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- C. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by the Engineer and the Authority.

3.3 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

- A. General: Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
- B. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
- C. Do not hold materials more than fourteen (14) days.
- D. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- E. Site: Maintain Project site free of waste materials and debris.
- F. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
- G. Remove liquid spills promptly.
- H. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- I. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- J. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

- K. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
- L. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- M. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- N. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- O. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION 01400

SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUBMITTALS

- A. Contractor shall prepare and issue a Construction Waste Management Plan.

1.3 USE CHARGES

- A. General: Cost or use charges for temporary facilities and controls are not chargeable to the Authority and shall be included in the Contract sum. All costs associated with the installation, relocation, and removal of temporary facilities and controls shall be the Contractor's responsibility. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
 - 1. The Authority's representative.
 - 2. Engineer.
 - 3. Testing agencies.
- B. Electric Power Service: Pay electric power service use charges, whether metered or otherwise, for electricity used by all entities engaged in construction activities at project site.
- C. Water Service: Water is available on-site. Use of water will be provided at no cost to the Contractor. Extend branch piping with outlets located throughout the site so that water is available for use of rubber hoses. Provide adequate temporary water supply to perform hydrostatic testing as required by other Sections.
- D. Barriers: Provide barriers as required to prevent public and employee entry into construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- E. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 SUPPORT FACILITIES INSTALLATION

- A. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section "Quality Requirements" for progress cleaning requirements.
- B. Develop a waste management plan for the work performed on the project. Indicate types of waste materials the project will produce and estimate quantities of each type. Provide detailed information for on-site waste storage and separation of recyclable materials. Provide information on destination of each type of waste material and means to be used to dispose of all waste materials.
- C. Parking: Coordinate with the Authority to use designated areas of existing parking areas adjacent to the project site for construction personnel.

3.2 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities to minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Install temporary orange construction fence at building entrances to ensure pedestrian safety through construction areas.
- C. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 - 2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- D. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- E. Termination and Removal: Remove each temporary facility when need for its service has ended, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the property of Contractor. The Authority reserves the right to take possession of the project identification signs.
2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by the Authority.
3. Remove temporary orange construction fencing.
4. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUBMITTALS

- A. Product warranties shall be submitted with the initial technical submittal for approval by the Authority and Engineer. Failure to submit the product warranty with the technical submittal shall be cause for the entire technical submittal to be rejected.

1.3 STORAGE AND PROTECTION OF MATERIALS AND EQUIPMENT

- A. All equipment and materials provided shall be protected from damage before and after installation.
- B. All structures, piping and accessories and appurtenances shall be adequately supported and safeguarded against all damage or injury during performance or work under this contract. The Contractor shall be responsible for all damage or injury resulting from his operations and shall repair such damage immediately and to the satisfaction of the Engineer and Authority.
- C. The Contractor shall store and protect products in accordance with the manufacturer's recommendations and the requirements specified herein.
- D. Areas available on the project site for storage of materials and equipment are shown on the plans or designated and approved by the Engineer. All materials and equipment must be cosigned to the Contractor directly.
- E. Contractor shall be fully responsible for loss or damage to stored materials.

1.4 PRODUCT WARRANTIES

- A. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Warranties shall be for a minimum of two (2) years.

PART 2 - PRODUCTS

2.1 PRODUCT SUBSTITUTIONS

- A. Where the Contractor proposes to use a substitute product for a named item, he shall submit to the Engineer complete information on and working drawings for such substitute item, including all necessary redesign of the infrastructure or any other part of the project. All such redesign and all new drawings and detailing required therefore shall be prepared by the Contractor at the Contractor's expense. Where the substitution of any item or items requires a different quantity and arrangement of infrastructure from that specified or indicated on the Contract Drawings, the Contractor shall include the total cost of such changes as well as the necessary engineering design to support and detail the changes in the bid. It shall be expressly understood that all equipment and materials named shall be furnished in full accordance with the Contract Drawings and/or Specifications.
- B. The complete and salient characteristics of materials specified by the Manufacturer's product number or trade name are applicable to the requirements for substitution consideration, even if the complete and salient characteristics of the specified material are not listed herein.
- C. The attention of the Contractor is especially directed to the requirement that, if the Contractor proposes to substitute materials or equipment as "equals" to those specified, it shall be the Contractor's responsibility to furnish complete, specific, detailed information from the manufacturer or supplier of the material or equipment he proposes to furnish, in which the requirements of the Contract specifications are shown to be met, within thirty (30) days from notice to proceed. Failure to submit substitute materials or equipment as "equals" within thirty (30) days from notice to proceed will eliminate the substitute material from consideration as an "equal" to the specified product. The information requested shall consist of a point by point comparison of the Contract specification requirements with the material or equipment proposed to be furnished. In the event that the Contract specifications mention a model number and manufacturer, a point by point comparison of the complete and salient equipment characteristics of the listed model number specified under the Contract and the proposed substitutes shall be furnished by the Contractor. In the event the Contract specification indicates a requirement for substitute materials request to submit a specific number of operating systems and total duration of operation for each system, the Contractor shall submit the name of the Authority, length of service, current contact person and title, current phone number and size of the system. The requirement for a specific number of operating systems and duration of operation for substitute materials is applicable, even if the specified product does not meet these requirements. 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 to the Contractor and the request for approval will be denied. Names of manufacturers for substitute items which are not approved by the Engineer will not be considered and the Contractor must supply the products as specified.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

SECTION 01700 – EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes general procedural requirements governing execution of the work including, but not limited to, the following:
 - 1. Field engineering and surveying.
 - 2. General installation of products.
 - 3. Starting and adjusting.
 - 4. Protection of installed construction.
 - 5. Correction of the work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify the Authority promptly.
- B. General: Engage a land surveyor to lay out the work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels as needed to locate each element of the project.
 - 2. Establish dimensions within tolerances indicated. Do not scale drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the work progresses.
 - 5. Notify the Authority when deviations from required lines and levels exceed allowable tolerances.

6. Close site surveys with an error of closure equal to or less than the standard established by the Authority.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by the Engineer and the Authority.

3.2 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the work. Preserve and protect permanent benchmarks and control points during construction operations.
 1. Do not change or relocate existing benchmarks or control points without prior written approval of the Authority. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate or reestablish permanent benchmarks or control points to the Authority before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two (2) permanent benchmarks on Project site, referenced to data established by survey control points. Comply with the Authority for type and size of benchmark.
 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- C. Certified Survey: On completion of major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and site work.

3.3 INSTALLATION

- A. General: Locate the work and components of the work accurately, in correct alignment and elevation, as indicated.
 1. Make vertical work plumb and make horizontal work level.

2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the work.
- G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration during the course of construction and at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.5 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

END OF SECTION 01700

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project Record Documents.
 - 3. Operation and maintenance manuals.
 - 4. Warranties.
 - 5. Instruction of the Authority's personnel.
 - 6. Final cleaning.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise the Authority of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting the Authority unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information as required in Sections of Divisions 2-16.
 - 6. Complete startup testing of systems.
 - 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 8. Submit changeover information related to the Authority's occupancy, use, operation, and maintenance.
 - 9. Complete final cleaning requirements, including touchup painting.

- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
 - 1. Submit a final Application for Payment according to Standard Provisions for Construction Contracts and Interim Standard Provisions for Construction Contracts.
 - 2. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 4. Instruct Authority's personnel in operation, adjustment, and maintenance of products, equipment, and systems as required in Divisions 2-16.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three (3) copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order.
2. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Page number.

B. Project Completion, Punchlists, and Warranty:

1. Prior to or at the Final Inspection for acceptance of the Contract, or portion/phase of the Contract, a punchlist will be developed by the Authority to identify items of work remaining to be completed, unacceptable, or defective. The Contractor shall have time allotted to complete the punchlist that shall be equal to ten percent (10%) of the original Contract time, plus ten percent (10%) of any time added by change orders. The time shall begin on the date of notice, when served prior to final acceptance, or on the day of final acceptance for the entire Contract, or any portion or phase of the Contract as applicable. Any portion of a day will be counted as a full day.
2. Failure by the Contractor to complete any punchlist items in the allotted time may result in the Authority causing the incomplete punchlist items to be completed by others without further notice to the Contractor.
3. In the event the Authority allows the Contractor to continue work on the punchlist items beyond the allotted time, the Authority shall deduct from any monies owed the Contractor, all construction management and inspection cost it incurs as a result of the Work being performed beyond the allotted time.

1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Engineer and Authority Project Manager for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including trenches, equipment vaults, and similar spaces.
 - h. Leave Project clean and ready for occupancy.

- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Authority's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

SECTION 01781 – PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Submittal: Submit one (1) set of marked-up Record Prints. Engineer will review and note whether general scope of changes, additional information recorded, and quality of drafting are acceptable. The Authority will return prints for organizing into sets, printing, binding, and final submittal.
- B. Record Specifications: Submit one (1) copy of marked-up Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one (1) copy of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one (1) set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Locations and depths of underground utilities.
 - d. Changes made by Change Order or Construction Change Directive.
 - e. Changes made following the Authority's written orders.
 - f. Details not on the original Contract Drawings.
 - g. Record information on the work that is shown only schematically.
 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the work at the same location.
 5. Mark important additional information that was either shown schematically or omitted from original drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with the Authority and the Engineer.
1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
 2. Refer instances of uncertainty to the Authority for resolution.
 3. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. The Authority will make the Contract Drawings available to Contractor's print shop.

- C. Newly Prepared Record Drawings: Prepare new drawings instead of preparing Record Drawings where the Authority and the Engineer determine that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
 2. Consult with the Authority and the Engineer for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
- D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify drawings included.
 3. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of the Engineer.
 - e. Name of the Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark specifications to indicate the actual product installation where installation varies from that indicated in specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other specification sections for miscellaneous record keeping and submittal in connection with actual performance of the work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one (1) copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.
- C. Provide access to Project Record Documents for the Authority's reference during normal working hours.

END OF SECTION 01781

SECTION 02221 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Selective demolition and removal of site infrastructure.
 - 2. Abandoning in place below-grade structures and roadway boxes.
 - 3. Disconnecting, capping or sealing, and abandoning in-place and removing site utilities.
- B. Related Sections include the following:
 - 1. Division 1 Section "Summary" for use of the premises and phasing requirements.
 - 2. Division 1 Section "Project Management and Coordination" for meeting procedures before and during construction.
 - 3. Division 1 Section "Temporary Facilities and Controls" for temporary construction, protection facilities, and environmental-protection measures for building demolition operations.
 - 4. Division 2 Section "Site Clearing" for site clearing and removal of above- and below-grade site improvements not part of building demolition.
 - 5. Division 2 Section "Earthwork" for soil materials, excavating, backfilling and site grading.

1.3 DEFINITIONS

- A. Demolish: Completely remove and legally dispose of off-site.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 SUBMITTALS

- A. Proposed Protection Measures: Submit informational report, including drawings, that indicates the measures proposed for protecting individuals and property, for dust control and for noise control. Indicate proposed locations and construction of barriers.
 - 1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain.
- B. Schedule of Demolition Activities: Indicate the following:
 - 1. Detailed sequence of demolition work, with starting and ending dates for each activity.
 - 2. Temporary interruption of utility services.
 - 3. Shutoff and capping or re-routing of utility services.
 - 4. Locations of temporary protection and means of egress for adjacent occupied buildings.
- C. Pre-demolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by building demolition operations. Submit before the Work begins.

1.6 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI A10.6 and NFPA 241.
- C. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to building demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be demolished.
 - 2. Review and finalize selective demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review and finalize protection requirements.
 - 4. Review procedures for noise control and dust control.
 - 5. Review procedures for protection of adjacent buildings.

1.7 PROJECT CONDITIONS

- A. Buildings immediately adjacent to selective demolition area will be occupied. Conduct selective demolition activities so operations of occupied buildings will not be disrupted.
 - 1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
 - 2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
 - a. Utilize temporary orange construction fencing to maintain pedestrian safety through construction areas.
 - b. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from the Authority.
- B. The Authority assumes no responsibility for structures to be demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by the Authority as far as practical.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
- D. On-site storage or sale of removed items or materials is not permitted.

1.8 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with operations of adjacent occupied buildings.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Division 2 Section "Earthwork."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting demolition operations.

- B. Review Project Record Documents of existing construction provided by the Authority. The Authority does not guarantee that existing conditions are same as those indicated in Project Record Documents.

3.2 PREPARATION

- A. Existing Utilities: Locate, identify, disconnect, abandon and seal or cap off indicated utilities.
 1. The Authority will arrange to shut off indicated utilities when requested by Contractor.
 2. Contractor shall arrange to shut off affected utilities with utility companies.
 3. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
 4. Cut off pipe a minimum of 24 inches below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of the Authority.
- B. Temporary Shoring: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

3.3 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, building entries, and other building facilities during selective demolition operations. Maintain exits from existing buildings.
- B. Existing Utilities: Maintain utility services to remain and protect from damage during selective demolition operations.
 1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by the Authority.
 2. Provide temporary services during interruptions to existing utilities, as acceptable to the Authority.
 - a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.
- C. Temporary Protection: Erect temporary protection, such as walks and fences where required by Authority. Comply with requirements in Division 1 Section "Temporary Facilities and Controls."
 1. Protect adjacent buildings and facilities from damage due to selective demolition activities.

2. Protect existing site improvements, appurtenances, and landscaping to remain.
 3. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 4. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
 5. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to selective demolition operations.
 6. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
- D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.4 DEMOLITION, GENERAL

- A. General: Demolish indicated existing site infrastrucre completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
 2. Maintain fire watch during and for at least 4 hours after flame cutting operations.
 3. Maintain adequate ventilation when using cutting torches.
- B. Engineering Surveys: During selective demolition, perform surveys to detect hazards that may result from selective demolition activities.
- C. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct roads, walkways, or other adjacent occupied or used facilities without permission from the Authority. Provide alternate routes around closed or obstructed traffic ways if required by the Authority.
 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- D. Explosives: Use of explosives is not permitted.

3.5 DEMOLITION BY MECHANICAL MEANS

- A. Existing Utilities: Abandon existing utilities and below-grade utility structures that are within 5 feet outside indicated exterior building wall locations.

1. Fill abandoned utility structures with satisfactory soil materials according to backfill requirements in Division 2 Section "Earthwork."
2. Piping: Disconnect piping at unions, flanges, valves, or fittings.

3.6 SITE RESTORATION

- A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from selective demolition operations with satisfactory soil materials according to backfill requirements in Division 2 Section "Earthwork."
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.7 REPAIRS

- A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and legally dispose of them in a landfill acceptable to authorities having jurisdiction.
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3.9 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02221

SECTION 02230 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation
3. Clearing and grubbing
4. Stripping and stockpiling topsoil.
5. Temporary erosion- and sediment-control measures.

- B. Related Sections:

1. Division 1 Section "Temporary Facilities and Controls" for temporary utility services, construction and support facilities, security and protection facilities, and temporary erosion- and sedimentation-control measures.
2. Division 1 Section "Quality Requirements" for field engineering and surveying.
3. Division 2 Section "Earthwork" for soil materials, excavating, backfilling and site grading.

1.3 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt and clay particles; friable and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain on the Authority's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

- A. Pre-clearing photograph or videotape, sufficiently detailed, of existing trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- B. Record Drawings, according to Division 1 Section “Project Record Documents,” identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

- A. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section “Project Management and Coordination.”
 - 1. Identify and accurately locate capped utilities and other substructure structural, electrical and mechanical conditions.

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct roads, walks, or other adjacent occupied or used facilities without permission from the Authority and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by the Authority.
- B. Utility Locator Service: Notify utility locator service and Miss Utility for area where Project is located before site clearing.
- C. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Division 2 Section "Earthwork."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to the Authority.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of Section 308 of the Maryland State Highway Administration ("MSHA") Standard Specifications and the Maryland Department of Environment ("MDE") Standards and Specifications for erosion- and sedimentation-control.
- B. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 UTILITIES

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by the Authority or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify the Authority not less than seventy-two (72) hours in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without the Authority's written permission.
- B. Locate, identify, disconnect, and seal or cap off utilities indicated to be abandoned and/or removed.
- C. Excavate for and remove underground utilities indicated to be removed.
- D. Removal of underground utilities is included in Division 2 Sections covering site utilities.

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain.
 - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 - 4. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and non-soil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.

- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Limit height of topsoil stockpiles to 72 inches.
 - 2. Dispose of excess topsoil as specified for waste material disposal.
 - 3. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.6 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically. Saw cuts for pavement, sidewalk and curb removal shall be full depth.
 - 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions, to prevent corrosion. Keep paint off surfaces that will remain exposed.

3.7 DISPOSAL

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose them off the Authority's property.

END OF SECTION 02230

SECTION 02300 EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Preparing subgrades for slabs-on-grade walks, pavements, and lawns and grasses.
2. Excavating and backfilling for structures.
3. Subbase course for concrete walks and pavement.
4. Subbase and base course for asphalt paving.
5. Subsurface drainage backfill for trenches.
6. Excavating and backfilling trenches for buried utilities and pits for buried utility structures.

- B. Related Sections include the following:

1. Division 1 Sections "Project Management and Coordination" for recording pre-excavation and earthwork progress.
2. Division 1 Section "Temporary Facilities and Controls" for temporary controls, utilities, and support facilities.
3. Division 2 Section "Site Clearing" for temporary erosion and sedimentation control measures, site stripping, and removal of above- and below-grade improvements and utilities.
4. Division 2 Section "Selective Demolition" for demolition and disposal of materials.
5. Divisions 2 Section "Water Distribution" for installing underground mechanical and buried mechanical structures.

1.3 DEFINITIONS

- A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

- B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.

- C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil (Select Borrow) imported from off-site for use as fill or backfill.
- E. Excavation: Removal of material encountered above subgrade elevations.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations as directed by the Geotechnical Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 - 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations without direction by the Geotechnical Engineer. Unauthorized excavation, as well as remedial work directed by the Geotechnical Engineer, shall be without additional compensation.
- F. Fill: Soil materials approved by the Geotechnical Engineer to be used to raise existing grades.
- G. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
 - 1. Excavation of Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch-wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,090 lbf and stick-crowd force of not less than 18,650 lbf; measured according to SAE J-1179.
 - 2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 210-hp flywheel power and developing a minimum of 48,510-lbf breakout force with a general-purpose bare bucket; measured according to SAE J-732.
- H. Structures: Buildings, footings, retaining walls, slabs, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

- K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Each type of detectable warning tape.
- B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D 2487 of each borrow soil material proposed for fill and backfill.
 - 2. Laboratory compaction curve according to ASTM D 1557 for each on-site and borrow soil material proposed for fill and backfill.
- C. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.5 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. International Building code (“IBC”) current version.
 - 2. American Society of Testing and Materials (“ASTM”).
 - 3. Maryland Department of Transportation, State Highway Administration, “Standard Specifications for Construction and Materials,” January 2001, as amended to date (MSHA as hereafter referred). Delete references to Measurement and Payment.
- B. Blasting: Blasting is prohibited on this project.
- C. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.
- D. Pre-excavation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by the Authority unless permitted in writing by the Authority and then only after arranging to provide temporary utility services according to requirements indicated.
 - 1. Notify the Authority not less than seventy-two (72) hours in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without the Authority's written permission.
 - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Demolish and completely remove from site existing items indicated to be removed. Abandon indicated existing water service piping. Coordinate with utility companies to shut off services if lines are active.
- C. Existing Conditions: Accept the site in the condition which it exists at the time of the award of the Contract and perform all work to the grades indicated.
 - 1. Protect plant material and other features not designated for removal.
 - 2. Protect benchmarks, existing structures, swales and paving from excavating equipment and vehicular traffic.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Refer to Section 916 of SHA Standard Specifications for Construction and Materials.
- B. General: Provide select borrow soil materials for replacement of all excavated material removed from the pipe trench. All excavated material removed from the trench excavations shall be hauled and disposed off-site. Provide test results or certification that borrow material meets the requirements for the specified material.
- C. Satisfactory Soils: Select Borrow as Per Section 916.01.01 of the MSHA Standard Specifications for Construction and Materials.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve per Section 901 of the MSHA Standard Specifications for Construction and Materials .
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve per Section 901 of the MSHA Standard Specifications for Construction and Materials.

- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- G. Bedding Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve.
- H. Topsoil: Loam, without stones or debris larger than 1/2 inch in diameter, without roots, vegetation, and without harmful materials or other debris which may be harmful to plant life. The topsoil shall contain a minimum of 5% of organic matter by weight when tested in accordance with AASHTO T 194. Other components shall be within the following percentages:

Silt	25 – 50%
Clay	10 – 30 %
Sand	20 – 35 %
pH	6 – 7.5
Soluble Salts	600 ppm maximum
- I. Off-Site Topsoil: Topsoil furnished by the Contractor shall meet the requirements specified above, as tested by the Contractor and approved by the Geotechnical Engineer.
- J. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.
- K. Sand: ASTM C 33; fine aggregate, natural, or manufactured sand.
- L. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with a metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows.
 - 1. Blue: Water systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Prepare subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section "Site Clearing," during earthwork operations.
- D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

3.2 EXPLOSIVES

- A. Explosives: Do not use explosives on this project.

3.3 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. Excavated materials will be hauled and disposed off-site. Fill and backfill shall be satisfactory soil materials meeting paragraph 2.1.A.
 - 2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
 - a. 6 inches beneath bottom of concrete slabs on grade.
 - b. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.5 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
 - 1. Excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
 - 1. Clearance: 8” minimum each side of pipe.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes. Shape subgrade to provide continuous support for bells, joints and barrels of pipes, unless otherwise indicated.
 - 1. For pipes less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe on an undisturbed subgrade.
 - 2. For pipes 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
 - 3. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.6 SUBGRADE INSPECTION

- A. Notify Geotechnical Engineer when excavations have reached required subgrade.
- B. If Geotechnical Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.7 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations by extending bottom elevation of concrete foundation to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by the Engineer.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by the Engineer.

3.8 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials only at locations that have been approved by the Authority. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.9 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Surveying locations of underground utilities for Record Documents.
 - 2. Testing and inspecting underground utilities.
 - 3. Removing concrete formwork.
 - 4. Removing trash and debris.
 - 5. Removing temporary shoring and bracing, and sheeting.
 - 6. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.10 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill trenches excavated under structure and within 18 inches of bottom of structure with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 3 Section "Cast-in-Place Concrete."
- D. After installing compacted pipe bedding material, place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.
 - 1. Carefully compact initial bedding material under pipe haunches and compact evenly up on both sides and along the full length of utility piping to avoid damage or displacement of piping. Coordinate backfilling with utilities testing.
- E. Backfill voids with satisfactory soil while installing and removing shoring and bracing.

- F. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- G. Install detectable warning tape directly above utilities, 24 inches above the pipe crown, except 6 inches below subgrade under pavements and slabs.

3.11 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under walks and pavements, use satisfactory soil material.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.12 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.13 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 6 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 - 1. Under pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent modified proctor density.
 - 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent modified proctor density.

3.14 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Walks: Plus or minus 1/2 inch.
 - 2. Pavements: Plus or minus 1/2 inch.

3.15 SUBBASE AND BASE COURSES

- A. Place subbase and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase and base course under pavements and walks as follows:
 - 1. Place base course material over subbase course under hot-mix asphalt pavement.
 - 2. Shape subbase and base course to required crown elevations and cross-slope grades.
 - 3. Place subbase and base course 6 inches or less in compacted thickness in a single layer.
 - 4. Place subbase and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 5. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.16 FIELD QUALITY CONTROL

- A. Testing Agency: The Contractor shall engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

- C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. or less of paved area, but in no case fewer than 3 tests.
 - 2. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet or less of trench length, but no fewer than 2 tests.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.17 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Authority's property.

END OF SECTION 02300

SECTION 02510 - WATER DISTRIBUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes water-distribution piping and related components outside the building for combined water service and fire-service mains.

1.3 DEFINITIONS

- A. PVC: Polyvinyl chloride plastic.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.
- C. Operation and Maintenance Data: For water valves and specialties to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
 - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
 - 3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

D. NSF Compliance:

1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:

1. Ensure that valves are dry and internally protected against rust and corrosion.
2. Protect valves against damage to threaded ends and flange faces.
3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves, including fire hydrants, according to the following:

1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

F. Protect flanges, fittings, and specialties from moisture and dirt.

G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by the Authority unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:

1. Notify the Authority no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of water-distribution service without the Authority's written permission.

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

- A. Soft Copper Tube: ASTM B 88, Type K (ASTM B 88M, Type A), water tube, annealed temper.
 1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
 2. Copper, Pressure-Seal Fittings:
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Viega; Plumbing & Heating Systems.
 - b. NPS 2 and Smaller: Wrought-copper fitting with EPDM O-ring seal in each end.

2.2 PVC PIPE AND FITTINGS

- A. PVC, AWWA Pipe: AWWA C900, Class 150, with bell end with gasket, and with spigot end.
 1. Comply with UL 1285 for fire-service mains.
 2. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

2.3 JOINING MATERIALS

- A. Brazing Filler Metals: AWS A5.8, BCuP Series.
- B. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.4 PIPING SPECIALTIES

- A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- B. Tubular-Sleeve Pipe Couplings:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cascade Waterworks Manufacturing.
 - b. Dresser, Inc.; Dresser Piping Specialties.
 - c. Ford Meter Box Company, Inc. (The); Pipe Products Div.
 - d. Hays Fluid Controls; a division of ROMAC Industries Inc.
 - e. JCM Industries.
 - f. Smith-Blair, Inc.
 - g. Viking Johnson.
 - 2. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.
 - a. Standard: AWWA C219.
 - b. Center-Sleeve Material: Manufacturer's standard.
 - c. Gasket Material: Natural or synthetic rubber.
 - d. Pressure Rating: 150 psig minimum.
 - e. Metal Component Finish: Corrosion-resistant coating or material.
- C. Split-Sleeve Pipe Couplings:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Victaulic Depend-O-Lok.
 - 2. Description: Metal, bolted, split-sleeve-type, reducing or transition coupling with sealing pad and closure plates, O-ring gaskets, and bolt fasteners.
 - a. Standard: AWWA C219.
 - b. Sleeve Material: Manufacturer's standard.
 - c. Sleeve Dimensions: Of thickness and width required to provide pressure rating.
 - d. Gasket Material: O-rings made of EPDM rubber, unless otherwise indicated.
 - e. Pressure Rating: 150 psig minimum.
 - f. Metal Component Finish: Corrosion-resistant coating or material.

2.5 GATE VALVES

A. UL/FMG, Cast-Iron Gate Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Cast Iron Pipe Co.; American Flow Control Div.
 - b. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - c. Crane Co.; Crane Valve Group; Stockham Div.
 - d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - e. McWane, Inc.; Kennedy Valve Div.
 - f. McWane, Inc.; M & H Valve Company Div.
 - g. Mueller Co.; Water Products Div.
 - h. NIBCO INC.
 - i. U.S. Pipe and Foundry Company.
2. UL/FMG, Nonrising-Stem Gate Valves:
 - a. Description: Iron body and bonnet with flange for indicator post, bronze seating material, and inside screw.
 - 1) Standards: UL 262 and FMG approved.
 - 2) Minimum Pressure Rating: 175 psig.
 - 3) End Connections: Flanged.

B. Bronze Gate Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Crane Co.; Crane Valve Group; Crane Valves.
 - b. Crane Co.; Crane Valve Group; Jenkins Valves.
 - c. Crane Co.; Crane Valve Group; Stockham Div.
 - d. Hammond Valve.
 - e. Milwaukee Valve Company.
 - f. NIBCO INC.
 - g. Red-White Valve Corporation.
2. Nonrising-Stem Gate Valves:
 - a. Description: Class 125, Type 1, bronze with solid wedge, threaded ends, and malleable-iron handwheel.
 - 1) Standard: MSS SP-80.

2.6 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - b. East Jordan Iron Works, Inc.
 - c. Flowserve.
 - d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - e. McWane, Inc.; Kennedy Valve Div.
 - f. McWane, Inc.; M & H Valve Company Div.
 - g. Mueller Co.; Water Products Div.
 - h. U.S. Pipe and Foundry Company.
2. Description: Sleeve and valve compatible with drilling machine.
 - a. Standard: MSS SP-60.
 - b. Tapping Sleeve: Cast- or ductile-iron, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
 - c. Valve: AWWA, cast-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.

B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes and Baltimore City standards. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.

1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

C. Indicator Posts: UL 789, FMG-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

2.7 FIRE HYDRANTS

A. Dry-Barrel Fire Hydrants:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. McWane, Inc.; Kennedy Valve Div.

2. Description: Freestanding, with one NPS 4-1/2 and two NPS 2-1/2 outlets, 5-1/4-inch main valve, drain valve, and NPS 6 mechanical-joint inlet. Hydrant shall have cast-iron body, compression-type valve opening against pressure and closing with pressure.
 - a. Standards: UL 246, FMG approved.
 - b. Pressure Rating: 150 psig minimum.
 - c. Outlet Threads: NFPA 1963, with external hose thread used by local fire department. Include cast-iron caps with steel chains.
 - d. Operating and Cap Nuts: Pentagon, 1-1/2 inches point to flat.
 - e. Direction of Opening: Open hydrant valve by turning operating nut to left or counterclockwise.
 - f. Exterior Finish: Red alkyd-gloss enamel paint, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Refer to Division 2 Section "Earthwork" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
- C. Do not use flanges or unions for underground piping.
- D. Flanges, unions, grooved-end-pipe couplings, and special fittings may be used, instead of joints indicated, on aboveground piping.
- E. Underground water-service piping NPS 3/4 to NPS 3 shall be the following:
 1. Soft copper tube, ASTM B 88, Type K (ASTM B 88M, Type A); copper, pressure-seal fittings; and pressure-sealed joints.
- F. Underground Combined Water-Service and Fire-Service-Main Piping NPS 6 to NPS 12 shall be the following:
 1. PVC, AWWA Class 150 pipe listed for fire-protection service; PVC fabricated or molded fittings of same class as pipe; and gasketed joints.

3.3 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, resilient-seated gate valves with valve box.
 - 2. Use the following for valves aboveground:
 - a. Gate Valves, NPS 2 and Smaller: Bronze, nonrising stem.
 - b. Gate Valves, NPS 3 and Larger: AWWA, cast iron, Non-rising stem, resilient seated.

3.4 PIPING INSTALLATION

- A. Make connections larger than NPS 2 with tapping machine according to the following:
 - 1. Install tapping sleeve and tapping valve according to MSS SP-60.
 - 2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
 - 3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
 - 4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.
- B. Comply with NFPA 24 for fire-service-main piping materials and installation.
 - 1. Install copper tube and fittings according to CDA's "Copper Tube Handbook."
- C. Install PVC, AWWA pipe according to ASTM F 645 and AWWA M23.
- D. Bury piping with depth of cover over top at least 42 inches, with top at least 12 inches below level of maximum frost penetration. In Loose Gravelly Soil and Rock: With at least 12 inches additional cover.
- E. Extend water-service piping and connect to water-supply source and building-water-piping systems at outside face of building wall in locations and pipe sizes indicated.
- F. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

3.5 JOINT CONSTRUCTION

- A. Make pipe joints according to the following:
1. Copper-Tubing, Pressure-Sealed Joints: Use proprietary crimping tool and procedure recommended by copper, pressure-seal-fitting manufacturer.
 2. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
 3. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 2 Section "Piped Utilities - Basic Materials and Methods" for joining piping of dissimilar metals.

3.6 ANCHORAGE INSTALLATION

- A. Anchorage, General: Install water-distribution piping with restrained joints. Anchorages and restrained-joint types that may be used include the following:
1. Concrete thrust blocks.
 2. Locking mechanical joints.
 3. Bolted flanged joints.
 4. Pipe clamps and tie rods.
- B. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
1. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
 2. Fire-Service-Main Piping: According to NFPA 24.
- C. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.7 VALVE INSTALLATION

- A. UL/FMG, Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.

3.8 FIRE HYDRANT INSTALLATION

- A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.
- B. UL/FMG Fire Hydrants: Comply with NFPA 24.

3.9 CONNECTIONS

- A. Connect water-distribution piping to existing water main.
- B. Connect water-distribution piping to exterior domestic water and fire-suppression piping outside the building.

3.10 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.
 - 1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- C. Prepare reports of testing activities.

3.11 IDENTIFICATION

- A. Install continuous underground detectable warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, 24” directly above pipe crown. Underground detectable warning tape is specified in Division 2 Section "Earthwork."
- B. Permanently attach equipment nameplate or marker indicating plastic water-service piping, on main electrical meter panel.

3.12 CLEANING

- A. Clean and disinfect water-distribution piping as follows:
 - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
 - 2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
- B. Prepare reports of purging and disinfecting activities.

END OF SECTION 02510

SECTION 02920 - LAWNS AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

- 1. Seeding.
- 2. Fertilizers and mulches.
- 3. Topsoil and soil amendments.

- B. Related Sections

- 1. Division 2 Section "Site Clearing" for topsoil stripping and stockpiling.
- 2. Division 2 Section "Earthwork" for excavation, filling and backfilling, and rough grading.

1.3 DEFINITIONS

- A. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- B. Subsoil: All soil beneath the topsoil of the soil profile, and typified by the lack of organic matter and soil organisms.
- C. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.
- D. Finish Grade: Elevation of the finished surface of the planting soil in which seed or sod is to be placed.
- E. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
- C. Qualification Data: For qualified landscape installer.
- D. Material Test Reports: For existing surface soil and imported topsoil.
- E. Planting Schedule: Indicating anticipated planting dates for each type of planting.
- F. Maintenance Instructions: Recommended procedures to be established by Authority for maintenance of lawns during a calendar year. Submit before expiration of required maintenance periods.

1.5 QUALITY ASSURANCE

- A. Maryland Turf Grass Law and Regulations published by the Maryland Department of Agriculture (“MDA”), as amended to date.
- B. Recommended Turfgrass Cultivars for Certified Sod and Professional Seed Mixtures (TT-77) published by the University of Maryland, as amended to date.
- C. 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control (“E&SC”) published by the Maryland Department of the Environment (“MDE”) in association with the Soil Conservation Service and State Soil Conservation Committee, as amended to date.
- D. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful lawn establishment.
 - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
 - 2. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
- E. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- F. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in container showing weight, analysis, and name of manufacture. Protect materials from deterioration during delivery and while stored at site.

1.7 SCHEDULING

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 1. Spring Planting: March 1 – May 15.
 2. Fall Planting: August 15 – November 15.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.
- C. Begin maintenance immediately after each area is planted and continue until lawn is established but not for less than 60 days from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
 1. Sun and Partial Shade: Proportioned by weight as follows:
 - a. 85 percent Dwarf Type Tall Fescues, comprised of equal parts of at least two of the following: Rebel III-D, Crossfire, Shenandoah, or other approved equal seed types.
 - b. 5 percent Turf Type Perennial Rye Grass.
 - c. 10 percent Kentucky Bluegrass.

2.2 TOPSOIL

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1/2 inch or larger in any dimension, noxious seeds, sticks, brush, litter, and other extraneous materials harmful to plant growth.
1. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from bogs or marshes.
 2. Composition: All topsoil shall be sandy loam, or loamy sand soil as classified by the Soil Conservation Service USDA, Soil Classification System.
 3. Soil pH (non Buffered) shall be in the range of 5.5 to 7.0.
 4. Mechanical Analysis, shall fall within the following particle ranges, and percentages by volume, and contractor shall perform soil tests with the following particle size analysis:
 - a. Gravel, +2mm size, 15% max.
 - b. Coarse to Medium Sand, 0.25-2mm size, 50% max.
 - c. Fine Sand, 0.05-0.25mm size, 20% max.
 - d. Silt/Clay, 0.002-0.05mm size, 20% max.
 - e. Clay, minus 0.002mm, size 20% max.
 5. Silt and Clay combined shall not exceed 30% of the total volume. The minimum water permeability rate shall be 1.25 inches per hour. The minimum percent total pore space shall be 25% with a minimum aeration pore space of 12%. The minimum bulk density shall be 1.70 grams per cubic centimeter. The minimum moisture retention shall be 9%.
 6. Minerals and salts shall be as follows:
 - a. Magnesium (Mg) 100+ units
 - b. Phosphorus (P₂O₅) 150+ units
 - c. Potassium (K₂O) 120+ units
 - d. Soluble salts/conductivity, shall not exceed 900 ppm/0.9mmhos/cm (in soil) and 3000 ppm/2.5mmhos/cm (in high organic mix).

2.3 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
1. Provide lime in form of dolomitic limestone with a minimum 95 percent passing through No. 8 sieve and a minimum 55 percent passing through No. 60 sieve.
- B. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.
- C. Sand: Clean, washed, natural or manufactured, free of toxic materials.

2.4 ORGANIC SOIL AMENDMENTS

- A. Polymer dewatered biosolid compost, sold as “Or-Grow”, “ComposT”, or approved equal.
- B. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.
- C. Peat: Finely divided or of granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.
- D. Use soil amendments as required to increase organic content of topsoil.

2.5 PLANTING ACCESSORIES

- A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.6 FERTILIZER

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.

2.7 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt straw. The use of hay is not permitted.
- B. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic; free of plant-growth or germination inhibitors; with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- C. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 LAWN PREPARATION

- A. Limit lawn subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Authority's property.
 - 1. Apply superphosphate fertilizer directly to subgrade before loosening.
 - 2. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 - 3. Spread planting soil mix to a depth of 4 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil mix.

- C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.
- D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- E. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 1. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 5 to 8 lb/1000 sq. ft.
- C. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.
 - 1. Anchor straw mulch by chemical mulch binder, twine or netting. Asphalt emulsion shall not be used.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
 - 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.6 LAWN RENOVATION

- A. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 - 1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.
 - 2. Provide new topsoil as required.
- B. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.
- C. Remove topsoil containing foreign materials such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new topsoil.
- D. Mow, dethatch, core aerate, and rake existing lawn.
- E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off the Authority's property.
- G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
- H. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
- I. Apply seed and protect with straw mulch as required for new lawns.
- J. Water newly planted areas and keep moist until new lawn is established.

3.7 LAWN MAINTENANCE

- A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established. Turnover of turf areas to the Authority will be accepted after a minimum of three mowings, all punch list items have been performed as directed by the Engineer, and the turf is acceptable to the Authority.
- B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
 - 1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

- C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water lawn at a minimum rate of 1 inch per week.
- D. Mow lawn as soon as top growth is 3” tall and cut to 2” height. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.
- E. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
 - 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to lawn area.

3.8 SATISFACTORY LAWNS

- A. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
- B. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.9 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.
- C. Remove erosion-control measures after grass establishment period.

END OF SECTION 02920

SECTION 03301 - CAST-IN-PLACE CONCRETE (LIMITED APPLICATIONS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes, for noncritical applications of concrete and for projects using small quantities of concrete.
- B. Related Sections include the following:
 - 1. Division 2 Section "Earthwork" for drainage fill under slabs-on-grade.

1.3 SUBMITTALS

- A. General: In addition to the following, comply with submittal requirements in ACI 301.
- B. Product Data: For each type of product indicated.
- C. Design Mixtures: For each concrete mixture.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Source Limitations: Obtain each type of cement of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
 - 1. Comply with ACI 301, "Specification for Structural Concrete".
- C. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORMWORK

- A. Furnish formwork and formwork accessories according to ACI 301.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Wire: ASTM A 82, as drawn.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I/II.
 - 2. Blended Hydraulic Cement: ASTM C 595, Type IS, portland blast-furnace slag or IP, portland-pozzolan cement.
- B. Normal-Weight Aggregate: ASTM C 33, graded, 1-1/2-inch nominal maximum aggregate size.
- C. Water: ASTM C 94/C 94M; potable.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 RELATED MATERIALS

- A. Vapor Retarder: Multi-ply reinforced polyethylene sheet, ASTM E 1745, Class C, or polyethylene sheet, ASTM D 4397, not less than 10 mils thick.
- B. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2.7 CONCRETE MIXTURES

- A. Comply with ACI 301 requirements for concrete mixtures.
- B. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301, as follows:
 1. Minimum Compressive Strength: 3500 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Slump Limit: 4 inches, plus or minus 1 inch.
 4. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of floor slabs to receive troweled finishes to exceed 3 percent.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
 1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

3.2 VAPOR RETARDERS

- A. Install, protect, and repair vapor retarders according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.
 - 1. Lap joints 6 inches and seal with manufacturer's recommended adhesive or joint tape.

3.3 STEEL REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Locate and install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:
 - 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces and other locations, as indicated.
 - 1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3.5 CONCRETE PLACEMENT

- A. Comply with ACI 301 for measuring, batching, mixing, transporting, and placing concrete.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- C. Do not add water to concrete during delivery, at Project site, or during placement.
- D. Consolidate concrete with mechanical vibrating equipment.

3.6 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
 - 1. Do not further disturb surfaces before starting finishing operations.
- C. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.7 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Tests: Perform according to ACI 301.
 1. Testing Frequency: One composite sample shall be obtained for each day's pour of each concrete mix exceeding 5 cu. yd. but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

3.9 REPAIRS

- A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION 03301