STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND TRANSIT ADMINISTRATION

Contract Specification Book

WALDORF PARK AND RIDE FACILITY

CONTRACT NO. T-1038-0140

DATE: October 23, 2012

WALDORF PARK AND RIDE FACILITY
CONTRACT NO. T-1038-0140
CONTRACT SPECIFICATIONS BOOK

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MARYLAND TRANSIT ADMINISTRATION

VENDOR COMMENTS

To help us improve the quality of State solicitations, and make our procurement process more responsive and business-friendly, we ask that you take a few minutes to complete this form. Thank you for your assistance.

Bid/Proposal No.: T-1038-0140

Contract Title: Waldorf Park and Ride Facility

I. If you are not bidding, please indicate why:

____ Other commitments preclude our participation at this time.
____ The subject of the contract is not in our business line.
____ We lack experience in the work/commodities required.
____ The scope of work is beyond our current capacity.
____ We cannot be competitive. (Please explain below.)
____ The specifications are either unclear or too restrictive. (Please explain below.)
____ Bid/proposal requirements, other than specifications, are unreasonable or too risky. (Please explain below.)
____ Time for completion is insufficient.
____ Bonding/insurance requirements are prohibitive. (Please explain below.)
____ Doing business with government is simply too complicated.
____ Prior experience with State of Maryland contracts was unprofitable or otherwise unsatisfactory. (Please explain below.)
____ Other: _____

II. Please explain your response further, offer suggestions, or express concerns. (use the back for additional information.

Remarks: _____

OPTIONAL:

Vendor Name: _____ Date: _____
Contact: _____ Phone: _____
Address or e-mail: _____

THANK YOU !!!!!!!

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION
NOTICE TO CONTRACTORS

WALDORF PARK AND RIDE FACILITY

CONTRACT NO.: T-1038-0140 **DATE:** **October 23, 2012**

1. DESCRIPTION OF WORK

A. This Contract is for the construction of a park and ride in Waldorf, Maryland. The work involves construction of a new 551 space park and ride; widening and resurfacing of MD 925 (Old Washington Road); pervious concrete pavement; concrete pavement; hot mix asphalt pavement; concrete curb and sidewalk; lighting; signing; and a new traffic signal at the intersection of MD 925 and Smallwood Drive.

B. Estimated value for this work is in the range of $5,000,000 to $10,000,000

2. PRE-BID MEETING & SITE VISIT

A Pre-Bid meeting for the purpose of explaining the Project will be held on November 9, 2012 at 10:30 a.m., local time at the Administration Headquarters, 6 St. Paul Street, 7th Floor Conference Room(s) 731-732, Baltimore, Maryland 21202-1614.

The site is accessible to the public and bidders can visit on their own.

It is strongly suggested that the person(s) responsible for the preparation of bid documents for bidders attend the Pre-Bid Meeting and the site visit. INSTRUCTIONS CRITICAL TO THE PREPARATION OF THE CONTRACT DOCUMENTS WILL BE PRESENTED AT THE PRE-BID MEETING.

3. DEADLINE FOR QUESTIONS

Questions regarding the work should be directed in writing to Ms. Vanessa Ashe at the Administration Offices or via Internet address vashe@mta.maryland.gov. Facsimile messages will not be accepted unless accompanied by telephone notification at (410) 767-3353. Our fax number is (410) 333-4810. Questions directed to this office must be received no later than November 28, 2012 at the close of the business day. Questions should be submitted on company letterhead. No interpretations other than written shall be binding on the Administration.

4. BID DUE DATE & TIME

Sealed Bids addressed to the Maryland Transit Administration, Procurement Division, 6 St. Paul Street, Baltimore, Maryland 21202-1614, and marked "Bid

for Contract No. T-1038-0140 – Waldorf Park and Ride Facility ", will be received at the above address until but not after 2:00 P.M. local time, December 14, 2012. At that time, the Bids will be publicly opened and read aloud at a location at the same address. Hand delivered bids should be deposited in the Bid Box located on the 7th Floor before the 2:00 P.M. deadline. Any bids received after the date and time specified shall not be considered.

5. ELECTRONIC VERSION OF BID DOCUMENTS

The bid documents will be available by electronic means. The Bidder acknowledges and accepts full responsibility to ensure that the Bidder has made no changes to the Administration's bid documents. In the event of a conflict between the versions of the bid documents in the bidder's possession and the version maintained by the Procurement Officer, the version maintained by the Procurement Officer shall govern.

6. AVAILABILITY OF DOCUMENTS

Specifications may be downloaded from the MTA web site located at www.mta.maryland.gov. Bidders will be required to register the first time specifications are downloaded and a login number will be assigned. This number should be used every time the bidder downloads the documents for this contract. Bidders must supply accurate information in order to receive notice of all subsequent addenda.

TO OBTAIN THE SPECIFICATIONS: Please visit MTA's website (www.mta.maryland.gov) , follow the links for "Business" – "Procurement" - "Bids/Solicitations", and download the Specifications for this procurement.

TO OBTAIN THE DRAWINGS: e-mail Ms. Vanessa Ashe at vashe@mta.maryland.gov requesting the contract drawings and supplying the following information: the contact person, company name, mailing address, phone # and e-mail address. The drawings (CD) will be mailed to you at no cost. You also have the option of picking up the CD containing the drawings at: 6 Saint Paul Street, 7th floor, Baltimore, MD 21202.

7. ADDENDA

Bidders are required to acknowledge all addenda with their bid package. Although the MTA endeavors to send out all addenda to this solicitation in a timely manner, it is the responsibility of the contractors to make sure they received all appropriate documents prior to the bid due date.

8. EMARYLAND MARKETPLACE REGULATIONS

Use of "e-Maryland Marketplace"

"e-Maryland Marketplace" is an electronic commerce system administered by the

Maryland Department of General Services.

Registration is free and will provide a means for your business to receive e-mail notifications of upcoming contracting opportunities in specified areas of interest and expertise. This means that all such information is immediately available to subscribers to e-Maryland Marketplace. Because of the instant access afforded by e-Maryland Marketplace, it is recommended that all Bidders interested in doing business with Maryland State agencies subscribe to e-Maryland Marketplace. For more eMM registration information, visit the website: http://ebidmarketplace.com.

9. BID BOND

Each bid exceeding $100,000 must be accompanied by a Bid Bond in the amount of five percent (5%) of the Bid Price. Bid, payment, and performance security may be in the form of: (1) a bond executed by a surety company authorized to do business in the State; (2) a bond executed by an individual surety that meets certain criteria; (3) another form of security required by State or federal law; or (4) another form of security satisfactory to the unit awarding the contract. Sections 13-207, 13-216, 17-104 of the State Finance and Procurement Article, Annotated Code of Maryland.

10. PAYMENT AND PERFORMANCE BONDS

Payment and Performance Bonds in the amount of the Contract Price will be required by the awardee. Upon receiving notification of contract award, the Contractor shall deliver the bond to the MTA no later than the time the Contractor executes the contract**.** Bid, payment, and performance security may be in the form of: (1) a bond executed by a surety company authorized to do business in the State; (2) a bond executed by an individual surety that meets certain criteria; (3) another form of security required by State or federal law; or (4) another form of security satisfactory to the unit awarding the contract. Sections 13-207, 13-216, 17-104 of the State Finance and Procurement Article, Annotated Code of Maryland.

11. ELECTRONIC FUNDS TRANSFER

On every solicitation for a contract expected to exceed $200,000, the bidder will be required to accept payments by electronic funds transfer (EFT) unless the State Comptroller's Office grants an exemption.

12. DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

A. DISADVANTAGED BUSINESS ENTERPRISES ARE ENCOURAGED TO RESPOND TO THIS SOLICITATION NOTICE.

B. The Maryland Transit Administration hereby notifies all bidders that, in regard to any Contract entered into pursuant to this advertisement, Disadvantaged Business Enterprises will be afforded full opportunity to

submit Bids in response to this Notice, and will not be subjected to discrimination on the basis of political or religious opinion or affiliation, race color, creed, sex, age or national origin in consideration for an award.

C. It is the goal of the Administration that Disadvantaged Business Enterprises participate in all Contracts. Each Contract will contain goals for Disadvantaged Business Enterprise participation on a contract-to-contract basis. A subcontracting goal of thirty percent (30%) has been established for this procurement**.** All bidders must submit with their bid a fully executed copy of the Certified DBE Utilization and Fair Solicitation Affidavit (MDOT DBE FORM A) and DBE Participation Schedule (MDOT DBE FORM B). If the bidder fails to submit these completed forms with the bid 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. ALL DBE FIRMS MUST BE CERTIFIED BY THE MARYLAND DEPARTMENT OF TRANSPORTATION. NO OTHER CERTIFICATIONS WILL BE ACCEPTED.

D. **A contractor may count toward its DBE goal 60 percent of its expenditures for materials and supplies required under the contract and obtained from a DBE regular dealer, and 100 percent of such expenditures to a DBE manufacturer. The DBE credited supplies may not exceed 60 percent of the entire contract goal**.

E. New versions of Sections 13-103, 13-104 and 14-303 of the State Finance and Procurement Article of the Maryland Code, relating to increased bid/proposal documentation of DBE commitments, are effective as of October 1, 2004. The Contract under this solicitation will be awarded in accordance with these new requirements. As a result, new bid submission requirements, including certain revised DBE documents, are in effect for this solicitation. These new requirements are set forth elsewhere in this solicitation.

F. As a result of the revisions to Sections 13-103, 13-104 and 14-303, certain existing portions of the Code of Maryland Regulations (COMAR) relating to post bid/proposal submission of DBE subcontractors are inconsistent with the revised statute. To the extent the provisions of COMAR relating to post bid identification of DBE subcontractors are inconsistent with the requirements of this solicitation, the requirements of this solicitation shall control the award of a Contract. Questions or concerns regarding the DBE requirements of this solicitation must be raised prior to the opening of bids or receipt of initial proposals

G. Effective on October 1, 2009, Minority Business Enterprise (MBE) firms may elect to be dually certification as woman-owned businesses and as members of an ethnic or racial category. For purposes of achieving any gender or ethnic/racial MBE participation subgoals in a particular contract, an MBE firm that has dual certification may participate in the contract either

as a woman-owned business or as a business owned by a member of a racial or ethnic minority group, **but not both**.

WARNING – PLEASE READ:

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

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

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

13. AFFIRMATIVE ACTION REQUIREMENTS

Bidders on this Work will be required to comply with MTA Affirmative Action Requirements and all applicable Equal Employment Opportunity Laws and Regulations.

14. FEDERAL FUNDING

Any contract resulting from bids submitted is subject to a Financial Assistance Contract between the Administration and the U.S. Department of Transportation. Federal funds will be used to finance 80% of the cost of this contract.

15. SUSPENSION AND DEBARMENT CERTIFICATION

All bidders will be required to certify that they are not on the GSA List of Parties Excluded from Procurement and the List of Contractors Suspended or Debarred from Contracting with the State of Maryland. All bidders must also be in good standing with the State Assessment & Taxation Department.

16. CONTRACTOR'S QUESTIONNAIRE

All Bidders shall submit a fully executed copy the Contractor's Questionnaire Pre-Award Evaluation Data Form with the bid package.

17. INSURANCE REQUIREMENTS

The Administration has chosen to provide Workers' Compensation, General Liability, Excess Liability, Builders Risk, Pollution Liability and Railroad Protective coverage on behalf of Contractors and subcontractors working on this project. This approach to project insurance is commonly called a wrap-up or owner controlled insurance program (OCIP). Specific information regarding Liability Insurance Requirements is contained in the Contract Specifications.

Please note that an Insurance Cost Worksheet must be included with each bid package.

18. USE OF BIDDER'S OWN FORCES

The bidder with his own forces shall perform not less than fifty percent (50%) of the work at the project site.

19. BUY AMERICA REQUIREMENTS

This contract is subject to Section 165, "Buy America", of the Surface Transportation Assistant Act of 1982, U.S. Public Law 197-424, and regulations and/or guidance implementing this statutory provision issued by the Federal Transit Administration of the U.S. Department of Transportation. The contract is further subject to the Buy American Steel requirements of Chapter 02 of subtitle 11 of the Code of Maryland Regulations, Title 21, State Procurement Regulations.

20. CANCELLATION OR REJECTION OF BIDS

Notice to Contractors may be canceled in accordance with State Procurement Regulations.

The Administration reserves the right to reject any and all bids and/or waive technical defects if, in its judgment, the interests of the Administration so require.

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION
BID FORM
FOR
CONTRACT NO.: T-1038-0140

TO:	MARYLAND TRANSIT ADMINISTRATION	BID OPENING DATE:
ATTN:	PROCUREMENT DIVISION	**December 14, 2012**
	6 SAINT PAUL STREET, 7TH FLOOR	BID OPENING TIME:
	BALTIMORE, MD 21202-1614	**2:00 PM**

BID OF: _____
(Bidder's Name)

PROJECT DESCRIPTION:
This Contract is for the construction of a park and ride in Waldorf, Maryland. The work involves construction of: a new 551 space park and ride; widening and resurfacing of MD 925 (Old Washington Road); pervious concrete pavement; concrete pavement; hot mix asphalt pavement; concrete curb and sidewalk; lighting; signing; and a new traffic signal at the intersection of MD 925 and Smallwood Drive.

1. This bid is hereby submitted to the Maryland Transit Administration (hereinafter sometimes called the "Administration") in response to NOTICE TO CONTRACTORS dated _____ .

2. The UNDERSIGNED has thoroughly examined, acknowledges receipt of, and is familiar with the Contract Documents as well as the various instructions, information, and requirements covering the same, all as mentioned herein and in said NOTICE TO CONTRACTORS.

3. In compliance with said NOTICE TO CONTRACTORS the UNDERSIGNED hereby proposes to furnish all labor, equipment, and materials and perform all work described and in strict accordance with the provisions of the Contract Documents for the consideration of the amounts, lump sum and unit prices listed in the attached Unit Price Schedule, and agrees that, upon Notice of Award, within one hundred eighty (180) calendar days after the date of opening of bids, unless mutually extended, he will within ten (10) calendar days after receipt of the prescribed forms, execute the Contract and furnish a performance bond and payment bond (if such bonds are required by the Contract Documents) on forms furnished by the Administration with good and sufficient surety or sureties.

4. The UNDERSIGNED agrees and understands that the time of completion is as specified in the Special Provisions, unless the completion dates are extended as provided for in the Contract Documents.

5. The UNDERSIGNED agrees to pay liquidated damages in the amount specified in the Special Provisions for each and every calendar day after the completion date that the work remains incomplete unless an extension is granted as provided for in the Contract Documents.

6. The UNDERSIGNED hereby certifies that the _____ (Bidder's Name) / ___ / is, / ____ / is not (CHECK ONE) included on the GSA list of Parties Excluded from Procurement. **AND**

The UNDERSIGNED hereby certifies that the _____ (Bidder's Name) / ___ / is, / ____ / is not (CHECK ONE) included on the List of Contractors Suspended or Debarred from Contracting with the State of Maryland.

7. The UNDERSIGNED, as the Contractor, will perform on the Site, with its own organization, _____ percent (____ %) of the total amount of work to be performed under this contract.

8. PARENT COMPANY

a, The UNDERSIGNED represents that it / ___ / is, / ___ / is not, (CHECK ONE) owned or controlled by a parent company. For this purpose a parent company is defined as one which either owns or controls the activities and basic business policies of the UNDERSIGNED. To own another company means the parent company must own at least a majority (more than 50 percent) of the voting rights in that company. To control another company such ownership is not required; if another company is able to formulate, determine or veto basic business policy decisions of the bidder, such other company is considered the parent of the bidder. This control may be exercised through the use of dominant minority voting rights, use of proxy voting, contractual arrangements, or otherwise.

b. If UNDERSIGNED is owned or controlled by a parent company, insert in the space below the name and main office address of the parent company

_____

Name

_____

_____

Address

9. ARREARAGES

By submitting a response to this solicitation, the undersigned shall be deemed to represent that it is not in arrears in the payment of any obligations due and owing the State of Maryland, including the payment of taxes and employee benefits, and that it shall not become so arrears during the term of the contract if selected for contract award.

10. CERTIFICATION OF NON-MARYLAND CORPORATION (FOREIGN CORPORATION)

a. A corporation not incorporated in the State of Maryland is considered to be a foreign corporation and, therefore, is required to be registered with the Maryland State Department of Assessment and Taxation if awarded this contract.

b. Where a foreign corporation is currently registered with the Department of Assessments and Taxation, such a bidder shall submit with his bid a copy of the department's certification of his registration or qualification acknowledgment.

c. If a foreign corporation is not currently registered, such a bidder shall submit with his bid his certification that, if notified of his apparent award of the contract, he will register with the Maryland State Department of Assessments and Taxation and provide a copy of the department's certification of his registration or qualification acknowledgment along with the executed contract.

11. The Contractor shall, prior to the time of execution of the contract, obtain all applicable licenses and comply with all applicable laws and regulations in the Annotated Code of Maryland.

12. All bidders must submit with their bid the following documents fully executed.

a. Bid Bond in the Amount of $ _____
Or 5% of the bid price (if applicable).

or

Individual Surety Bid Bond in the Amount of
$_____ Or 5% of the bid price (if applicable) and a executed Affidavit of Individual Surety (Attachment A) & Surety Affidavit (Attachment B).

b. Contractor's Questionnaire Pre-Award Evaluation Data

c. Bid/Proposal Affidavit.

d. Buy America Certificate.

e. Certification Regarding Lobbying.

f. MDOT DBE Form A, "Certified DBE Utilization and Fair Solicitation Affidavit".

g. MDOT DBE Form B, "DBE Participation Schedule".

h. Signed copy of the Cover Letter for each Addendum issued by MTA.

i. Completed Insurance Cost Worksheet

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
001	01130	Mobilization	1	LS	$380,000.00	$380,000.00
002	01210	Miscellaneous Work Allowance	ALL	ALL	$525,000.00	$525,000.00
003	01450	Quality Assurance and Quality Control	ALL	ALL	$160,000.00	$160,000.00
004	01522	Engineer's Field Office, Type 2	1	LS		
005	01550	Maintenance of Traffic	1	LS		
006	01550	Temporary Orange Construction Fence	809	LF		
007	02220	Saw Cutting	481	LF		
008	02220	Existing Gravel Removal	289	CY		
009	02220	Existing Concrete Sidewalk Removal	35	CY		
010	02220	Existing Concrete Curb and Comb. C & G Removal	240	LF		
011	02230	Site Clearing	1	LS		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
012	02240	Test Pit Excavation	24	CY		
013	02315	Class 1 Excavation	11,500	CY		
014	02315	Class 1-A Excavation	1,000	CY		
015	02315	Borrow Excavation	2,800	CY		
016	02315	Geosynthetic Stabilized Subgrade Using Graded Aggregate Base	1,000	CY		
017	02370	Class I Riprap	128	SY		
018	02370	Stabilized Construction Entrance	180	TON		
019	02370	Rehabilitate Stabilized Construction Entrance	270	TON		
020	02370	Temporary Stone Outlet Structure	2	EA		
021	02370	Super Silt Fence	1379	LF		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
022	02370	Silt Fence	108	LF		
023	02370	Erosion and Sediment Control Cleanout Excavation	20	CY		
024	02370	Dewatering Basin	6	EA		
025	02370	Filter Bag	10	EA		
026	02370	Riprap for Sediment Control	12	TON		
027	02370	Filter Log, 18 Inch	968	LF		
028	02370	Temporary Mulching	15000	SY		
029	02370	Temporary Seeding	1500	LB		
030	02370	Curb Inlet Protection	4	EA		
031	02372	Type A Soil Stabilization Matting	607	SY		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
032	02460	Steel Bollards	14	EA.		
033	02584	2 Inch Schedule 40 Rigid PVC Conduit-Trenched	6,500	LF		
034	02584	4 Inch Schedule 40 Rigid PVC Conduit-Trenched	900	LF		
035	02584	Electrical Hand Box	23	EA		
036	02630	Modified Shallow COG Inlet, 5 Foot Opening	5	EA		
037	02630	COG/COS Inlet for 8 Inch Curb, 5 Foot Opening	2	EA		
038	02630	COG/COS Inlet for 8 Inch Curb, 10 Foot Opening	2	EA		
039	02630	Precast Shallow COS Inlet, 10 Foot Opening	1	EA		
040	02630	Precast Manhole, 60 Inch Diameter	4	EA		
041	02630	Concrete End-Section for HERCP, 14x23 Inches	4	EA		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
042	02630	Concrete End-Section for HERCP, 19x30 Inches	1	EA		
043	02630	Metal End Section, 15 Inches	1	EA		
044	02630	Type C Endwall for HERCP, 19x30 Inches	1	EA		
045	02630	Modified Junction Box	1	EA		
046	02630	Horizontal Elliptical Concrete Pipe, 14x23 Inches	247	LF		
047	02630	Horizontal Elliptical Concrete Pipe, 19x30 Inches	358	LF		
048	02630	Ductile Iron Pipe, 6 Inches	120	LF		
049	02630	Corrugated Metal Pipe, 15 Inches	12	LF		
050	02630	15 Inch Corrugated Metal Pipe Connection	1	EA		
051	02630	6 Inch CPP-SP Overdrain Pipe	1,273	LF		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
052	02660	Excavation for Stormwater Management Facilities	750	CY		
053	02660	Bioretention Soil Mixture for Stormwater Management Facilities	750	CY		
054	02680	6 Inch No. 57 Stone	36,000	SY		
055	02680	No. 2 Stone	29,000	TON		
056	02680	6 Inch Sand Subbase Layer	18,000	SY		
057	02680	Class PE, Type 3 Geotextile	1,165	SY		
058	02680	8 Inch Pervious Concrete Pavement	17,000	SY		
059	02720	3 inch Graded Aggregate Base Course	370	SY		
060	02720	4 inch Graded Aggregate Base Course	8,100	SY		
061	02720	6 inch Graded Aggregate Base Course	3,600	SY		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
062	02745	Hot Mix Asphalt Superpave 12.5mm for Surface, PG 64-22, Level 2	380	TON		
063	02745	Hot Mix Asphalt Superpave 19.0 mm for Base, PG 64-22, Level 2	500	TON		
064	02746	Grinding Hot Mix Asphalt Pavement	1,415	SY		
065	02750	8 Inch Reinforced Portland Cement Concrete Pavement Mix #7	3,100	SY		
066	02765	5 Inch White Pavement Marking Paint Lines	27,440	LF		
067	02765	5 Inch Yellow Pavement Marking Paint Lines	4,850	LF		
068	02765	12 Inch White Preformed Thermoplastic Pavement Marking Line	335	LF		
069	02765	12 Inch White Pavement Marking Paint Lines	1,180	LF		
070	02765	Pavement Marking Legends and Symbols	186	SF		
071	02765	24 Inch White Preformed Thermoplastic Pavement Marking Line	145	LF		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
072	02765	24 Inch White Pavement Marking Paint Lines	510	LF		
073	02770	Type D Concrete Curb, 8" x 14"	1,253	LF		
074	02770	Type A Concrete Curb & Gutter, 12" Gutter Pan, 8" Depth	3,815	LF		
075	02775	5 Inch Concrete Sidewalk	14,700	SF		
076	02775	Detectable Warning Surface for Curb Ramps	225	SF		
077	02830	Wood Fencing	727	LF		
078	02871	Bike Rack	1	EA		
079	02890	Sheet Aluminum Signs	255	SF		
080	02890	Square Perforated Tubular Steel Sign Posts	19	EA		
081	02890	Square Tubular Steel Anchor Bases	19	EA		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
082	02890	Remove Existing Ground Mounted Signs and Supports	24	SF		
083	02891	Bus Shelter	4	EA		
084	02895	Removal of Existing Pavement Line Markings, Any Width	255	LF		
085	02895	Remove & Dispose Mat & Equip Per Assign	1	EA		
086	02895	Concrete for Signal Foundation	11	CY		
087	02895	Wood Sign Supports up to 4"x4"	60	LF		
088	02895	Wood Sign Supports up to 4"x6"	17	LF		
089	02895	3 Inch Schedule 80 Rigid PVC Conduit-Bored	65	LF		
090	02895	4 Inch Schedule 80 Rigid PVC Conduit-Bored	380	LF		
091	02895	2 Inch Schedule 80 Rigid PVC Conduit-Trenched	100	LF		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
092	02895	3 Inch Schedule 80 Rigid PVC Conduit-Trenched	635	LF		
093	02895	4 Inch Schedule 80 Rigid PVC Conduit-Trenched	110	LF		
094	02895	1 Inch Liquid Tight Flexible Non-Metallic Conduit for Detector Sleeve	5	LF		
095	02895	Embedded Metered Service Pedestal	1	EA		
096	02895	Electrical Cable 1-Conductor No. 8 AWG-THHN/THWN	65	LF		
097	02895	Microloop Probe, 1000 Foot Lead in Cable	1	EA		
098	02895	Noninvasive Detector, 1000 Foot Lead in Cable	5	EA		
099	02895	Furnish and Install Electrical Handhole	16	EA		
100	02895	10 Foot Breakaway Pedestal Pole	2	EA		
101	02895	14 Foot Breakaway Pedestal Pole	2	EA		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
102	02895	Steel Pole With a Single 38 Foot Mast Arm	1	EA		
103	02895	Steel Pole With Twin 50 Foot And 60 Foot Mast Arms	1	EA		
104	02895	250 Watt High Pressure Sodium Lamp And Luminaire	2	EA		
105	02895	Bare Copper Ground Wire, No 6 AWG	455	LF		
106	02895	Ground Rod - 3/4 Inch Diameter X 10 Foot Length	8	EA		
107	02895	8 Inch Vehicular Traffic Signal Head Section	12	EA		
108	02895	12 Inch LED Vehicular Traffic Signal Head Section	40	EA		
109	02895	Cut, Clean, Galvanize and Cap Traffic Signal Structure	2	EA		
110	02895	Electrical Cable - 2 Conductor (No. 14 AWG)	670	LF		
111	02895	Electrical Cable - 5 Conductor (No. 14 AWG)	770	LF		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
112	02895	Electrical Cable - 7 Conductor (No. 14 AWG)	1,670	LF		
113	02895	Electrical Cable - 2 Conductor (No. 12 AWG)	325	LF		
114	02895	Saw Cut for Signal (Loop Detector)	45	LF		
115	02895	Audible/Tactile Pedestrian Pushbutton Station & Sign	4	EA		
116	02895	15 Foot Lighting Arm on Signal Structure	2	EA		
117	02895	Controller and Cabinet - Base Mount (Four Channel, Time Delay-Output, Loop Detector Amplifier, Eight-Phase, Full-Traffic-Actuated Controller with Intersection Monitor Housed in a Nema Size "S" Base Mount Cabinet and Video Interface Equipment 1-8 Cameras)	1	EA		
118	02895	2 Wire Central Control Unit	1	EA		
119	02895	LED 16 Inch Countdown Pedestrian Signal Heads	4	EA		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
120	02895	Video Detection Camera and Cable Any Length	4	EA		
121	02920	Furnishing and Placing 4" Topsoil	11,500	SY		
122	02920	Sodding	1,000	SY		
123	02920	Mowing	10	EA		
124	02920	Additional Watering of Sodded Areas	50	MG		
125	02920	Bioretention Seeding	748	SY		
126	02920	Turfgrass Seeding	10,500	SY		
127	02930	Gleditisia triacanthos 'Shademaster', 2" Cal., B&B	4	EA		
128	02930	Quercus palustris, 2" Cal., B&B	4	EA		
129	02930	Acer rubrum 'October Glory', 2" Cal., B&B	2	EA		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
130	02930	Betula nigra, 2" Cal., B&B	2	EA		
131	02930	Nyssa sylvatica, 2" Cal., B&B	1	EA		
132	02930	Liriodendron tulipifera, 1" Cal., Cont.	2	EA		
133	02930	Quercus palustris, 1" Cal., Cont.	2	EA		
134	02930	Quercus phellos, 1" Cal., Cont.	2	EA		
135	02930	Ilex opaca, 4' Height, Cont.	3	EA		
136	02930	Ilex opaca, 6' Height, B&B	18	EA		
137	02930	Thuja 'Green Giant', 4' Height, Cont.	3	EA		
138	02930	Thuja 'Green Giant', 6' Height, B&B	18	EA		
139	02930	Cercis canadensis, 5' Height, B&B	28	EA		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
140	02930	Amelanchier arborea, 5' Height, B&B	25	EA		
141	02930	Chionanthus virginicus, 5' Height, B&B	20	EA		
142	02930	Prunus laurocerasus 'Otto Luyken', No. 5 Cont.	28	EA		
143	02930	Viburnum dentatum, No. 5 Cont.	15	EA		
144	02930	Aronia arbutifolia, No. 5 Cont.	28	EA		
145	02930	Itea virginica 'Little Henry', No. 3 Cont.	110	EA		
146	02930	Spiraea japonica 'Little Princess', No. 3 Cont.	90	EA		
147	02930	Ilex glabra, No. 3 Cont.	73	EA		
148	02930	Vaccinium angustifolium, No. 3 Cont.	76	EA		
149	02930	Coreopsis verticillata 'Moonbeam', No. 1 Cont.	140	EA		

Item	Section	Description	Estimate of Quantity	Unit	Unit Price	Total Price
150	02930	Rudbeckia fulgida 'Goldsturm', No. 1 Cont.	161	EA		
151	02930	Liriope muscari 'Big Blue', No. 1 Cont.	430	EA		
152	02930	Pennisetum alopecuroides 'Hameln', No. 1 Cont.	190	EA		
153	02930	Carex morrowii 'Ice Dance', No. 1 Cont.	146	EA		
154	02930	Lobelia cardinalis, No. 1 Cont.	368	EA		
155	02930	Chelone glabra, No. 1 Cont.	296	EA		
156	02930	Plant Beds	472	SY		
157	02930	Watering	100	MG		
158	03300	Cast in place concrete	10	CY		
159	03510	Modular Concrete Fencing	265	LF		

Basis of Award: Total amount of items 001 thru 159_____

(figures)

_____

(words)

160		Insurance Premium (Contingency)	LS	LS	LS	

This amount will only be added to the base bid in the event that the bidder is excluded from the wrap-up insurance program or the program is terminated mid-term. The Insurance Premium Worksheet must be attached to the bid.

A. CORPORATION BID: FEIN: _____

_____
Name of Corporation

_____
State in which Incorporated

_____
Business Address

_____
Telephone Number / Fax Number

ATTEST: By:

_____ _____
Secretary President or Vice President

_____ _____
Print Name Print Name

B. PARTNERSHIP BID: FEIN: _____

_____
Name of Partnership

_____
Business Address

_____
Telephone Number / Fax Number

Names of each Partner:

_____ _____

_____ _____

Witness: By:

_____ _____
Signature Signature

_____ _____
Print Name Print Name

C. INDIVIDUAL BID:

S.S. No.: _____

_____
Name

_____
Business Address

_____
Telephone Number / Fax Number

Witness:

By:

_____

_____
Signature

_____
Print Name

_____
Print Name

D. JOINT VENTURE

FEIN: _____

_____
Name of Corporation

_____
State in which Incorporated

_____
Business Address

_____
Telephone Number / Fax Number

ATTEST

By:

_____
Secretary

_____
President or Vice President

Print Name

_____
Print Names

FEIN: _____

_____
Name of Corporation

_____
State in which Incorporated

_____
Business Address

_____
Telephone Number / Fax Number

ATTEST:	By:
_____	_____
Secretary	President or Vice President
_____	_____
Print Name	Print Name
	FEIN: _____
	_____
	Name of Corporation
	_____
	State in which Incorporated
	_____
	Business Address
	_____
	Telephone Number / Fax Number
ATTEST:	By:
_____	_____
Secretary	President or Vice President
_____	_____
Print Name	Print Name

A Joint Venture doing business as _____

* Each member of the Joint Venture must execute the Bid Form. A Corporate Officer must sign for each member of the joint venture. In the event that a Corporate Officer (President or Vice President) does not sign the Bid Form, a Power of Execution or Power of Attorney, must be submitted with the Bid Forms.

BID BOND

Bond No. _____

We, _____ as Principal, hereinafter called the Principal, and _____, a corporation duly organized under the laws of the State of _____, as Surety, hereinafter called the Surety, are held and firmly bound unto the State of Maryland, hereinafter called "State", for the sum of _____ for the payment of which sum, the Principal and the Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for _____

_____ (Identify project by number and brief description):

NOW, THEREFORE, if the Principal, upon acceptance by the State of its bid identified above, within the period specified therein for acceptance (ninety (90) days, if no period is specified), shall execute such further contractual documents, if any, and give such bond(s) as may be required by the terms of the bid as accepted within the time specified (ten (10) days if no period is specified) after receipt of the forms, or in the event of failure so to execute such further contractual documents and give such bonds, if the Principal shall pay the State the difference not to exceed the penalty hereof between the amount specified in Principal's bid and such larger amount for which the State may in good faith contract with another party to perform the work covered by said bid, then the above obligation shall be void and of no effect.

The Surety executing this instrument hereby agrees that its obligation shall not be impaired by any extension(s) of the time for acceptance of the bid that the Principal may grant to the State, notice of which extension(s) to the Surety being hereby waived; provided that such waiver of notice shall apply only with respect

to extensions aggregating not more than ninety (90) calendar days in addition to the period originally allowed for acceptance of the bid.

In Presence of:
Witness

_____ as to

In Presence of:
Witness:

_____ as to

_____ as to

_____ as to

Attest:

_____
Secretary

Attest:

_____

Individual Principal

_____
(Name)
_____(SEAL)

Partnership Principal

_____
(Name)
_____ (SEAL)
(Partner)
_____ (SEAL)
(Partner)
_____ (SEAL)
(Partner)

Corporate Principal

_____
(Name of Corporation) AFFIX
By:_____
President SEAL

_____
(Surety) AFFIX

By:_____
Attorney-in-fact SEAL

Bonding Agent's Name _____
Agent's Address_____
Approved as to form and legal sufficiency
This _____ day of _____ , 20 __

Attachment A

AFFIDAVIT OF INDIVIDUAL SURETY

(See instructions on reverse) (Type or print all answers)

County: _____ State: _____

Social Security Number: _____

I, the undersigned, being duly sworn, depose and say that I am: (1) the surety to the attached bond(s); (2) a citizen of the United States; and of full age and legally competent. I also depose and say that, concerning any stocks or bonds included in the assets listed below, that there are no restrictions on the resale of these securities pursuant to the registration provisions of Section 5 of the Securities Act of 1933. I recognize that statements contained herein concern a matter within the jurisdiction of an agency of the State of Maryland and the making of a false, fictitious or fraudulent statement may render the maker subject to prosecution under the Criminal Law Article, §9-101, Annotated Code of Maryland and the State Finance and Procurement Article, §11-205.1, Annotated Code of Maryland. This affidavit is made to induce the State of Maryland to accept me as surety on the attached bond.

_____

Name *(First, Middle, Last)*

_____

Home Address *(Number, Street, City, State, Zip)*

_____

Type and Duration of Occupation

_____

Name of Employer *(if self-employed, so state)*

_____

Address of Employer

_____

Name and Address of Individual Surety Broker Used *(If any)*

_____

(*Number, Street, City, State, Zip)*

_____

Telephone Number *(Home)* *(Office)*

The following is a true representation of the assets I have pledged to the State of Maryland in support of the attached Bond:

(a) Real estate *(Include a legal description, street address and other identifying description; the market value: attach supporting certified documents including recorded lien; evidence of title and the current tax assessment of the property. For market value approach, also provide a current appraisal.)*

_____

_____

_____

(b) Assets other than real estate *(describe the assets, the details of the escrow account, and attach certified evidence thereof).*

_____

_____

_____

Identify all mortgages, liens, judgments or any other encumbrances involving subject assets including real estate taxes due and payable.

_____

_____

_____

Identify all bonds, including bid guarantees for which the subject assets have been pledged within 3 years prior to the date of execution of this Affidavit.

_____

_____

_____

SIGNATURE OF SURETY

_____

BOND AND CONTRACT TO WHICH THIS AFFIDAVIT RELATES *(Where appropriate):*

_____

Subscribed and sworn to before me, this _____ day of _____, 20__.

_____	_____
Signature	Printed/Typed Name
My commission expires:	NOTARY PUBLIC [Seal]
_____, 20__	

DOCUMENTATION OF THE PLEDGED ASSETS MUST BE ATTACHED

INSTRUCTIONS

Individual sureties on bonds executed in connection with State contracts must complete and submit this form with the bond. The surety must have the completed form notarized.

No corporation, partnership, or other unincorporated association or firm, as such, is acceptable as an individual surety. Likewise, members of a partnership are not acceptable as sureties on bonds that a partnership or an association, or any co-partner or member thereof, is the principal obligor. However, stockholders of corporate principals are acceptable provided their qualifications are independent of the stockholder's financial interest therein. An individual surety will not include any financial interest in assets connected with the principal on the bond that this affidavit supports.

United State citizenship is a requirement for individual sureties for contracts and bonds.

All signatures of the affidavit submitted must be originals. Affidavits bearing reproduced signatures are not acceptable. An authorized person must sign the bond. Any person signing in a representative capacity (e.g. an attorney-in-fact) must furnish evidence of authority if that representative is not a member of a firm, partnership, or joint venture, or an officer of the corporation involved.

Attachment B

SURETY AFFIDAVIT
Appendix

A. AUTHORIZED REPRESENTATIVE

I HEREBY AFFIRM THAT:

I am the surety to the attached bond(s) and that I possess the legal authority to make this Affidavit.

B. AFFIRMATION REGARDING BRIBERY CONVICTIONS

I FURTHER AFFIRM THAT:

I have not been convicted of, or had probation before judgment imposed pursuant to Criminal Procedure Article, §6-220, Annotated Code of Maryland, or have pleaded nolo contendere to a charge of, bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, except as follows (indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, and the sentence or disposition):

_____

_____

C. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

I have not:

(1) Been convicted under state or federal statute of:
(a) a criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract; or
(b) fraud, embezzlement, theft, forgery, falsification or destruction of records, or receiving stolen property;
(2) Been convicted of any criminal violation of a state or federal antitrust statute;
(3) Been convicted under the provisions of Title 18 of the United States Code for violation of the Racketeer Influenced and Corrupt Organization Act, 18 U.S.C. §1961, et seq., or the Mail Fraud Act, 18 U.S.C. §1341, et seq., for acts in connection with the submission of bids or proposals for a public or private contract;
(4) Been convicted of a violation of the State Minority Business Enterprise Law, §14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland;
(5) Been convicted of a violation of the §11-205.1 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(6) Been convicted of conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any law or statute described in subsection (1) through (5) above;
(7) Been found civilly liable under a state or federal antitrust statute for acts or omissions in connection with the submission of bids or proposals for a public or private contract; or
(8) Admitted in writing or under oath, during the course of an official investigation or other proceedings, acts or omissions that would constitute grounds for conviction or liability under any law or statute described in §B and subsections (1) through (7) above, except as follows (indicate reasons why the affirmations cannot be given, and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of the person(s) involved and their current positions and responsibilities with the business, and the status of any debarment):

_____

_____

D. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

I have not been suspended or debarred (including being issued a limited denial of participation) by any public entity, except as follows (list each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceedings, the grounds of the debarment or suspension, and the details of the activity that formed the grounds of the debarment or suspension):

_____

_____

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION
CONTRACTORS QUESTIONNAIRE
PRE-AWARD EVALUATION DATA

IMPORTANT

This questionnaire is intended as a basis of establishing the qualifications of contractors for undertaking Construction, Maintenance and Repair Work under the jurisdiction of the Maryland Transit Administration.

THIS QUESTIONNAIRE FORM IS A PART OF THE CONTRACTOR'S BID AND FAILURE TO SUBMIT IT MAY BE THE BASIS FOR REJECTION OF A BID.

I. General

(a) Legal Title and Address of Organization
_____
_____
_____

(b) Contractor's Local Representative's Name, Title and Address
_____
_____

(c) ___Corporation ___Partnership ___Individual (**Check One**)

(d) Date your Firm was organized or started:

(e) Federal I.D. No. _____

(f) If a Corporation, state:
Capital Paid in Cash: $_____
Date of Incorporation: _____
State in which Incorporated: _____

(g) Other than persons listed above, number of full-time office employees:
_____

(h) Number of full-time permanent field employees:_____

(i) Subsidiary of another company? Yes _____ No _____
1. Parent Company Name and Federal I.D. No.:
2. Sister Company in related business? Yes _____ No _____
3. Sister Company Name and Federal I.D. No.:

(j) In what States, if any, are you licensed to do business?

1. License Number in each State in which you are licensed to do business:

(k) Names of officers, owners, partners and principals. Identify relationship of each to firm, extent of activity in firm and projected involvement of each on this contract:

(l) List major items of equipment fully owned by your firm, giving approximate value and age:

II. If yes to any of the following questions, please attach a brief explanation and include the names, addresses and phone numbers of the person who may be contacted for additional information.

(a) Are there any claims, judgments, arbitration proceedings or suits pending against your organization? Yes___ No___

(b) Within the last five years, has your organization ever filed any law suit or requested arbitration related to a construction contract? Yes___ No___

(c) Within the last five years has your organization ever failed to complete any work awarded to it? Yes___ No___

(d) Has your organization ever been adjudged a bankruptcy or filed a petition in bankruptcy? Yes___ No___

(e) In the last five years has your organization been assessed liquidated damages for failure to complete a project by the contracted date? Yes___ No__

(f) Have any Performance or Payment Bond claims ever been paid by any surety on behalf of your organization? Yes___ No___

(g) Does your organization have a Quality Control Program? Yes ___No___

(h) Is a copy of this program available upon request? Yes ____ No____

(i) Has your organization ever been barred from performing work for any Federal, State or other governmental agency? Yes ____ No ___

(j) Is any member of your organization employed by the State of Maryland, a member of any State institutional board, management board or board of trustees, or in any way officially connected with the government of the State of Maryland? Yes ____ No ____

(k) Has your organization or any of its directors, officers, partners or supervisory personnel ever been indicated and/or found guilty for criminal action relating in any way to the conduct of your organization's business? Yes ____ No ____

III. Financial

(a) Enclose your most recent audited financial statement. If, and only if, you do not have an audited financial statement, enclose your most recent Federal tax return and unaudited financial statement.

(b) Who is your bonding Company?

(c) Who is your bonding agent?

(d) Has your bonding company changed in the past three years? If yes, why?

(e) What is the total bonding capacity of your firm?

(f) What is your current bond amount in use?

(g) What is the maximum you have bonded on any single project?

(h) What is your policy on bonding subcontractors?

(i) Do you have any outstanding claims from any subcontractors?

(j) Within the past five years, has any bonding company refused to write you a bond on any construction work? If yes, explain.

IV. Experience

(a) Indicate type of Contracting undertaken by your organization and years of experience:

General _____years Sub_____years
Type_____ _____ years
Type _____ _____years

(b) State construction experience of principal members of your organization: Enclose resumes of all key personnel who may staff this project.

Construction Experience

Name and Title (Vice Pres., Mgr., etc.)	Construction Experience (Years)	Type of Work (Such as Hospitals, Apts, Etc.)	In what capacity? (Foreman, Supt., etc.)

(c) List some principal projects completed by your organization:

Name of Work _____
General or Sub _____
Type of work_____
Percentage of work performed by your firm (attach separate sheet if needed)_____

(d) If a General Contractor, list some sub contractors in various fields who have worked under you:_____
_____
_____
_____
_____

(e) If Sub-Contractor, list some General Contractors for whom you have worked:_____
_____
_____
_____
_____

V. Safety

(a) Does your organization have a written Safety program? Yes ___ No ___

(b) Is a copy of this program available upon request? Yes ___ No ___

(c) Within the past ten years, has your organization received any order for violations from the United States Occupational Safety and Health Administration (OSHA) or the Maryland Occupation Safety and Health Administration? Yes ___ No ___

If yes, explain. _____
_____

The above statements are certified to be true and accurate.

Dated at _____this _____day of _____, 20__.

By: _____

_____
(Title of Person signing)

_____
(Name of Organization)

State of _____

County (City) of_____:

On this _____day of _____, 20____, before me, _____, the undersigned officer, personally appeared and acknowledged that he (she) executed the foregoing Contractor's Questionnaire in the capacity therein stated and for the purpose therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

(SEAL)

My commission expires: _____

Bid/Proposal Affidavit

A. AUTHORITY

I HEREBY AFFIRM THAT:

I, _____ (name of affiant) am the _____ (title) and duly authorized representative of _____ (name of business entity) and that I possess the legal authority to make this affidavit on behalf of the business for which I am acting.

B. CERTIFICATION REGARDING COMMERCIAL NONDISCRIMINATION

The undersigned bidder hereby certifies and agrees that the following information is correct: In preparing its bid on this project, the bidder has considered all proposals submitted from qualified, potential subcontractors and suppliers, and has not engaged in "discrimination" as defined in §19-103 of the State Finance and Procurement Article of the Annotated Code of Maryland. "Discrimination" means any disadvantage, difference, distinction, or preference in the solicitation, selection, hiring, or commercial treatment of a vendor, subcontractor, or commercial customer on the basis of race, color, religion, ancestry, or national origin, sex, age, marital status, sexual orientation, or on the basis of disability or any otherwise unlawful use of characteristics regarding the vendor's, supplier's, or commercial customer's employees or owners. "Discrimination" also includes retaliating against any person or other entity for reporting any incident of "discrimination". Without limiting any other provision of the solicitation on this project, it is understood that, if the certification is false, such false certification constitutes grounds for the State to reject the bid submitted by the bidder on this project, and terminate any contract awarded based on the bid. As part of its bid or proposal, the bidder herewith submits a list of all instances within the past 4 years where there has been a final adjudicated determination in a legal or administrative proceeding in the State of Maryland that the bidder discriminated against subcontractors, vendors, suppliers, or commercial customers, and a description of the status or resolution of that determination, including any remedial action taken. Bidder agrees to comply in all respects with the State's Commercial Nondiscrimination Policy as described under Title 19 of the State Finance and Procurement Article of the Annotated Code of Maryland.

B-1. CERTIFICATION REGARDING MINORITY BUSINESS ENTERPRISES.

The undersigned bidder hereby certifies and agrees that it has fully complied with the State Minority Business Enterprise Law, State Finance and Procurement Article, §14-308(a)(2), Annotated Code of Maryland, which provides that, except as otherwise provided by law, a contractor may not identify a certified minority business enterprise in a bid or proposal and:

(1) Fail to request, receive, or otherwise obtain authorization from the certified minority business enterprise to identify the certified minority proposal;

(2) Fail to notify the certified minority business enterprise before execution of the contract of its inclusion in the bid or proposal;

(3) Fail to use the certified minority business enterprise in the performance of the contract; or

(4) Pay the certified minority business enterprise solely for the use of its name in the bid or proposal.

Without limiting any other provision of the solicitation on this project, it is understood that if the certification is false, such false certification constitutes grounds for the State to reject the bid submitted by the bidder on this project, and terminate any contract awarded based on the bid.

B-2. Certification Regarding Veteran-Owned Small Business Enterprises. The undersigned bidder hereby certifies and agrees that it has fully complied with the State veteran-owned small business enterprise law, State Finance and Procurement Article, §14-605, Annotated Code of Maryland, which provides that a person may not:

(1) Knowingly and with intent to defraud, fraudulently obtain, attempt to obtain, or aid another person in fraudulently obtaining or attempting to obtain public money, procurement contracts, or funds expended under a procurement contract to which the person is not entitled under this title;

(2) Knowingly and with intent to defraud, fraudulently represent participation of a veteran–owned small business enterprise in order to obtain or retain a bid preference or a procurement contract;

(3) Willfully and knowingly make or subscribe to any statement, declaration, or other document that is fraudulent or false as to any material matter, whether or not that falsity or fraud is committed with the knowledge or consent of the person authorized or required to present the declaration, statement, or document;

(4) Willfully and knowingly aid, assist in, procure, counsel, or advise the preparation or presentation of a declaration, statement, or other document that is fraudulent or false as to any material matter, regardless of whether that falsity or fraud is committed with the knowledge or consent of the person authorized or required to present the declaration, statement, or document;

(5) Willfully and knowingly fail to file any declaration or notice with the unit that is required by COMAR 21.11.12; or

(6) Establish, knowingly aid in the establishment of, or exercise control over a business found to have violated a provision of §B-2(1) — (5) of this regulation.

C. AFFIRMATION REGARDING BRIBERY CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business (as is defined in Section 16-101(b) of the State Finance and Procurement Article of the Annotated Code of Maryland), or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies has been convicted of, or has had probation before judgment imposed pursuant to Criminal Procedure Article, §6-220, Annotated Code of Maryland, or has pleaded nolo contendere to a charge of, bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, except as follows (indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of person(s) involved, and their current positions and responsibilities with the business):

_____

_____

_____.

D. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies, has:

(1) Been convicted under state or federal statute of:

(a) A criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract; or

(b) Fraud, embezzlement, theft, forgery, falsification or destruction of records or receiving stolen property;

(2) Been convicted of any criminal violation of a state or federal antitrust statute;

(3) Been convicted under the provisions of Title 18 of the United States Code for violation of the Racketeer Influenced and Corrupt Organization Act, 18 U.S.C. §1961 et seq., or the Mail Fraud Act, 18 U.S.C. §1341 et seq., for acts in connection with the submission of bids or proposals for a public or private contract;

(4) Been convicted of a violation of the State Minority Business Enterprise Law, §14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(5) Been convicted of a violation of §11-205.1 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(6) Been convicted of conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any law or statute described in subsections (1)—(5) above;

(7) Been found civilly liable under a state or federal antitrust statute for acts or omissions in connection with the submission of bids or proposals for a public or private contract;

(8) Been found in a final adjudicated decision to have violated the Commercial Nondiscrimination Policy under Title 19 of the State Finance and Procurement Article of the Annotated Code of Maryland with regard to a public or private contract; or

(9) Admitted in writing or under oath, during the course of an official investigation or other proceedings, acts or omissions that would constitute grounds for conviction or liability under any law or statute described in §§B and C and subsections D(1)—(8) above, except as follows (indicate reasons why the affirmations cannot be given, and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of the person(s) involved and their current positions and responsibilities with the business, and the status of any debarment):

_____

_____

_____.

E. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities, including obtaining or performing contracts with public bodies, has ever been suspended or debarred (including being issued a limited denial of participation) by any public entity, except as follows (list each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceedings, the name(s) of the person(s) involved and their current positions and responsibilities with the business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension).

_____

_____

_____.

F. AFFIRMATION REGARDING DEBARMENT OF RELATED ENTITIES

I FURTHER AFFIRM THAT:

(1) The business was not established and it does not operate in a manner designed to evade the application of or defeat the purpose of debarment pursuant to Sections 16-101, et seq., of the State Finance and Procurement Article of the Annotated Code of Maryland; and

(2) The business is not a successor, assignee, subsidiary, or affiliate of a suspended or debarred business, except as follows (you must indicate the reasons why the affirmations cannot be given without qualification):

_____

_____

_____.

G. SUB-CONTRACT AFFIRMATION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, has knowingly entered into a contract with a public body under which a person debarred or suspended under Title 16 of the State Finance and Procurement Article of the Annotated Code of Maryland will provide, directly or indirectly, supplies, services, architectural services, construction related services, leases of real property, or construction.

H. AFFIRMATION REGARDING COLLUSION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business has:

(1) Agreed, conspired, connived, or colluded to produce a deceptive show of competition in the compilation of the accompanying bid or offer that is being submitted;

(2) In any manner, directly or indirectly, entered into any agreement of any kind to fix the bid price or price proposal of the bidder or offeror or of any competitor, or otherwise taken any action in restraint of free competitive bidding in connection with the contract for which the accompanying bid or offer is submitted.

I. CERTIFICATION OF TAX PAYMENT

I FURTHER AFFIRM THAT:

Except as validly contested, the business has paid, or has arranged for payment of, all taxes due the State of Maryland and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, and the Department of Labor, Licensing, and Regulation, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final settlement.

J. CONTINGENT FEES

I FURTHER AFFIRM THAT:

The business has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency working for the business, to solicit or secure the Contract, and that the business has not paid or agreed to pay any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency, any fee or any other consideration contingent on the making of the Contract.

K. ACKNOWLEDGEMENT

I ACKNOWLEDGE THAT this Affidavit is to be furnished to the Procurement Officer and may be distributed to units of: (1) the State of Maryland; (2) counties or other subdivisions of the State of Maryland; (3) other states; and (4) the federal government. I further acknowledge that this Affidavit is subject to applicable laws of the United States and the State of Maryland, both criminal and civil, and that nothing in this Affidavit or any contract resulting from the submission of this bid or proposal shall be construed to supersede, amend, modify or waive, on behalf of the State of Maryland, or any unit of the State of Maryland having jurisdiction, the exercise of any statutory right or remedy conferred by the

Constitution and the laws of Maryland with respect to any misrepresentation made or any violation of the obligations, terms and covenants undertaken by the above business with respect to (1) this Affidavit, (2) the contract, and (3) other Affidavits comprising part of the contract.

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

Date: _____

By: _____ (print name of Authorized Representative and Affiant)

_____ (signature of Authorized Representative and Affiant)

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION

As a condition of responsiveness, the bidder or offeror must submit with his bid a completed Certificate of Compliance OR a Certificate of Non-Compliance.

STEEL, IRON OR MANUFACTURED PRODUCTS

CERTIFICATE OF COMPLIANCE WITH 49 U.S.C. 5323 (j)(l)

The bidder hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(l) and the applicable regulations in 49 C.F.R. Part 661.5.

DATE _____

SIGNATURE _____

COMPANY NAME _____

TITLE _____

-OR-

CERTIFICATE FOR NON-COMPLIANCE WITH 49 U.S.C. 5323 (j)(l)

The bidder hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(l) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

DATE _____

SIGNATURE _____

COMPANY NAME _____

TITLE _____

APPENDIX, 49 CFR PART 20—CERTIFICATION REGARDING LOBBYING

(To be submitted with each bid or offer exceeding $100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If and funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form—LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to codified at 2 U.S.C. 1601, et seq.)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. & 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. & 1352(c)(1)-(2)(A), any person who make a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each expenditure or failure.]

The Contractor,_____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, et seq., apply to this certification and disclosure, if any.

_____ Signature of Contractor's Authorized Official

_____ Name and Title of Contractor's Authorized Official

_____ Date

MDOT DBE FORM A
FEDERALLY-FUNDED CONTRACTS
CERTIFIED DBE UTILIZATION AND FAIR SOLICITATION AFFIDAVIT
PAGE 1 OF 2

THIS AFFIDAVIT MUST BE INCLUDED WITH THE BID/ PROPOSAL. IF THE BIDDER/OFFEROR FAILS TO ACCURATELY COMPLETE AND SUBMIT THIS AFFIDAVIT AS REQUIRED, THE BID SHALL BE DEEMED NOT RESPONSIVE OR THE PROPOSAL SHALL BE DEEMED NOT SUSCEPTIBLE OF BEING SELECTED FOR AWARD.

In connection with the bid/proposal submitted in response to Solicitation No. , I affirm the following:

1. DBE Participation (PLEASE CHECK ONLY ONE)

☐ I have met the overall certified Disadvantaged Business Enterprise (DBE) participation goal of percent (%). I agree that this percentage of the total dollar amount of the Contract for the DBE goal will be performed by certified DBE firms as set forth in the DBE Participation Schedule - Part 2 of the MDOT DBE Form B (Federally-Funded Contracts).

OR

☐ I conclude that I am unable to achieve the DBE participation goal. I hereby request a waiver, in whole or in part, of the goal. Within 10 business days of receiving notice that our firm is the apparent awardee or as requested by the Procurement Officer, I will submit a written waiver request and all required documentation in accordance with COMAR 21.11.03.11. For a partial waiver request, I agree that certified DBE firms will be used to accomplish the percentages of the total dollar amount of the Contract as set forth in the DBE Participation Schedule - Part 2 of the MDOT DBE Form B (Federally-Funded Contracts).

2. Additional DBE Documentation

I understand that if I am notified that I am the apparent awardee or as requested by the Procurement Officer, I must submit the following documentation within 10 business days of receiving such notice:
(a) Outreach Efforts Compliance Statement (MDOT DBE Form C - Federally-Funded Contracts);
(b) Subcontractor Project Participation Statement (MDOT DBE Form D - Federally-Funded Contracts);
(c) DBE Waiver Request documentation per COMAR 21.11.03.11 (if waiver was requested); and
(d) Any other documentation required by the Procurement Officer to ascertain bidder's responsibility/ offeror's susceptibility of being selected for award in connection with the certified DBE participation goal.

I acknowledge that if I fail to return each completed document (in 2 (a) through (d)) within the required time, the Procurement Officer may determine that I am not responsible and therefore not eligible for contract award or not susceptible of being selected for award.

MDOT DBE FORM A
FEDERALLY-FUNDED CONTRACTS
CERTIFIED DBE UTILIZATION AND FAIR SOLICITATION AFFIDAVIT
PAGE 2 OF 2

3. Information Provided to DBE firms

In the solicitation of subcontract quotations or offers, DBE firms were provided not less than the same information and amount of time to respond as were non-DBE firms.

4. Products and Services Provided by DBE firms

I hereby affirm that the DBEs are only providing those products and services for which they are MDOT certified.

I solemnly affirm under the penalties of perjury that the information in this affidavit is true to the best of my knowledge, information and belief.

_____	_____
Company Name	Signature of Representative
_____	_____
Address	Printed Name and Title
_____	_____
City, State and Zip Code	Date

MDOT DBE FORM B
FEDERALLY-FUNDED CONTRACTS
DBE PARTICIPATION SCHEDULE

PART 1 – INSTRUCTIONS FOR DBE PARTICIPATION SCHEDULE

PARTS 2 AND 3 MUST BE INCLUDED WITH THE BID/PROPOSAL. IF THE BIDDER/OFFEROR FAILS TO ACCURATELY COMPLETE AND SUBMIT PART 2 WITH THE BID/PROPOSAL AS REQUIRED, THE BID SHALL BE DEEMED NOT RESPONSIVE OR THE PROPOSAL SHALL BE DEEMED NOT SUSCEPTIBLE OF BEING SELECTED FOR AWARD.

*** STOP ***
FORM INSTRUCTIONS
PLEASE READ BEFORE COMPLETING THIS FORM

1. Please refer to the Maryland Department of Transportation (MDOT) DBE Directory at www.mdot.state.md.us to determine if a firm is certified for the appropriate North American Industry Classification System ("NAICS") Code **and** the product/services description (specific product that a firm is certified to provide or specific areas of work that a firm is certified to perform). For more general information about NAICS, please visit www.naics.com. Only those specific products and/or services for which a firm is certified in the MDOT Directory can be used for purposes of achieving the DBE participation goal.

2. In order to be counted for purposes of achieving the DBE participation goal, the firm `must be certified for that specific NAICS ("DBE" for Federally-funded projects designation after NAICS Code). **WARNING:** If the firm's NAICS Code is in **graduated status**, such services/products **will not be counted** for purposes of achieving the DBE participation goals. Graduated status is clearly identified in the MDOT Directory (such graduated codes are designated with the word graduated after the appropriate NAICS Code).

3. Examining the NAICS Code is the **first step** in determining whether a DBE firm is certified and eligible to receive DBE participation credit for the specific products/services to be supplied or performed under the contract. The **second step** is to determine whether a firm's Products/Services Description in the DBE Directory includes the products to be supplied and/or services to be performed that are being used to achieve the DBE participation goal.

4. If you have any questions as to whether a firm is MDOT DBE certified, or if it is certified to perform specific services or provide specific products, please call MDOT's Office of Minority Business Enterprise at 1-800-544-6056 or send an email to mbe@mdot.state.md.us.

5. The Contractor's subcontractors are considered second-tier subcontractors. Third-tier contracting used to meet a DBE goal is to be considered the exception and not the rule. The following two conditions must be met before MDOT, its Modal Administrations and the Maryland Transportation Authority may approve a third-tier contracting agreement: (a) the bidder/offeror must request in writing approval of each third-tier contract arrangement, and (b) the request must contain specifics as to why a third-tier contracting arrangement should be approved. These documents must be submitted with the bid/proposal in Part 2 of this DBE Participation Schedule.

6. For each DBE firm that is being used as supplier/wholesaler/regular dealer/broker/manufacturer, please follow these instructions for calculating the **amount of the subcontract for purposes of achieving the DBE participation goal**:

   A. Is the firm certified as a broker of the products/supplies? If the answer is YES, please continue to Item C. If the answer is NO, please continue to Item B.

   B. Is the firm certified as a supplier, wholesaler, regular dealer, or manufacturer of such products/supplies? If the answer is YES, continue to Item D. If the answer is NO, continue to Item C only if the DBE firm is certified to perform trucking/hauling services under NAICS Codes 484110, 484121, 484122, 484210, 484220 and 484230. If the answer is NO and the firm is not certified under these NAICS Codes, then no DBE participation credit will be given for the supply of these products.

   C. For purposes of achieving the DBE participation goal, you may count only the amount of any reasonable fee that the DBE firm will receive for the provision of such products/supplies - not the total subcontract amount or the value (or a percentage thereof) of such products and/or supplies. For Column 3 of the DBE Participation Schedule, please divide the amount of any reasonable fee that the DBE firm will receive for the provision of such products/services by the total Contract value and insert the percentage in Line 3.1.

MDOT DBE FORM B
FEDERALLY-FUNDED CONTRACTS
DBE PARTICIPATION SCHEDULE
PART 1 – INSTRUCTIONS FOR DBE PARTICIPATION SCHEDULE

D. Is the firm certified as a manufacturer (refer to the firm's NAICS Code and specific description of products/services) of the products/supplies to be provided? If the answer is NO, please continue to Item E. If the answer is YES, for purposes of achieving the DBE participation goal, you may count the total amount of the subcontract. For Column 3 of the DBE Participation Schedule, please divide the total amount of the subcontract by the total Contract value and insert the percentage in Line 3.1.

E. Is the firm certified as a supplier, wholesaler and/or regular dealer? If the answer is YES and the DBE firm is furnishing and installing the materials and is certified to perform these services, please divide the total subcontract amount (including full value of supplies) by the total Contract value and insert the percentage in Line 3.1. If the answer is YES and the DBE firm is only being used as a supplier, wholesaler and/or regular dealer or is not certified to install the supplies/materials, for purposes of achieving the DBE participation goal, you may only count sixty percent (60%) of the value of the subcontract for these supplies/products (60% Rule). To apply the 60% Rule, first divide the amount of the subcontract for these supplies/products only (not installation) by the total Contract value. Then, multiply the result by sixty percent (60%) and insert the percentage in Line 3.2.

7. For each DBE firm that **is not** being used as a supplier/wholesaler/regular dealer/broker/manufacturer, to calculate the **amount of the subcontract for purposes of achieving the DBE participation goal**, divide the total amount of the subcontract by the total Contract value and insert the percentage in Line 3.1.

   Example: $ 2,500 (Total Subcontract Amount) ÷ $10,000 (Total Contract Value) x 100 = 25%

8. Please note that for USDOT-funded projects, a DBE prime may count towards its DBE participation goal work performed by its own forces. Include information about the DBE prime in Part 2.

9. **WARNING:** The percentage of DBE participation, computed using the dollar amounts in Column 3 for all of the DBE firms listed in Part 2, MUST at least equal the DBE participation goal as set forth in MDOT DBE Form A – Federally-Funded Contracts for this solicitation. If the bidder/offeror is unable to achieve the DBE participation goals, then the bidder/offeror must request a waiver in Form A or the bid will be deemed not responsive, or the proposal not susceptible of being selected for award. You may wish to use the Goal Worksheet shown below to assist you in calculating the percentage and confirming that you have met the applicable DBE participation goal.

GOAL WORKSHEET	
Total DBE Firm Participation (Add percentages in Column 3 for all DBE firms listed in DBE Participation Schedule)	(A) _____%
The percentage amount in Box A above should be equal to the percentage amount in Box E below.	
Add *Countable* Subcontract Amounts (see 6 through 8 of Instructions) for all DBE firms listed in DBE Participation Schedule, and insert in Box B	(B) $_____
Insert the Total Contract Amount in Box C	(C) $_____
Divide Box B by Box C and Insert in Box D	(D) =_____
Multiply Box D by 100 and insert in Box E	(E) =_____%

MDOT DBE FORM B
FEDERALLY-FUNDED CONTRACTS
DBE PARTICIPATION SCHEDULE

PART 2 – DBE PARTICIPATION SCHEDULE

PARTS 2 AND 3 MUST BE INCLUDED WITH THE BID/PROPOSAL. IF THE BIDDER/OFFEROR FAILS TO ACCURATELY COMPLETE AND SUBMIT PART 2 WITH THE BID/PROPOSAL AS REQUIRED, THE BID SHALL BE DEEMED NOT RESPONSIVE OR THE PROPOSAL SHALL BE DEEMED NOT SUSCEPTIBLE OF BEING SELECTED FOR AWARD.

PAGE __ OF ____

Prime Contractor	Project Description	Solicitation Number

LIST INFORMATION FOR EACH CERTIFIED DBE SUBCONTRACTOR YOU AGREE TO USE TO ACHIEVE THE DBE PARTICIPATION GOAL.

COLUMN 1	COLUMN 2	COLUMN 3 **Unless the bidder/offeror requested a waiver in MDOT DBE Form A – Federally Funded Contracts for this solicitation, the cumulative DBE participation for all DBE firms listed herein must equal at least the DBE participation goal set forth in Form A.**
NAME OF DBE SUBCONTRACTOR AND TIER	**CERTIFICATION NO. AND DBE CLASSIFICATION**	**FOR PURPOSES OF ACHIEVING THE DBE PARTICIPATION GOAL, refer to sections 6, 7 and 8 in Part 1 - Instructions. State the percentage amount of the products/services in Line 3.1, except for those products or services where the DBE firm is being used as a wholesaler, supplier, or regular dealer. For items of work where the DBE firm is being used as a supplier, wholesaler and/or regular dealer, complete Line 3.2 using the 60% Rule.**
☐ Please check if DBE firm is a third-tier contractor (if applicable). Please submit written documents in accordance with Section 5 of Part 1 - Instructions	**Certification Number:** _____ **(If dually certified, check only one box.)** ☐ African American-Owned ☐ Hispanic American- Owned ☐ Asian American-Owned ☐ Women-Owned ☐ Other DBE Classification _____	3.1. **TOTAL PERCENTAGE TO BE PAID TO THE SUBCONTRACTOR** (STATE THIS PERCENTAGE AS A PERCENTAGE OF THE TOTAL CONTRACT VALUE- EXCLUDING PRODUCTS/SERVICES FROM SUPPLIERS, WHOLESALERS OR REGULAR DEALERS). _____% (Percentage for purposes of calculating achievement of DBE Participation goal) 3.2 **TOTAL PERCENTAGE TO BE PAID TO THE SUBCONTRACTOR FOR ITEMS OF WORK WHERE THE DBE FIRM IS BEING USED AS A SUPPLIER, WHOLESALER AND/OR REGULAR DEALER)** (STATE THE PERCENTAGE AS A PERCENTAGE OF THE TOTAL CONTRACT VALUE AND THEN APPLY THE 60% RULE PER SECTION 6(E) IN PART 1 - INSTRUCTIONS). _____% Total percentage of Supplies/Products x _____60% (60% Rule) _____% (Percentage for purposes of calculating achievement of DBE Participation goal)

☐Please check if Continuation Sheets are attached.

MDOT DBE FORM B
FEDERALLY-FUNDED CONTRACTS
DBE PARTICIPATION SCHEDULE
CONTINUATION SHEET

PAGE ___ OF ____

Prime Contractor	Project Description	Solicitation Number

LIST INFORMATION FOR EACH CERTIFIED DBE SUBCONTRACTOR YOU AGREE TO USE TO ACHIEVE THE DBE PARTICIPATION GOAL.

COLUMN 1	COLUMN 2	COLUMN 3 **Unless the bidder/offeror requested a waiver in MDOT DBE Form A – Federally Funded Contracts for this solicitation, the cumulative DBE participation for all DBE firms listed herein must equal at least the DBE participation goal set forth in Form A.**
NAME OF DBE SUBCONTRACTOR AND TIER	**CERTIFICATION NO. AND DBE CLASSIFICATION**	**FOR PURPOSES OF ACHIEVING THE DBE PARTICIPATION GOAL, refer to sections 6, 7 and 8 in Part 1 - Instructions. State the percentage amount of the products/services in Line 3.1, except for those products or services where the DBE firm is being used as a wholesaler, supplier, or regular dealer. For items of work where the DBE firm is being used as a supplier, wholesaler and/or regular dealer, complete Line 3.2 using the 60% Rule.**
☐ Please check if DBE firm is a third-tier contractor (if applicable). Please submit written documents in accordance with Section 5 of Part 1 - Instructions	**Certification Number:** _____ **(If dually certified, check only one box.)** ☐ African American-Owned ☐ Hispanic American- Owned ☐ Asian American-Owned ☐ Women-Owned ☐ Other DBE Classification _____	3.1. **TOTAL PERCENTAGE TO BE PAID TO THE SUBCONTRACTOR** (STATE THIS PERCENTAGE AS A PERCENTAGE OF THE TOTAL CONTRACT VALUE- EXCLUDING PRODUCTS/SERVICES FROM SUPPLIERS, WHOLESALERS OR REGULAR DEALERS). _____% (Percentage for purposes of calculating achievement of DBE Participation goal) 3.2 **TOTAL PERCENTAGE TO BE PAID TO THE SUBCONTRACTOR FOR ITEMS OF WORK WHERE THE DBE FIRM IS BEING USED AS A SUPPLIER, WHOLESALER AND/OR REGULAR DEALER)** (STATE THE PERCENTAGE AS A PERCENTAGE OF THE TOTAL CONTRACT VALUE AND THEN APPLY THE 60% RULE PER SECTION 6(E) IN PART 1 - INSTRUCTIONS). _____% Total percentage of Supplies/Products x _____60% (60% Rule) _____% (Percentage for purposes of calculating achievement of DBE Participation goal)

☐Please check if Continuation Sheets are attached.

MDOT DBE FORM B
FEDERALLY-FUNDED CONTRACTS
DBE PARTICIPATION SCHEDULE

PART 3 – CERTIFICATION FOR DBE PARTICIPATION SCHEDULE

PARTS 2 AND 3 MUST BE INCLUDED WITH THE BID/PROPOSAL AS DIRECTED IN THE SOLICITATION.

I hereby affirm that I have reviewed the Products and Services Description (specific product that a firm is certified to provide or areas of work that a firm is certified to perform) set forth in the MDOT DBE Directory for each of the DBE firms listed in Part 2 of this DBE Form B for purposes of achieving the DBE participation goal that was identified in the DBE Form A that I submitted with this solicitation, and that the DBE firms listed are only performing those products/services/areas of work for which they are certified. I also hereby affirm that I have read and understand the form instructions set forth in Part 1 of this DBE Form B.

The undersigned Prime Contractor hereby certifies and agrees that it has fully complied with the State Minority Business Enterprise law, State Finance and Procurement Article §14-308(a)(2), Annotated Code of Maryland which provides that, except as otherwise provided by law, a contractor may not identify a certified minority business enterprise in a bid or proposal and:

(1) fail to request, receive, or otherwise obtain authorization from the certified minority business enterprise to identify the certified minority business enterprise in its bid or proposal;

(2) fail to notify the certified minority business enterprise before execution of the contract of its inclusion of the bid or proposal;

(3) fail to use the certified minority business enterprise in the performance of the contract; or

(4) pay the certified minority business enterprise solely for the use of its name in the bid or proposal.

I solemnly affirm under the penalties of perjury that the contents of Parts 2 and 3 of MDOT DBE Form B are true to the best of my knowledge, information and belief.

_____	_____
Company Name	Signature of Representative
_____	_____
Address	Printed Name and Title
_____	_____
City, State and Zip Code	Date

MDOT DBE FORM C
FEDERALLY-FUNDED CONTRACTS
OUTREACH EFFORTS COMPLIANCE STATEMENT

In conjunction with the offer/proposal submitted in response to Solicitation No._____, I state the following:

1. Bidder/Offeror took the following efforts to identify subcontracting opportunities in these specific work categories:

2. Attached to this form are copies of written solicitations (with bidding/proposal instructions) used to solicit certified DBE firms for these subcontract opportunities.

3. Bidder/Offeror made the following attempts to personally contact the solicited DBE firms:

4. **Please Check One:**

☐ This project does not involve bonding requirements.

☐ Bidder/Offeror assisted DBE firms to fulfill or seek waiver of bonding requirements. (DESCRIBE EFFORTS)

5. **Please Check One:**

☐ Bidder/Offeror did attend the pre-bid/pre-proposal meeting/conference.

☐ No pre-bid/pre-proposal meeting/conference was held.

☐ Bidder/Offeror did not attend the pre-bid/pre-proposal meeting/conference.

_____	_____
Company Name	Signature of Representative
_____	_____
Address	Printed Name and Title
_____	_____
City, State and Zip Code	Date

MDOT DBE FORM D

FEDERALLY-FUNDED CONTRACTS

DBE SUBCONTRACTOR PROJECT PARTICIPATION AFFIDAVIT

IF THE BIDDER/OFFEROR FAILS TO RETURN THIS AFFIDAVIT WITHIN THE REQUIRED TIME, THE PROCUREMENT OFFICER MAY DETERMINE THAT THE BIDDER IS NOT RESPONSIBLE AND THEREFORE NOT ELIGIBLE FOR CONTRACT AWARD OR THAT THE PROPOSAL IS NOT SUSCEPTIBLE OF BEING SELECTED FOR AWARD. SUBMIT ONE FORM FOR EACH CERTIFIED DBE FIRM LISTED IN THE DBE PARTICIPATION SCHEDULE. BIDDERS/ OFFERORS ARE HIGHLY ENCOURGED TO SUBMIT FORM D PRIOR TO THE TEN (10) DAY DEADLINE.

Provided that _____ (Prime Contractor's Name) is awarded the Contract in conjunction with Solicitation No. _____, such Prime Contractor will enter into a subcontract with _____(Subcontractor's Name) committing to participation by the DBE firm _____ (DBE Name) with MDOT Certification Number _____ (if subcontractor previously listed is also the DBE firm, please restate name and provide DBE Certification Number) which will receive at least $_____ or _____% (Total Subcontract Amount/ Percentage) for performing the following products/services for the Contract:

NAICS CODE	WORK ITEM, SPECIFICATION NUMBER, LINE ITEMS OR WORK CATEGORIES (IF APPLICABLE)	DESCRIPTION OF SPECIFIC PRODUCTS AND/OR SERVICES

I solemnly affirm under the penalties of perjury that the information provided in this DBE Subcontractor Project Participation Affidavit is true to the best of my knowledge, information and belief. I acknowledge that, for purposes of determining the accuracy of the information provided herein, the Procurement Officer may request additional information, including, without limitation, copies of the subcontract agreements and quotes.

PRIME CONTRACTOR	SUBCONTRACTOR (SECOND-TIER)	SUBCONTRACTOR (THIRD-TIER)
Signature of Representative: _____	Signature of Representative: _____	Signature of Representative: _____
Printed Name and Title: _____ _____	Printed Name and Title: _____ _____	Printed Name and Title: _____ _____
Firm's Name: _____	Firm's Name: _____	Firm's Name: _____
Federal Identification Number: _____	Federal Identification Number: _____	Federal Identification Number: _____
Address: _____ _____	Address: _____ _____	Address: _____ _____
Telephone: _____	Telephone: _____	Telephone: _____
Date: _____	Date: _____	Date: _____

IF DBE FIRM IS A THIRD-TIER SUBCONTRACTOR, THIS FORM MUST ALSO BE EXECUTED BY THE SECOND-TIER SUBCONTRACTOR THAT HAS THE SUBCONTRACT AGREEMENT WITH THE DBE FIRM.

LIABILITY INSURANCE REQUIREMENTS

MARYLAND TRANSIT ADMINISTRATION (MTA) will utilize an Owner Controlled Insurance Program (OCIP) for this construction project.

What is an OCIP?

The MTA OCIP will provide General Liability, Workers' Compensation, and Excess Liability coverage for contractors and subcontractors while performing Work on the project site. The Work specified in your Bid Request qualifies for the OCIP, therefore, General Liability, Workers' Compensation, and Excess Liability will be purchased on your behalf, for this Work. However, you must continue to purchase General Liability, Automobile Liability and Workers' Compensation, and Excess Liability for Work performed *away from* the Project site.

A Builder's Risk insurance policy will also be provided for the benefit of the OCIP participants. You need not provide such insurance, as the interest of all parties in the Work will be covered by this policy. Such insurance will NOT cover your own tools and equipment.

Enclosed herein as Exhibit B – Indemnities and Insurance is detailed information about this program.

Bids:

Because General Liability, Workers' Compensation, and Excess Liability coverage will be provided by the OCIP, you will need to bid all Work with insurance costs for General Liability, Workers' Compensation, and Excess Liability separately identified as an add/alternate to your bid price. The cost should be separated by line of insurance utilizing the Insurance Cost Worksheet provided in the Bid Form package and as Exhibit A of this form. This form must be submitted as part of your bid package. For your information, the forms that will need to be completed by the successful bidder as part of the contract package are included herein as Exhibit C.

It is important that these insurance costs be as accurate as possible, as they have a direct bearing on the competitiveness of your bid.

If in doubt, your insurance agent should be able to give you the insurance cost for Work to be done at the site. To enable him to calculate that cost, you should be prepared to give your agent your payrolls (by workers' compensation class code) for Work to be performed on this Project.

Safety:

A critical part of any construction project is job site safety. An OCIP program is designed to standardize safety procedures to enhance your safety efforts. Representatives

of AIG, the OCIP insurer, the Construction Manager, and Aon Risk Services, Inc. of MD will be available to assist you in these efforts. You will be expected to comply with the safety requirements established by MTA and the Construction Manager in conjunction with the OCIP carrier. The Maryland Transit Administration Project Safety Plan is included in the Contract Specification Book as Form PSP.

Claims:

A claims representative will assist you in reporting any claims. You will be given an insurance manual that will identify the basic information necessary to report a claim. The forms and instructions contained in the manual should not be significantly different from those you are currently using.

Contractor Provided Insurance:

Because an OCIP is limited to Work performed at a specific location (except as provided by the Builder's Risk), you will be required to provide General Liability, Workers' Compensation, and Property insurance, if applicable, for any activities away from the project site, or performed for someone other than MTA.

You will also need to continue other coverages, such as:

- ⇒ Automobile liability and physical damage
- ⇒ Inland Marine coverage for your tools and equipment
- ⇒ Umbrella/Excess liability for limits over the maximum limit to be provided by MTA (limit to be advised)
- ⇒ Any other coverage you elect to continue

Alternate program option:

MTA reserves the option **not** to utilize an OCIP program for this project or to discontinue it. In such a case, you and any subcontractors will be expected to provide insurance coverages as required by the contract at a cost commensurate with the insurance deductions in your original bids.

Summary of Owner Provided Insurance
Workers Compensation

Coverage A - Statutory Limits

Coverage B - Employers Liability

$2,000,000 Bodily Injury by Accident

$2,000,000 Bodily Injury by Disease

$2,000,000 Policy Limit by Disease

Commercial General Liability

The policy includes Completed Operations Coverage for a period of 10 years after acceptance of the work by Owner with a limit of liability of $2,000,000 each occurrence/$4,000,000 general aggregate for Bodily Injury/Property Damage.

Excess Liability

$50,000,000 each occurrence
$50,000,000 aggregate

Builder's Risk Insurance:

Loss Limit (Total Liability per Occurrence):	$	50,000,000
Sub limits:		
Building Ordinance or Law (Coverages A, B & C Combined)	$	2,500,000
Debris Removal per Occurrence	$	2,500,000
Delay in Completion/Soft Costs	$	TBD
Loss Adjustment Expenses	$	100,000
Expediting Expenses per Occurrence	$	100,000
Fire Department Service Charges per Occurrence	$	50,000
Inland Transit	$	500,.000
Offsite Temporary Storage per Occurrence	$	1,000,000
Physical Damage per Occurrence	$	50,000,000
Valuable Papers and Records	$	100,000
Pollution Cleanup	$	10,000
Trees, Shrubs, Plants and Landscaping per Occ (Named Perils Only)	$	25,000
Annual Aggregate Limits of Liability:		
Earthquake	$	50,000,000
Flood (Depending on Flood Zones)	$	50,000,000

The Owner will purchase for the benefit of all Approved Contractors, Subcontractors and Vendors, all-risk Builder's Risk insurance in the amounts sufficient to cover replacement cost of the work in progress and the property located at the Project Site. Such insurance will specifically protect the interest of the Contractor in the Work, but **it will not cover Contractor's equipment, which will <u>not</u> become a permanent part of the Work to be accepted by the Owner**.

Notwithstanding the contractor's deductible responsibilities as stated in Section I, Exhibit D, Contractor's total liability for loss of or damage to the Work shall be limited to the recoveries from the Owner-provided Builder's Risk Insurance".

EXHIBIT A

INSURANCE COST WORKSHEET

AND

INSTRUCTIONS FOR COMPLETING INSURANCE COST WORKSHEET

Error! Objects cannot be created from editing field codes.Form-1a	Insurance Cost Worksheet (Fixed Price Type Contracts) Numbers reference attached instructions	MTA OCIP Page 1 of 2

A. Contractor Information:

Federal ID # or Soc. Sec. #: 1

	Business Information *(headquarters)*	Contact Information *(address questions to..)*
Company Name & dba: Contact Name & Title:	2	3
Address:		
City, State, Zip Code:		
Telephone:		
Fax:		
E.mail Address:		

B. BID INFORMATION:

Bid Package No.: 1

Description of Work: 2

Proposed Contract Price $: 3

Amount of Self Performed Work $: 4

Are you Submitting a bid to MTA: 5 ❑ Yes ❑ No

If No, identify to whom: 6

C. Workers Compensation Insurance Information for Work Described Above: (a) *(attach a separate sheet if necessary)*

a State	b Class Code	C Description	d Rate *(per $100 payroll)*	e Man-hours	f Payroll	G WC Premium *(Payroll * Rate / 100)*
1						
Totals				2	3	4

Identify the Amount of Your Claim Retention 5

Your Company's Workers Compensation Experience Modifier: 6

Modified Premium *(line C4 x C6)*: 7

Employers Liability Rate: 8

Employers Liability Premium: 9

10 Modification & Discount Premium Factors		11 Rate	12 Amount
Mod 1:	+ or -		
Mod 2:	+ or -		
Mod 3:	+ or -		
Mod 4:	+ or -		
Mod 5:	+ or -		

Total Modification Amount *(Total of all amounts entered in column C12)*: 13

Total Workers Compensation Premium *(line C7 + C9 + C13)*: 14

D. General Liability: (a)

Rate: 1

2 Based On: ❑ Total Payroll (C3) ❑ Contract Price (B3) ❑ Other

3 Rate factor: ❑ Per 100 ❑ Per 1,000

4 Identify the Amount of Your Claim Retention:

GL Premium *(D2 x D1 ÷ D3)*: 5

Excess/Umbrella Liability: (a)

Rate: 6

7 Based On: ❑ Total Payroll (C3) ❑ Contract Price (B3) ❑ Other

8 Rate factor: ❑ Per 100 ❑ Per 1,000

Excess/Umbrella Premium *(D7 x D6 ÷ D8)*: 9

E. Builder's Risk/Installation Floater: (1)

Rate: 1

2 Rate factor ❑ Per 100 ❑ Per 1,000

Builder's Risk/Installation Floater Premium *(B3 x E1 ÷ E2)*: 3

F. Other Insurance Premiums: (1) *(Enter total premium costs identified on page 2)*

1

G. Totals

Total of all Insurance Premiums *(Total of lines C14 +D5 + D9 + E3 + F1)*: 1

Overhead & Profit on Insurance Prem. %: 2 15%

O/H & Profit Amount *(G1 x G2)*: 3

Total Initial Insurance Cost *(Total of lines G1 + G3)*: 4

Contractor's Initial Insurance Cost Rate *(Line G4 divided by total payroll in line C3 x 100)*: 5

H. Signature Block :

I verify the information presented above and attachments are correct:

Name: _____ (please print) Date: _____

Title: _____ Signature: _____

Completion of this form is a required part of your bid and must accompany your bid documents. Complete a separate form for each contractor, known subcontractor(s) and trades not currently awarded to a subcontractor. Duplicate this form as needed.

(a) Please provide copies of the following documents to support your insurance cost calculations:

- ☑ Schedule of Values
- ☑ Workers Compensation declaration and rate pages
- ☑ Experience Modification worksheet
- ☑ General Liability declaration and rate pages
- ☑ Umbrella/Excess Liability declaration and rate pages
- ☑ 5 years actual loss experience for each line of coverage in which Contractor retains more than $5,000.

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INSURANCE COST WORKSHEET

(Instructions for Fixed Price Type Contracts)

MTA OCIP

Complete a separate form for each contractor, known subcontractor and trade not currently awarded to a subcontractor. Duplicate this form as needed. Completion of this form is a required part of your bid and must accompany your bid documents.

A. Contractor Information

1 Enter your company's Federal ID number. This number can be found on filings made to the federal government such as your tax return.
2 Enter your company's name, mailing address and phone/fax number for your company's main office location in the space provided below.
3 Enter the name of the person Aon should contact if questions arise. Include the mailing address, phone/fax and e.mail address if different than A-2

B. Bid Information

1 Enter the Bid Package Number, Contract Number or Purchase Order Number that was included in Maryland Transit Administration's originating documentation.
2 Provide a brief description of the work you will be performing at the project site.
3 Identify the total amount of your bid. Include both labor and material.
4 Identify the amount of work that you anticipate will be self-performed. Include both labor and material.
5 Check the appropriate box that identifies if you contract directly with Maryland Transit Administration's or are a subcontractor.
6 If you are a Subcontractor, identify the entity with whom you are under contract.

C. Workers Compensation Insurance Information *(Duplicate or attach additional sheets if necessary. You may create an electronic version of this document if all requested information is included):*

1 a Enter the two-letter abbreviation for the state in which the work will be performed.
b Enter each Workers Compensation class code that applies to your work identified in B2. *(Most states use a 4 digit Number)*
c Enter the Workers Compensation class code description that applies to each class code identified in C1b.
d Enter the Workers Compensation rate that applies to the specified class code.
e Enter the estimated Man-hours required to complete the described work for each Workers Compensation class code.
F Enter the estimated Payroll required to complete your work. Use only unburdened payroll and exclude the premium portion of any overtime pay.
G Calculate the WC Premium by multiplying the Payroll (C1f) by the Rate (C1d) and dividing the result by 100. Repeat this calculation for each WC class code.
2 Total the estimated Man-hours for each class code. Be sure to include information from additional pages if used.
3 Total the estimated Payroll for each class code. Be sure to include information from additional pages if used.
4 Total the Workers Compensation Premium for each class code. Be sure to include information from additional pages if used.
5 Enter the amount of the Claim Retention / Deductible your company has on their existing Workers Compensation.
6 Enter your WC Experience Modifier. This Information can be located on your Workers Compensation policy or on your NCCI Bureau Rating Sheet.
7 Calculate the Modified Premium by multiplying the WC Premium (C4) by the Experience Modifier (C6).
8 Enter your Employer's Liability Insurance Rate. This information can be found in your Workers Compensation policy.
9 Calculate your Employer's Liability Premium by multiplying the Modified Premium (C7) by the Employer's Lia. Rate (C8).
10 Identify the Modifiers that apply to your Workers Compensation Premium. This information can be located on your Workers Compensation Policy.
11 Enter the Rate for each identified Modifier. The information can be located on your Workers Compensation Policy
12 Calculate the Modified Premium Factor Amount by multiplying the Modified Premium (C7) by the Modified Premium Rate (C11) and dividing by 100. Be sure to identify if the Modification factor is an addition or reduction to your premium.
13 Total the Modified Premium Amounts by adding the numbers in column C12.
14 Calculate the Total Workers Compensation Premium by adding the Modified Premium (C7) to the Employer's Lia. Premium (C9) and adding the Premium Modifications (C12).

D. General Liability & Umbrella/Excess Liability Insurance

1 Enter the General Liability Rate. This number can be found on your General Liability Policy
2 Identify the base the General Liability Rate applies to. If the base is other than Payroll or Revenue, enter the amount and the description in the space provided.
3 Identify the General Liability Rate factor by marking the box.
4 Identify the amount of your Claim Retention.
5 Calculate the General Liability Premium by multiplying the Bases (D2) by the Rate (D1) and dividing by the factor (D3).
6 Enter the Excess/Umbrella Liability Rate. This number can be found on your Excess/Umbrella Liability Policy
7 Identify the base the Excess/Umb. Liability Rate applies to. If the base is other than Payroll or Revenue, enter the amount and description in the space provided.
8 Identify the Excess/Umbrella Liability Rate factor by marking the box.
9 Calculate the Excess/Umbrella Liability Premium by multiplying the Bases (D7) by the Rate (D6) and dividing by the factor (100 or 1,000).

E. Builder's Risk/Installation Floater

1 Enter the Builder's Risk/Installation Floater Rate. Locate this information on your Property Policy or Builder's Risk Policy.
2 Identify the base factor that it applies to (100 or 1,000).
3 Calculate the Premium by multiplying the Proposed Contract Price (B3) by the Rate (E1) and dividing it by the Factor (E2).

F. Other Insurance Premiums

1 For each of the Insurance Lines of Coverage identified below, Identify the Rate, Base and Factor. Calculate the Premium by multiplying the Base x Rate ÷ Factor. Total the Other Insurance Premiums in the space provided and carry that amount to the front page.

Line of Coverage	Rate	Base	Factor	Premium	Total Premium

G. Totals

1 Calculate the Total of all Insurance Premium by adding Workers Compensation (C14), General Liability (D5), Excess/Umbrella Liability (D9), Builder's Risk/Installation Floater (E3), and Other Insurance Premiums (F1).
2 Identify the Overhead & Profit Percentage that was applied to this project during the tabulation of the Proposed Contract Price.
3 Calculate the Overhead & Profit Amount by Multiplying the Total of all Insurance Costs (G1) by the Overhead & Profit Percentage (G2).
4 Calculate the Total Initial Insurance Cost by adding the Overhead & Profit Amount (G3) with the Total of all Insurance Premium (G1)
5 Calculate your rate by Dividing the Total Initial Insurance Cost (G4) by the Estimated Payroll (C3) and multiplying by 100.

H. Signature Block: This form must be signed by a representative of your company with the authority to Verify the information is correct.

Note: Please provide copies of the following documents as part of your submittal:

- ☑ Schedule of Values
- ☑ Workers Compensation declaration and rate pages
- ☑ Experience Modification worksheet
- ☑ General Liability declaration and rate pages
- ☑ Umbrella/Excess Liability declaration and rate pages
- ☑ 5 years actual loss experience for each line of coverage in which Contractor retains more than $5,000.

EXHIBIT B

INDEMNITIES AND INSURANCE

Indemnities and Insurance

1.1 Indemnities.

1.1.1 To the fullest extent permitted by law, Contractor shall indemnify, defend (at Owner's request and through counsel reasonably acceptable to Owner) and hold harmless Owner from and against all claims, demands, causes of action, damages, liabilities, losses and expenses, including attorneys' and consultants' fees and expenses (collectively, "Claims"), arising out of or resulting from performance of Work, provided such Claims are attributable to bodily injury, sickness or death, or injury to or destruction of tangible property, or infringement of any patents, copyrights, trademarks, trade secrets or other intellectual property right; provided that such Claims are caused in whole or in part by the active or passive negligence or willful misconduct of Construction Manager, contractors, and subcontractors. With respect to Claims made after the expiration of the Completed Operations coverage of the Project Commercial General Liability Insurance procured by Owner at its expense under Paragraph 1.3.2(b), the foregoing indemnity shall apply only to the extent of the active negligence or willful misconduct of the Contractors, and/or subcontractors.

1.1.2 The foregoing indemnity shall apply regardless of whether such claim, demand, cause of action, damage, liability, loss or expense is caused in part by the active or passive negligence of an Indemnity, and regardless of whether liability without fault is imposed or sought to be imposed on an Indemnity, but shall not extend to claims, demands, causes of action, damages, liabilities, losses or expenses to the extent they result from the sole negligence or willful misconduct of such Indemnity. Nothing herein shall be deemed to abridge the rights, if any, of Owner or Contractor to seek contribution from other parties where appropriate.

1.1.3 With respect to claims against any person or entity indemnified under Paragraph 1.1.1 by an employee of the Contractor, or subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, the indemnification obligation under Paragraph 1.1.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable under workers' compensation acts, disability benefit acts or other employee
benefit acts.

1.1.4 Neither Contractor nor subcontractor, of any tier, shall place or release, or cause to be placed or released, any Hazardous Materials in, on or under the Project Site, or into any adjacent or nearby watercourse, body of water or wetlands, except in strict compliance with all applicable Laws and Permits. Contractor shall be responsible for any Hazardous Materials deposited, released or disposed of in, on or under the Project Site or into any adjacent or nearby watercourse, body of water or wetlands on or after the date of the Notice to Proceed by any of the foregoing persons (excluding Indemnitees) only, including if necessary any cleanup or remediation activities, and shall indemnify and hold harmless the Indemnitees from and against any claims, liabilities (including under CERCLA), damages, losses and expenses (including reasonably and actually incurred attorneys' fees) arising out of or resulting from the deposit, release or disposal of any

Hazardous Materials in, on or under the Project Site or into any adjacent or nearby watercourse, body of water or wetlands on or after the date of the Notice to Proceed by any of the foregoing persons (excluding Indemnitees) only, except to the extent caused by negligence or willful misconduct on the part of the applicable Indemnity.

1.1.5 Owner shall indemnify, defend and hold harmless Contractor, and subcontractors, and their officers, directors, employees and agents, from and against any claims, liabilities, damages, losses and expenses (including reasonably and actually incurred attorneys' fees) resulting from such indemnified party's being deemed an owner or operator of the Project Site, or a generator, storer or treater of Hazardous Materials existing at the Project Site as of the date of the Notice to Proceed, for purposes of any Laws and Permits relating to Hazardous Materials or any investigatory or remedial actions by any government authorities having jurisdiction over the Project or the Project Site; provided, however that this indemnity shall not apply to the extent of the actual negligence or willful misconduct of an indemnified party. Without limitation, such indemnity shall include any liability of the indemnified parties under the Comprehensive Environmental Response Compensation and Liability Act (including the SARA amendments thereto), and any liability of the indemnified parties resulting from actions by any state or local agency.

1.1.6 If any claim of Lien, stop notice, equitable lien or any other demand for payment or security, including claims or demand upon surety bonds for any of the Work, is made or filed with Owner, Owner's property or the Project by any person claiming that Contractor, subcontractor, or any other person claiming under any of them (other than Owner) has failed to perform its contractual obligations or to make payment for any obligation incurred for or in connection with the Work, then Owner shall have the right to retain from any payment then due or thereafter to become due Contractor or to be reimbursed by Contractor an amount sufficient to (i) satisfy, discharge and defend against any such claim or lien, stop notice or other demand, unless Contractor files surety bonds fully releasing the Owner and Owner's property from such claim or lien under applicable law, in which case Owner shall not make any such retention; (ii) remedy any such nonpayment, nonperformance; and (iii) compensate the Owner for and indemnify it against any and all claim, liability, damage, loss, and expense (including reasonably and actually incurred attorneys' and consultants' fees) sustained or incurred in connection therewith.

1.2 Insurance Provided by Contractor

1.2.1 Contractor shall provide, pay for and maintain (and as appropriate, shall require contractors and subcontractors of all tiers to provide, pay for and maintain) insurance of the type and in the limits as set forth below. Contractor shall maintain such insurance from the commencement of Work on the Project Site until Final Acceptance of the entire Project or the completion of all post-acceptance warranty or related work by Contractor or the applicable subcontractor.

1.2.2 Automobile Liability insurance covering all owned, non-owned, and hired

vehicles used by Contractor or the applicable contractor or subcontractor for all operations both on and off the Project Site, with a minimum limit of $2,000,000 combined single limit per accident for Bodily Injury and Property Damage. The policy shall include a waiver of subrogation with respect the Administration. Loading and unloading of any motor vehicle must be covered by endorsement to the automobile liability policy or policies.

Pollution liability coverage at least as broad as that provided under the ISO pollution liability - broadened coverage for covered autos endorsement (CA 99-48) shall be provided, and the Motor Carrier Act endorsement (MCS 90) shall be attached.

1.2.3 Workers' Compensation insurance for statutory benefits limits of the applicable Labor Code(s) and Workers' Compensation law(s) and Coverage B - Employer's Liability with minimum limits of $500,000. each accident for Bodily Injury by accident, $500,000 each employee for Bodily Injury by disease, and $500,000 policy limit for Bodily Injury by disease. Such insurance shall be endorsed to include Longshore and Harbor Workers' Compensation Act Coverage and Jones Act Coverage if applicable, and shall cover all operations of Contractor or the applicable subcontractor <u>except</u> those insured under the OCIP as described in Paragraph 1.3.2. Such insurance shall be endorsed to include Other States Coverage and to include a Waiver of Our Right to Recover from Others Endorsement in favor of the Indemnitees.

(a) If Contractor or the applicable subcontractor is a qualified Workers' Compensation self-insurer, prior to its commencement of Work at the Project Site Contractor shall submit to Owner a copy of such employer's current Certificate of Permission to Self-Insure.

(b) Contractor shall include, and shall require each of its subcontractors to include, the following provision in all subcontracts let by such party for performance of Work when the party performing Work under such subcontract is a qualified, approved self-insurer of Workers' Compensation:

> "The subcontractor waives any right of recovery the subcontractor may have or acquire against the Indemnitees, Contractor or subcontractors of all tiers by reason of the subcontractor's having paid Workers' Compensation benefits as a self-insurer."

1.2.4 Commercial General Liability insurance covering all operations of Contractor or the applicable subcontractor <u>except</u> those insured under the OCIP as described in Paragraph 1.3.2. Such insurance shall be written on an occurrence form; coverage cannot be provided under a "Claims-Made" or "Modified Occurrence" policy without the prior, express written consent of Owner. Such insurance shall be no less comprehensive and no more restrictive than the coverage provided by the standard Insurance Services Office (ISO) form CG 00 01 10 93; shall include by its terms or appropriate endorsements Bodily Injury, Property Damage, Personal Injury, Blanket

Contractual, Independent Contractors, Products and Completed Operations coverages; shall include Products Liability coverage for any products manufactured, assembled, or otherwise worked upon away from the Project Site; and shall include coverage for "x" (explosion), "c" (collapse), or "u" (underground) exposures. Such insurance shall have the following minimum limits:

(a) For the Contractor:

$2,000,000 Each Occurrence;
$2,000,000 General Aggregate; and
$2,000,000 Products/Completed Operations Aggregate

(b) For all subcontractors:

$2,000,000 Each Occurrence;
$2,000,000 General Aggregate; and
$2,000,000 Products/Completed Operations Aggregate

1.2.5. Professional Liability insurance if Contractor or applicable subcontractors will perform or retain others to perform professional services in connection with the Work, including engineering, architectural, medical, testing, environmental assessment or remediation, or design-build services, with a minimum limit of $2,000,000 per wrongful act, error, or omission, and a minimum annual aggregate limit of $4,000,000.

1.2.6. Umbrella Liability: Provide an occurrence "umbrella" form of excess liability insurance containing coverage no more restrictive than that required in the underlying policies specified above. The required primary insurance shall be listed as underlying coverage in the first layer umbrella policy. The umbrella policies shall contain a minimum occurrence and aggregate limit of $5,000,000.

The insurance coverages specified in Paragraphs 1.2.2, 1.2.3, 1.2.4, and may be arranged under single policies for the full limits required or by a combination of underlying policies with the balance provided by Umbrella Liability insurance 1.2.6. The Umbrella Liability insurance shall provide coverage following the form of and as broad as that of the underlying primary policies.

1.2.7 The Indemnitees defined in Article 1.1.1 shall be included as Additional Insureds under the insurance policies in 1.2.2, 1.2.4, and 1.2.6. Coverage afforded the Additional Insureds under these policies shall be primary insurance. If the Additional Insureds have other insurance, which is applicable to the loss, such other insurance shall be on an excess and/or contingent basis.

1.3 Insurance Provided by Owner.

Prior to issuance of the Notice to Proceed under this Agreement, and except as otherwise specified within this Agreement, Owner shall, at its sole expense, secure and

thereafter maintain insurance of the type and in the limits set forth below. To the extent that Contractor or subcontractors, or the property of such persons, are covered by such insurance, (i) Contractor shall comply and shall require its subcontractors to comply with the terms set forth in this Paragraph 1.3 and with the most current version of the OCIP Project Insurance Manual issued and maintained by Owner, and (ii) Contractor shall exclude, and shall require its subcontractors to exclude, cost of maintaining any duplicative insurance coverage in the Cost of Work.

1.3.1 Owner shall purchase and continuously maintain until Final Acceptance or termination of this Agreement, whichever occurs first, Builder's Risk insurance naming as insureds Owner, Contractor, and subcontractors performing construction Work at the Project Site. Such insurance shall cover all equipment, machinery, supplies, and other property intended to be permanently incorporated in the Project, for which title or risk of loss shall have passed at the time of loss to an insured. Coverage shall apply to such property while it is located at the Project

Site or located at temporary off-site storage or staging areas approved by Owner, or while in land-based transit to the Project Site within the continental United States. Coverage shall be written on an "All Risk" form, including but not limited to, fire, lightning, windstorm, hail, riot, riot attending a strike, civil commotion, aircraft, vehicle, smoke, explosion, vandalism, malicious mischief, damage to glass, theft, flood and earthquake (including sinkhole) coverages, subject to normal industry policy provisions. Such insurance shall include coverage for expenses due to delays in completion as a result of the insured perils, subject to a thirty (30) day deductible. Limits under this insurance shall not be less than 100% of the replacement value of the Project for physical damage to property and related expenses, provided that sublimits shall be established for losses due to earthquake (including sinkhole) and for losses due to flood, which earthquake and flood sublimits shall be no less than the minimum sublimits for such losses established pursuant to Owner's agreements with Lenders.

NOTE: The Contractor or its subcontractor shall be responsible to pay a deductible as specified in Exhibit D. This deductible shall not be included under the GMP.

Exclusions from such insurance may include, but are not limited to, the following: (1) loss resulting from mysterious disappearance or caused by any wrongful removal of any property of a named insured or any additional insured by the employee(s) of such named insured or additional insured, (2) loss or damage to any automobiles, (3) loss or damage to contractor's or any insured subcontractor's owned, leased or rented property or construction-type tools, equipment, machinery, or supplies used for construction but not intended to be permanently incorporated in the Project, and (4) loss or damage covered by a manufacturer's warranty or guarantee.

Loss, if any, under this insurance shall be adjusted with Owner, Lenders, and/or Trustees, with the cooperation of Contractor, and insurance proceed check(s) shall be made payable to Owner or its Lenders or Trustees. Amounts shall be disbursed to Contractor, contractors, or subcontractors through the Change Order procedures.

1.3.2 Owner shall maintain the Owner-Controlled Insurance Program (OCIP) insurance specified in Paragraphs 1.3.2(a), (b) and (c) below with Owner, Contractor, contractors and subcontractors of all tiers, and such other persons or interests as the Owner may designate as insured parties, with limits not less than those specified below for each coverage.

OCIP coverage shall not apply to vendors, suppliers, material dealers or other subcontractors who are solely engaged in the stocking, testing, transporting, picking up, delivering or carrying materials, parts, equipment or any other items or persons to or from the Project Site; to contractors or subcontractors who furnish material worked to a special design in accordance with the Drawings and Specifications but perform no operations at the Project Site, unless required by

Owner in writing; or to non-trade employees who are temporarily at the Project Site for meetings, deliveries or similar activities. OCIP coverage for any subcontractor requires a written determination of enrollment of the applicable

subcontractor by Owner; Owner may, in its sole discretion, and at any time prior to or during the performance of Work by an applicable contractor or subcontractor, elect to not enroll or to cease enrollment of any contractor or subcontractor of any tier.

(a) Workers' Compensation insurance for statutory benefits limits of the applicable Labor Code(s) and Workers' Compensation law(s), and Coverage B - Employer's Liability with minimum limits of $2,000,000 each accident for Bodily Injury by accident, $2,000,000 each employee for Bodily Injury by disease, and $2,000,000 policy limit for Bodily Injury by disease. Such insurance shall be endorsed to include Longshore and Harbor Workers' Compensation Act Coverage and Jones Act Coverage if applicable. The policy shall be endorsed to include Other States Coverage, and a Waiver of Our Right to Recover from Others Endorsement in favor of Indemnitees.

Coverage will apply only to Work performed at the Project Site and to off-site activities directly related to Work performed at the Project Site. Coverage <u>will not apply</u> with respect to employees of contractors or subcontractors engaged in hauling activities from or to the Project Site, or to employees of independent truckers/haulers.

(b) Commercial General Liability insurance, written on an occurrence form that shall be no less comprehensive and no more restrictive than the coverage provided by the standard Insurance Services Office (ISO) form CG 00 01 10 93. Such insurance shall include by its terms or appropriate endorsements Bodily Injury, Property Damage, Personal Injury, Blanket Contractual, Independent Contractors, Products and Completed Operations (for a minimum of three years following Substantial Completion), coverage shall include the perils of “x” (explosion), “c” (collapse) and “u” (underground) exposures. This coverage shall have a minimum limit of $2,000,000 each occurrence, $4,000,000 General Aggregate, and $4,000,000 Products/Completed Operations Aggregate.

Coverage will apply only to Work performed at the Project Site. Such insurance will not include coverage for products liability to any insured party, subcontractor, vendor, supplier, material dealer or others for any product(s) manufactured, assembled or otherwise worked upon away from the Project Site.

(c) Umbrella Liability insurance. Insurance coverages following form with the coverage specified in Paragraphs 1.3.2(a) and 1.3.2(b) will be provided. The umbrella program limits are $50,000,000 per occurrence and $50,000,000 annual aggregate.

(d) Railroad Protective Insurance written on an occurrence form CG00351093 for construction work performed on, over, or under a railroad right of way or within fifty (50) feet of railroad property. The coverage limits are $5,000,000 per occurrence and $10,000,00 aggregate.

(e) General Contractors Pollution on Legal Liability Insurance written on an occurrence form. Coverage for third Party BI/PD arising from pollution conditions on MTA's work site covers pollution events and cleanup costs. Coverage limits are $5,000,000 occurrence and $10,000,000 aggregate.

The coverages described in Paragraphs 1.3.2(a), (b) and (c) are set forth in full in their respective policy forms, and the foregoing descriptions of such policies are not intended to be complete, or to alter or amend any provisions of the actual policies. In matters, if any, in which this description may conflict with such policies, the provisions of the policies shall govern.

1.3.3 Owner reserves the right to terminate or modify any coverages identified in Paragraphs 1.3.1 and 1.3.2 on sixty-(60) calendar days' written notice to Contractor, contractors, and subcontractors of all tiers. To the extent that any coverage identified in Paragraphs 1.3.1 and 1.3.2 is so terminated or modified, or if and when Owner determines to not enroll or cease enrollment of a subcontractor in any of such coverages, then Contractor shall obtain or amend, and shall require its affected subcontractors to obtain or amend, its own policies of insurance
as required in Paragraph 1.2 to include coverage for all operations not included or no longer included in the coverage to be furnished under Paragraph 1.3. Owner will reimburse the actual cost of such alternative insurance, which was originally identified in the bid documents of the applicable subcontractor, as a Change Order with the GMP amended accordingly. Written evidence of such alternative insurance shall be provided to the Owner prior to the actual date of the termination or modification of Owner-furnished insurance coverage, or promptly after Owner's determination of non-enrollment of a subcontractor in any such coverage.

1.3.4 Deduction for Owner-Provided Insurance. The following procedures shall apply to OCIP coverage furnished by Owner under Paragraph 1.3.2.

1. Initial OCIP Deduction. In consideration of Owner providing the insurance coverages outlined in Paragraph 1.3, Owner and Contractor mutually agree that the contract price has been reduced by the Initial OCIP Deduction as stated in the relevant bid document. The Initial OCIP Deduction is based on the information provided by Contractor on the *Insurance Cost Worksheet and is subject to the approval of the Owner.*.

2. OCIP Insurance Worksheets. Prior to any subcontractor commencing Work on-site, Contractor shall provide to MTA Insurance Cost Worksheets in the form set forth in "Exhibit A" of this Agreement ("Bid Worksheets") completed and signed by each subcontractor.

3. Change Orders. All change orders shall be submitted net of insurance. Each proposed Change Order in excess of $500,000 should identify an OCIP Deduction for the Work described in the proposed Change Order. The proposed Change Order shall identify the estimated man-hours; estimated workers' compensation payroll and estimated OCIP Deduction included within the total Change Order amount.

At Owner's request, Contractor shall complete an *Insurance Cost Worksheet* and submit any other requested information for the Work specified in the Change Order. Owner, at its sole discretion, may amend the Initial OCIP Deduction to include the insurance costs specified in the Change Order and/or the *Insurance Cost Worksheet*.

4. Adjustments to the Initial OCIP Deduction. Owner and/or its representatives shall periodically review the appropriateness of each subcontractor OCIP Deduction. Owner may adjust the OCIP Deduction to reflect the subcontractor's actual insurance cost computed using audited payroll. Owner may withhold from Final Payment in amount adequate to cover the difference between the initial and audited OCIP deductions. If the initial OCIP Deduction is within 10% of the audited OCIP Deduction (as determined by reported and/or audited payroll), no change to the Final Payment will be issued.

1.4 Requirements for All Project Insurance.

Contractor shall cause the insurance to be obtained under Paragraph 1.2, and Owner shall cause the insurance it obtains under Paragraph 1.3, to satisfy the following provisions and requirements.

1.4.1 Owner and Contractor waive all rights against (i) each other and the subcontractors, agents and employees of each other, and (ii) subcontractors, agents and employees, for damages caused by fire or other peril to the extent covered by property insurance obtained by Owner pursuant to this Article 11 or by any other property insurance applicable to the Work, except such rights as each may have to proceeds of such insurance held by Owner as trustee. The insurance policies obtained by Owner pursuant to Paragraph 1.3 shall be endorsed to include a waiver of subrogation in favor of Indemnitees as well as Contractor and subcontractors, and the insurance policies obtained

by Contractor, and subcontractors pursuant to Paragraph 1.2 shall be endorsed to include a waiver of subrogation in favor of Indemnitees; provided, however, that such a waiver of subrogation shall not be required with respect to policies for which all of the Indemnitees are named or additional insureds.

1.4.2 All insurance required by this Agreement shall be from insurance companies authorized to transact that class of insurance in the State of Maryland and having a minimum rating of (or equivalent to) A– VIII by A.M. Best & Company. The required certificates must be personally and manually signed by the authorized representative of the insurance company shown on the certificate with proof that he/she is an authorized representative thereof. In addition, certified, true and exact copies of all insurance policies required by this Agreement shall be provided to either party within a reasonable period of time upon written request.

1.4.3 All of the required insurance shall provide primary coverage with respect to the Work. Any other insurance maintained by Owner, Contractor, or subcontractor shall be in excess of this insurance and shall not contribute to it.

1.4.4 Thirty (30) calendar days' written notice shall be given to Owner and Contractor of any cancellation, intent not to renew, or reduction in the policies' coverage except in the application of the aggregate limit provisions.

1.4.5 Prior to commencing any Work at the Project Site, Contractor, and subcontractors of all tiers shall furnish Owner with a certificate(s) of insurance giving evidence of insurance required by Paragraph 1.2 and evidence of additional insurance endorsements required by Paragraphs 1.2.7 and 1.4.1.

Additionally, Contractor and its subcontractors shall furnish a certificate(s) of insurance or a policy binder(s) of insurance or a policy binder(s), evidencing replacement coverage, to Owner thirty (30) calendar days prior to expiration of any such policies, so that there shall be no interruption in Work due to lack of proof of insurance coverage required by this Agreement. Owner shall not be liable for any delays (or costs or damages resulting therefrom) resulting from Contractor's failure (or that of any subcontractor of any tier) to obtain the insurance required of it under Paragraph 1.2, or to deliver the required certificates of insurance to Owner.

Certificates of insurance shall provide for at least thirty- (30) days' prior written notice to Owner of cancellation (unless cancellation is for nonpayment of premium, in which case 10 days' notice will suffice) or materials alteration, and shall delete the words “endeavor to” from the obligation to notify the certificate holder (Owner) of such cancellation or modification. Upon request of Owner, Contractor shall provide (or require its subcontractors to provide) Owner with a certified copy of any policy of insurance required by Paragraph 1.2.

Vendors, suppliers, material dealers and others who merely transport, pick up, deliver or carry materials, parts or equipment or any other items or persons to or from the Project

Site and those who furnish material worked to a special design but perform no operations at the Project Site shall not be required to furnish a certificate(s) or other evidence of insurance to Owner.

1.4.6 The insurance coverages and limits required under this Agreement are designed to meet the minimum requirements of Owner. They are not designed as a recommended insurance program for Contractor or subcontractors; and meeting these minimum requirements does not relieve such persons of their obligations under Paragraph 11.1.

1.4.7 The amounts and types of insurance shall conform to the minimum requirements set forth in this Appendix I, utilizing Insurance Services Office (ISO) policies and endorsements where applicable.

1.4.8 The acceptance of delivery of any certificates of insurance or certified insurance policies required to be purchased and maintained pursuant to this Agreement does not constitute approval or agreement by the recipient that the insurance requirements have been met or that those certificates of insurance or insurance policies are in compliance with this Agreement.

1.4.9 All of the insurance required by this Article 11 shall be issued as required by law and shall be endorsed, where necessary, to comply with the minimum requirements contained herein. Certified copies of renewal policies or binders must be provided thirty (30) calendar days prior to expiration of current policies so that there shall be no interruption in Work due to lack of proof of insurance coverage as required in this Agreement.

1.4.10 Owner may elect at any time during the term of this Agreement to require Contractor to procure and maintain other or additional insurance. Notice of such election shall be given at least sixty (60) days prior to the effective date of the required modifications. Owner shall reimburse any additional costs incurred by these parties in securing insurance as a part of the Cost of the Work, and the GMP shall be revised by Change Order to be increased by the amount of such additional reimbursement.

EXHIBIT C

FORMS TO BE COMPLETED BY SUCCESSFUL BIDDER ONLY

Enrollment Application
Notice of Subcontractor Award
Notice of Work Completion
Monthly Payroll Report

Error! Objects cannot be created from editing field codes. Form-3	**ENROLLMENT APPLICATION** Numbers reference attached instructions	MTA - OCIP Page 1 of 2

Examine your current Workers' Compensation and General Liability Policies or contact your Insurance Agent to assist you with completing this form. *** NOTICE *** **Enrollment** is not automatic and requires the satisfactory completion of the Aon Form-1a or Form-1b, Form-2 and Form-3. In addition, submit a Certificate of Insurance providing evidence of your *off-site* coverage. Please refer to the Insurance Manual for coverage requirements. Use of this form is mandatory. Duplicate as required.

A. Subcontractor Information:

Federal ID No.: 1

	Business Information *(headquarters)*	Contact Information (address questions to.)
Company Name & dba:	2	3
Contact Name & Title:		
Address:		
Washington, DC Zip Code:		
Telephone:		
Fax:		
Email Address:		

Indicate your Organization's Structure: 4 ❑ Corporation ❑ Partnership ❑ S-Corporation ❑ Joint Venture ❑ Sole Proprietor ❑ Other _____

B. Subcontract Information:

Subcontract No.: 1

Description of Work: 2

Subcontract Amount $: 3

Amount of Self Performed Work $: 4

5 Are you a: ☐ Subcontractor ☐ Subcontractor *(any tier)*

If Subcontractor (*any tier*), identify under contract with: 6

Start Date: 7 ☐ Actual ☐ Estimated

Completion Date: 8 ☐ Actual ☐ Estimated

C. Workers' Compensation Insurance Information for Work Described Above: *(attach a separate sheet if necessary)*

a State	b Class Code	c Description	e Man-hours	f Payroll
1				
		Totals	2	3

D. Provide your current Workers' Compensation Information:

Anniversary Rating Date:	Experience Modification:	Bureau File Number:
1	2	3

Your WC Insurance Carrier: 4

Policy #: 5 Effective Date: 6 Expiration Date: 7

E. Contacts: *(Complete if Applicable)*

Position	1 Name & Title	2 Phone	3 Fax	4 email address
Project				
Safety Rep:				
Contract				
Claims:				
Payroll:				

Provide Location of payroll records if different than Corporate address: 5

Address: _____ Contact: _____

Washington, DC Zip Code: _____ Phone: _____

Error! Objects cannot be created from editing field codes. Form-3	**ENROLLMENT APPLICATION** Numbers reference attached instructions	MTA - OCIP Page 2 of 2

F. Subcontract Information: List all subcontractors that will be working for you on this project (complete the information in the following table). Use additional paper if necessary:

1 Subcontractor	2 Subcontract Amount	3 Contact Person	4 Address & Email Address	5 Phone & Fax Number

G. Enrollment Questions: Answer each question. Use additional paper if necessary.

1 Will you have any off-site location(s) 100% dedicated to this project? ☐ Yes ☐ No If yes, please provide address:

_____

_____

2 Please check if: ☐ Any aircraft used on this project ☐ Any watercraft used on this project

3 Please indicate if labor from the following sources will be used: ☐ Employee Leasing Firm ☐ Temporary Labor Agency

H. WARRANTY APPLICABLE TO PROGRAM INSURANCE COVERAGE

1 Premiums for this Program are the responsibility of *Maryland Transit Administration* and I agree any and all return of premium, dividends, discounts, or other adjustments to any Program policy(ies) is assigned, transferred and set over absolutely to *Maryland Transit Administration*. This assignment applies to the Program policy(ies) as now written or as subsequently modified, rewritten or replaced. Rights of Cancellation for all Program insurance policy(ies) arranged by *Maryland Transit Administration* are assigned to *Maryland Transit Administration*.

2 I will pay the cost of premium(s) for non-Program insurance coverage, specified in the Subcontract Documents.

3 I authorized the release of all claim information for all insurance policies under this Program.

4 It is my responsibility to notify my insurance carrier(s) that I am enrolling in this Program.

5 I have omitted from my bid the insurance costs for the coverage provided by *Maryland Transit Administration*.

6 The statements in this insurance application are true to the best of my knowledge.

I. Signature Block :

I verify the information presented above and attachments are correct:

Name: _____ Date: _____
(please print)

Title: _____ Signature: _____

Mail or Fax to: Ed McDuffie
Aon Risk Services, Inc. of DC
1120 20th Street NW, Suite 600
Washington, DC 20036-3406

Fax # (202) 429-8530
Phone # (202) 429-8513

Or Email: ed_mcduffie@ars.aon.com

Error! Objects cannot be created from editing field codes. Form-3	ENROLLMENT APPLICATION INSTRUCTION	MTA - OCIP Page 1 of 1

This form must be completed and submitted by each successful Subcontractor and Subcontractor of any tier prior to Site mobilization for each contract awarded. The Subcontractor will submit the completed form to Aon Risk Services. Upon receipt of this form, Aon will issue, to the Subcontractor, a Certificate of Insurance evidencing coverage in the Controlled Insurance Program. The completed Certificate of Insurance and workers compensation insurance policy will be mailed to the Enrolled party.

A. Subcontractor Information

1 Enter your company's Federal ID number. This number can be found on filings made to the federal government such as your tax return.
2 Enter your company's name, mailing address and phone/fax number for your company's headquarters in the space provided below.
3 Enter the name of the person Aon should contact if questions arise. Include mailing address, phone/fax and email address in the space provided below.
4 Identify your company's legal structure by checking the box that applies. If the correct legal structure is not specifically listed, please check the "Other" box and specify in the space provided.

B. Subcontractor Information

1 Enter the Subcontractor Number that was included in Maryland Transit Administration's originating documentation.
2 Provide a brief description of the work you will be performing at the Constitution Center site.
3 Identify the total amount of your Subcontract.
4 Identify the percentage of work that you anticipate will be self-performed.
5 Check the appropriate box that identifies if you contract directly with Maryland Transit Administration or are a Subcontractor.
6 If you are a lower tier Subcontractor, identify the entity you are under Subcontract with.
7 Enter the Date you anticipate starting work and then mark whether the date provided is actual or estimated
8 Enter the Date you anticipate completing the described work and then mark whether the date provided is actual or estimated.

C. Workers' Compensation Insurance Information *(Duplicate or attach additional sheets if necessary.):*

1 A Enter the 2 digit abbreviation for the state in which the work will be performed.
B Enter the 4 digit workers compensation class code that applies to the work identified in B2.
C Enter the workers compensation class code description that applies to the work identified in C1c.
D Enter the Workers' Compensation rate that applies to the class code.
E Enter the estimated Man-hours required to complete the described work for each Worker's Compensation class code.
G Enter the estimated Payroll required to complete the described work for each Worker's Compensation class code. Use only unburdened payroll and exclude the premium portions of any over-time pay.
2 Total all estimated Man-hours for each class code. Be sure to include information from additional pages if used.
3 Total all estimated Payroll for each class code. Be sure to include information from additional pages if used.

D. Current Worker's Compensation Information *(This information relates to your corporate or existing coverage)*

1 Provide your Company's Anniversary Rating Date. Information can be located on your bureau's WC Experience Modification worksheets.
2 Enter your current WC Experience Modification Factor.
3 Enter your Bureau File Number also referred to as your Risk Identification Number. This number can also be found on your Modificati0n worksheets.
4 Identify your insurance carrier for Workers' Compensation Coverage.
5 Provide your Worker's Compensation Policy Number.
6 Provide the effective date of your Worker's Compensation policy.
7 Provide the expiration date of your Worker's Compensation policy.

E. Contacts (*Requested Contact information is for specific functions. It is possible to have a single person fulfill multiple responsibilities)*

1 Identify the name of the person and their title for each function. These individuals should be located, if at all possible, on-site.
2 Provide the phone number for each person identified above.
3 Provide the fax number for each person identified above.
4 Provide the email address for each person identified above, if applicable.
5 Identify the physical location of where your payroll records are retained. Provide the Address, City, State, Zip Code, Telephone, Fax Number and Email Address of the person responsible for maintaining the payroll information.

F. Subcontractor Information (*Provide the following information for each lower tier Subcontractor that will be performing work at the Constitution Center site.)*

1 Identify the name of the Subcontracting firm
2 Provide the estimated value of the subcontracted activity.
3 Provide a contact name, preferably the project manager, for the subcontractor.
4 Provide the mailing address for the Subcontractor.
5 Provide the phone number for the Subcontractor.

G. Enrollment Questions

1 Determine if you will have any locations, off-site, that will be 100% dedicated to this project. Mark the appropriate box (yes/no). If you answer yes – provide the address of each location you identified as 100% dedicated.
2 Mark the box or boxes that apply. Contemplate only work performed under this contract.
3 Mark the box or boxes that apply. Employee Leasing Firms are those firms that supply the entire labor force for your company.

H. Warranty Statements:

1-6 Read each Warranty statement thoroughly. If you have questions regarding any of these statements, contact Aon.

I. Signature Block: This form must be signed by a representative of your company knowledgeable of its accuracy.

Forward the completed Enrollment Application to the Aon administrator identified at the bottom of page of the form. This form must be received by the administrator prior to the start of your work.

NOTICE OF SUBCONTRACTOR AWARD

This form is to be completed every time you enter into a subcontract and submitted to Aon Risk Services, Inc. of MD at the address shown

Aon Risk Services, Inc. of MD
Attn: Chuck Burn
500 E. Pratt Street, 7th Floor
Baltimore, MD 21202

Phone: 410.547.2882
Fax: 847.953.0919

PROJECT NAME

BID PACKAGE NAME: _____

BID PACKAGE NUMBER: _____

AWARDING CONTRACTOR: _____

We have awarded a subcontract as follows:

Type of Work: _____

AWARDED TO: _____

Address: _____

City, State, Zip: _____

Federal ID#: _____

Insurance Contact: _____

Telephone Number: _____

Fax Number: _____

E-Mail Address: _____

Date of Subcontract: _____

Estimated Contract Amount: _____

Probable Starting Date: _____

Probable Completion Date: _____

_____

Authorized Signature Title Date

This form must be submitted each time a new subcontract is awarded. This includes subcontractors who are working on existing projects and are already enrolled in the OCIP program.

Error! Objects cannot be created from editing field codes. Form-4	On-Site Payroll Report - Form 4 Numbers reference attached instructions	MTA OCIP Page 1 of 2

Complete a Separate Form for Each Subcontract with Maryland Transit Administration. Your report is due not later than the 10th day of each month. Delay in providing this report may result in payments being withheld.

A. REPORT IDENTIFICATION

Period Beginning: 1 _____ Period Ending: 2 _____ Year: 3 _____

Subcontractor: 4 _____

Under Contract with: 5 _____

Contract #: 6 _____

B. ACTIVITY REPORT

a State	b workers' compensation Class Code	c Work Description	d Man-Hours	e Gross Payroll	f Reportable Payroll *
1					
		TOTALS:	2	3	4

* Do not include premium (excess) overtime wages, use straight time wage rates only. You must also comply with all rules set forth by the Workers Compensation Bureau in the state in which the work is performed.

C. ADDITIONAL DATA REQUIREMENTS :

1. _____

2. _____

3. _____

D. Signature Block : I verify the information presented above and attachments are correct:

Name: _____ Date: _____
(please print)

Title: _____ Signature: _____

☐ CHECK IF THIS IS YOUR LAST PAYROLL REPORT. COMPLETE AN AON FORM-5 "NOTICE OF WORK COMPLETION" AND INCLUDE WITH THIS PAYROLL REPORT.

Note: Information can be submitted on-line at www.aonwrap.aon.com. Please contact your Administration Staff to obtain a user ID and Password.

Mail or Fax to: Ed McDuffie
Aon Risk Services, Inc. of DC
1120 20th Street NW, Suite 600
Washington, DC 20036-3406
Or Email: ed_mcduffie@ars.aon.com

Fax # (202) 429-8530
Phone # (202) 429-8513

The Subcontractor and every Subcontractor of any tier performing work at the Project Site for each Subcontract awarded must complete this form each month. The Subcontractor must attach the completed report to their monthly pay request in order to receive interim payment. Subcontractors will be responsible for the submission of this form by their lower tier Subcontractors. Aon Risk Services can forward a supply of these forms to your company upon request.

A. Report Identification

1 Fill in the month and day for the beginning of the period you are reporting on.
2 Fill in the month and day for the ending of the period you are reporting on.
3 Fill in the year that applies to the reporting period.
4 Enter the name of your firm.
5 If you are a lower tier Subcontractor, identify the name of the firm you are contracted with. If you are a Subcontractor enter N/A
6 Provide your Subcontract Number

B. Activity Report

1 For each workers' compensation Class Code that applies to work performed during the reporting period, provide the following information:
  a Identify the state in which the work was performed.
  b Identify the workers' compensation Class Code that applies to the work performed during the period. (Most states use a four digit No.)
  c Provide a brief description of the work by class code.
  d Identify the number of Man-hours worked by your employees for each applicable class code.
  e Provide the Gross Payroll paid to your employees. This should include overtime pay and vacation pay.
  f Determine the Reportable Payroll. Reportable Payroll does not include the premium portion of any overtime pay (i.e. 45 hours X $10.00/hr = 450.00 *do not include the premium overtime pay of $5.00 for the 5 hours of overtime*)
2 Total the Man-hours provided on the payroll report.
3 Total the Gross Payroll provided.
4 Total the Reportable Payroll.

C. Additional Data Requirements: If questions are listed in this section of the form, they are unique to this project. Please refer to the Insurance Manual.

D. Signature Block: This form must be signed by a representative of your company with the authority to Verify the information is correct.

Note: Information can be submitted on-line at www.aonwrap.aon.com. Please contact your Administration Staff to obtain a user ID and Password.

Error! Objects cannot be created from editing field codes. Form-5	**NOTICE OF WORK COMPLETION** Numbers reference attached instructions	MTA OCIP Page 1 of 1

1 Contractor Name: _____

2 Contract #: _____

3 Description of Work Performed: _____

4 Date Work Completed: _____

5 Date this Subcontract Completed: _____

The following lower tier Subcontractors have completed their Work at the Project site: *(Add attachment if more space is needed)*

a Subcontractor's Name	b Contract Number	c Description of Work	d Date Completed
6			

Location of your payroll records *(Receipt of this form will initiate the payroll audit process)*:

Address: 7 _____

State, City Zip Code: _____

Contact/Phone #: _____

The undersigned acknowledges request for termination of coverage under the OCIP as of the date indicated above for the specified Contract. Should we return to the work Site, we will be working under our own insurance program and must provide MTA with a Certificate of Insurance showing our own coverage as detailed in our contract.

Signed by: 8 _____

Title Date

Approved by: 9 _____

DAVIS Project Manager Date

Mail or Fax to: Ed McDuffie
Aon Risk Services, Inc. of DC
1120 20th Street NW, Suite 600

Fax # (202) 429-8530
Phone # (202) 429-8513

Washington, DC 20036-3406
Or Email: ed_mcduffie@ars.aon.com

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- This form will be completed and returned to the OCIP Administrator by the Contractor whenever work is completed for each Subcontract. This form will initiate the final payroll audit process for the Contractor identified in item 1. Final Payments and Release of Retainage will not occur until all payroll work is complete and finalized.

1 ▪ Provide the name of the Contractor completing their work.

2 ▪ Enter the Subcontract number for the work being completed.

3 ▪ Provide a brief description of the work being completed.

4 ▪ Provide the Date the Work was completed.

5 ▪ Provide the Date the Subcontract was completed, if other than the work completion date.

6a ▪ Enter the name of each Subcontractor that performed work for you that has completed their work.

b ▪ Enter their Subcontract Number.

c ▪ Provide a brief description of their work.

d ▪ Provide the Date they completed their work.

7 ▪ Identify the physical location of where your payroll records are retained. Provide the Address, State, City, Zip Code, Contact Name and Telephone Number of the person responsible for maintaining the payroll information.

8 ▪ This form must be signed by a representative of your company with the authority to Verify the information is correct.

9 ▪ Have this form approved by the Project Manager for the Project site.

EXHIBIT D

SCHEDULE OF DEDUCTIBLES

CATEGORY	CLASSIFICATION	DEDUCTIBLE
Buildings	Fire Resistive/Non-Combustible 2 stories or less 3 Greater than 3 stories	 $10,000 $10,000
	Joisted Masonry	$10,000
	Renovations - Non Structural - Structural	$10,000 $10,000
	Frame - New or Renovation	Refer
Bridges	Over Land Except	$10,000
	Truss / Arch / Box Girder	$25,000
	Over Water Except	$25,000
	Truss / Arch / Box Girder	$25,000
	Suspension, Cable Stayed & Movable Spans	Refer
Tunnels	Cut & Cover	$25,000
	Hard Rock	$100,000
	Soft Bore	$250,000
Stations (Non-Building Work)	At Grade	$10,000
	Elevated	$10,000
	Below Grade	$10,000
Infrastructure	Railwork / Roadbed / Crossings / Signalization / Electrification / Paving / Utility Relocations & Miscellaneous Work	$10,000
Flood	Within 100-Year Flood Plain	$250,000
	All other Flood	$25,000 or Per Classification (Which-ever is higher)
Earthquake	All Earthquake	$25,000 or Per Classification (Which-ever is higher)
Delay in Completion	Bridges & Tunnels	1 - Day for Each Month of Construction Term (Minimum 15 Days)
	All other Categories	10 - Days
Rolling Stock Overhaul	Passenger Cars	$10,000
	Passenger Cars in Transit / Rail Testing	$100,000

SUBCONTACTOR UTILIZATION FORM

The attached form is for informational purposes only. It will only have to be completed by the successful bidder on the project. A copy of the form will be sent to the successful bidder along with the contract and Notice of Intent and should be returned to MTA with the other required paperwork within ten (10) days of receipt of the letter.

Maryland Department of Transportation
Sub-Contractor Utilization Information Form

Prime Contractor (Name of Firm):	**Telephone:**	**Fax:**	**E-Mail:**
Prime Contractor: (Address-Number, Street, City, State, Zip)			
FEIN Number:	**Contract Number:**	**Contract Amount: (Dollars)**	

Sub -Contractor (Name of Firm):	**Telephone:**	**Fax:**	**E-Mail:**
Sub - Contractor: (Address-Number, Street, City, State, Zip)			
FEIN Number:	**MDOT-DBE Certified (y/n):** **If yes, give MDOT Cert.#**	**Annual Gross Income:**	
List Years in Business:	**List Description of Service You Provide:**		

Sub -Contractor (Name of Firm):	**Telephone:**	**Fax:**	**E-Mail:**
Sub - Contractor: (Address-Number, Street, City, State, Zip)			
FEIN Number:	**MDOT-DBE Certified (y/n):** **If yes, give MDOT Cert.#**	**Annual Gross Income:**	
List Years in Business:	**List Description of Service You Provide:**		

Sub -Contractor (Name of Firm):	**Telephone:**	**Fax:**	**E-Mail:**
Sub - Contractor: (Address-Number, Street, City, State, Zip)			
FEIN Number:	**MDOT-DBE Certified (y/n):** **If yes, give MDOT Cert.#**	**Annual Gross Income:**	
List Years in Business:	**List Description of Service You Provide:**		

NOTE: Please copy this sheet if additional sub-contractors are used.

PAYMENTS TO CONTRACTORS BY ELECTRONIC FUNDS TRANSFER

Every solicitation for a contract expected to exceed $200,000 is required to contain the following provision:

> The Bidder agrees to accept payments by electronic funds transfer unless the State Comptrollers Office grants an exemption. The selected Bidder shall register using the attached form COT/GAD X-10 Vendor Electronic Funds (EFT) Registration Request Form. Any request for an exemption must be submitted to the State Comptroller's Office for approval at the address specified on the COT/GAD X-10 form and must include the business identification information as stated on the form and include the reason for the exemption.

Once a contractor registers to receive payments electronically, all State payments to the contractor (including payments under other State contracts regardless of value) will be disbursed via electronic funds transfer.

State of Maryland
Comptroller of Maryland

Vendor Electronic Funds Transfer (EFT) Registration Request Form

Date of request _____

Business identification information (Address to be used in case of default to check):

Business name _____

Address line1 _____

Address line 2 _____

City _____ State _____

Zip code ☐☐☐☐☐ ☐☐☐☐

Business taxpayer identification number:

Federal Employer Identification Number: ☐☐ ☐☐☐☐☐☐☐

(or) Social Security Number: ☐☐☐ ☐☐ ☐☐☐☐

Business contact name, title, and phone number including area code. (And address if different from above).

_____

_____

Financial institution information:

Name and address _____

_____

Contact name and phone number (include area code)

_____

ABA number ☐☐☐☐☐☐☐☐☐

Account number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Account type ☐ Checking ☐ Money Market

A voided check from the bank account must be attached.

Transaction requested:

1. ☐ Initiate all disbursements via EFT to the above account.
2. ☐ Discontinue disbursements via EFT, effective _____.
3. ☐ Change the bank account to above information—a copy of the approved Registration Form for the previous bank account must be attached.

(OVER)

I am authorized by * _____ (hereinafter Company) to make the representations contained in this paragraph. Company authorizes the Comptroller and the Treasurer of Maryland to register it for electronic transfer (EFT) using the information contained in this registration form. Company agrees to receive all funds from the State of Maryland by electronic funds transfer according to the terms of the EFT program. Company agrees to return to the State of Maryland any EFT payment incorrectly disbursed by the State of Maryland to the Company's account. Company agrees to hold harmless the State of Maryland and its agencies and departments for any delays or errors caused by inaccurate or outdated registration information or by the financial institution listed above.

*Name of registering business entity

_____

Signature of company treasurer, controller, or chief financial officer and date

Completed by GAD/STO

Date Received _____

GAD registration information verified _____ Date to STO _____

STO registration information verified _____ Date to GAD _____

R*STARS Vendor No. and Mail Code Assigned:

_____ / _____ / _____ _____

_____ _____

State Treasure's Office approval date General Accounting Division approval date

---

To Requestor:

Please retain a copy of this form for your records. Please allow approximately 30 days from the date of your request for the Comptroller's and Treasurer's Offices to process your request. Failure to maintain current information with this office could result in errors in payment processing. If you have any questions, please call the EFT registration desk at 410-260-7375.

Please submit form to: EFT Registration, General Accounting Division
Room 205, P.O. Box 746
Annapolis, Maryland 21404-0746

COT/GAD X-10

STATE OF MARYLAND

DEPARTMENT OF TRANSPORTATION

MARYLAND TRANSIT ADMINISTRATION

CONTRACT AGREEMENT

FOR

WALDORF PARK AND RIDE FACILITY

CONTRACTOR: CONTRACT NO.: T-1038-0140

_____
_____ DATE: _____
_____ (To Be Filled in by the Administration

THIS CONTRACT, made and entered into as of the above date by and between the MARYLAND TRANSIT ADMINISTRATION ("MTA"), a modal agency of the Maryland Department Of Transportation acting for and on behalf of the State of Maryland, and _____, a _____ (hereinafter called "Contractor")

In the event of any discrepancy or dispute, the following is the order of precedence: (1) The Contract, (2) Specifications, (3) Drawings, (4) Supplementary General Provisions, and (5) General Provisions.

Contractor covenants and agrees to perform all obligations of Contractor set forth in this Contract and in the documents listed below, which documents are incorporated herein by reference and which documents together with this Contract are hereinafter called "Contract Documents".

* Exhibit A Contract Specification Book which includes the MDOT General Provisions, the MTA Supplementary General Provisions, and the Special Provisions
* Exhibit B Contract Drawings
* Exhibit C Addendum No. 0 to 0
* Exhibit D Contract Affidavit

PERIOD OF PERFORMANCE: _____ Calendar Days from NTP

LIQUIDATED DAMAGES: $ _____

COMPENSATION:

In consideration of the faithful performance of all of Contractor obligations hereunder, the Administration shall pay to Contractor the compensation specified in Exhibit "A" Bid Form.

Aggregate Contract Amount: $ _____

ADDRESSES:

Contractor:

_____
_____
_____
_____

Administration:

Department of Transportation
Maryland Transit Administration
6 St. Paul Street
Baltimore, Maryland 21202-1614

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the date first above written.

WITNESS:

_____

_____

_____
(Federal Tax ID Number)

_____
(Signature)

_____
(Printed Name)

_____
(Title)

WITNESS:

_____

MARYLAND TRANSIT ADMINISTRATION

_____

_____
(Printed Name)

_____
(Title)

Approved as to Form and Legal Sufficiency:

_____
Assistant Attorney General

APPROVED BY BOARD OF PUBLIC WORKS

Date: _____ Item No.: _____

CONTRACT AFFIDAVIT

A. AUTHORITY

I HEREBY AFFIRM THAT:
I, _____ (print name), possess the legal authority to make this Affidavit.

B. CERTIFICATION OF REGISTRATION OR QUALIFICATION WITH THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION

I FURTHER AFFIRM THAT:

The business named above is a (check applicable box):

(1) Corporation — ☐ domestic or ☐ foreign;
(2) Limited Liability Company — ☐ domestic or ☐ foreign;
(3) Partnership — ☐ domestic or ☐ foreign;
(4) Statutory Trust — ☐ domestic or ☐ foreign;
(5) ☐ Sole Proprietorship.

and is registered or qualified as required under Maryland Law. I further affirm that the above business is in good standing both in Maryland and (IF APPLICABLE) in the jurisdiction where it is presently organized, and has filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation. The name and address of its resident agent (IF APPLICABLE) filed with the State Department of Assessments and Taxation is:

Name and Department ID Number:_____Address:_____

and that if it does business under a trade name, it has filed a certificate with the State Department of Assessments and Taxation that correctly identifies that true name and address of the principal or owner as:

Name and Department ID Number: _____
Address:_____.

C. FINANCIAL DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, the provisions of State Finance and Procurement Article, §13-221, Annotated Code of Maryland, which require that every business that enters into contracts, leases, or other agreements with the State of Maryland or its agencies during a calendar year under which the business is to receive in the aggregate $100,000 or more

shall, within 30 days of the time when the aggregate value of the contracts, leases, or other agreements reaches $100,000, file with the Secretary of State of Maryland certain specified information to include disclosure of beneficial ownership of the business.

D. POLITICAL CONTRIBUTION DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, Election Law Article, §§14-101 — 14-108, Annotated Code of Maryland, which requires that every person that enters into contracts, leases, or other agreements with the State of Maryland, including its agencies or a political subdivision of the State, during a calendar year in which the person receives in the aggregate $100,000 or more shall file with the State Board of Elections a statement disclosing contributions in excess of $500 made during the reporting period to a candidate for elective office in any primary or general election.

E. DRUG AND ALCOHOL FREE WORKPLACE

(Applicable to all contracts unless the contract is for a law enforcement agency and the agency head or the agency head's designee has determined that application of COMAR 21.11.08 and this certification would be inappropriate in connection with the law enforcement agency's undercover operations.)

I CERTIFY THAT:

(1) Terms defined in COMAR 21.11.08 shall have the same meanings when used in this certification.

(2) By submission of its bid or offer, the business, if other than an individual, certifies and agrees that, with respect to its employees to be employed under a contract resulting from this solicitation, the business shall:

(a) Maintain a workplace free of drug and alcohol abuse during the term of the contract;

(b) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of drugs, and the abuse of drugs or alcohol is prohibited in the business' workplace and specifying the actions that will be taken against employees for violation of these prohibitions;

(c) Prohibit its employees from working under the influence of drugs or alcohol;

(d) Not hire or assign to work on the contract anyone who the business knows, or in the exercise of due diligence should know, currently abuses drugs or alcohol and is not actively engaged in a bona fide drug or alcohol abuse assistance or rehabilitation program;

(e) Promptly inform the appropriate law enforcement agency of every drug-related crime that occurs in its workplace if the business has observed the violation or otherwise has reliable information that a violation has occurred;

(f) Establish drug and alcohol abuse awareness programs to inform its employees about:

(i) The dangers of drug and alcohol abuse in the workplace;
(ii) The business's policy of maintaining a drug and alcohol free workplace;
(iii) Any available drug and alcohol counseling, rehabilitation, and employee assistance programs; and
(iv) The penalties that may be imposed upon employees who abuse drugs and alcohol in the workplace;

(g) Provide all employees engaged in the performance of the contract with a copy of the statement required by §E(2)(b), above;

(h) Notify its employees in the statement required by §E(2)(b), above, that as a condition of continued employment on the contract, the employee shall:

(i) Abide by the terms of the statement; and
(ii) Notify the employer of any criminal drug or alcohol abuse conviction for an offense occurring in the workplace not later than 5 days after a conviction;

(i) Notify the procurement officer within 10 days after receiving notice under §E(2)(h)(ii), above, or otherwise receiving actual notice of a conviction;

(j) Within 30 days after receiving notice under §E(2)(h)(ii), above, or otherwise receiving actual notice of a conviction, impose either of the following sanctions or remedial measures on any employee who is convicted of a drug or alcohol abuse offense occurring in the workplace:

(i) Take appropriate personnel action against an employee, up to and including termination; or
(ii) Require an employee to satisfactorily participate in a bona fide drug or alcohol abuse assistance or rehabilitation program; and

(k) Make a good faith effort to maintain a drug and alcohol free workplace through implementation of §E(2)(a)—(j), above.

(3) If the business is an individual, the individual shall certify and agree as set forth in §E(4), below, that the individual shall not engage in the unlawful manufacture, distribution, dispensing, possession, or use of drugs or the abuse of drugs or alcohol in the performance of the contract.

(4) I acknowledge and agree that:

(a) The award of the contract is conditional upon compliance with COMAR 21.11.08 and this certification;

(b) The violation of the provisions of COMAR 21.11.08 or this certification shall be cause to suspend payments under, or terminate the contract for default under COMAR 21.07.01.11 or 21.07.03.15, as applicable; and

(c) The violation of the provisions of COMAR 21.11.08 or this certification in connection with the contract may, in the exercise of the discretion of the Board of Public Works, result in suspension and debarment of the business under COMAR 21.08.03.

F. CERTAIN AFFIRMATIONS VALID

I FURTHER AFFIRM THAT:

To the best of my knowledge, information, and belief, each of the affirmations, certifications, or acknowledgements contained in that certain Bid/Proposal Affidavit dated _____ , 20___ , and executed by me for the purpose of obtaining the contract to which this Exhibit is attached remains true and correct in all respects as if made as of the date of this Contract Affidavit and as if fully set forth herein.

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

Date: _____

By: _____ (printed name of Authorized Representative and Affiant)

_____ (signature of Authorized Representative and Affiant)

Surety Bond Assistance Program

Small businesses may qualify for assistance in obtaining bid, performance and payment bonds through the Maryland Small Business Development Financing Authority (MSBDFA). MSBDFA can directly issue bid, performance or payment bonds up to $5 million. MSBDFA may also guarantee up to 90% of a surety's losses resulting from a contractor's breach of a bid, performance or payment bond or $1,350,000, whichever is less. Bonds issued directly by the MSBDFA Surety Bond Program (Program) will remain in effect for the term of the contract. Bond guarantees will remain in effect for the term of the bond.

To be eligible for bonding assistance, an applicant must:

1. Have its principal place of business in Maryland or be a Maryland resident;
2. First be denied bonding by at least one surety in both the standard and specialty markets within 90 days of submitting a bonding application to MSBDFA;
3. Employ fewer than 500 full-time employees or have gross sales of less than $50 million annually;
4. Not subcontract more than 75 percent of the work;
5. Have good moral character and a history of financial responsibility;
6. Demonstrate that the contract will have a substantial economic impact; and
7. Never have defaulted on any loan or financial assistance made or guaranteed by MSBDFA.

Applicants are encouraged to apply for assistance under the Program through their respective bonding agents. Questions regarding the bonding assistance program should be referred to:

Maryland Small Business Development Financing Authority
c/o Meridian Management Group, Inc.
826 East Baltimore Street
Baltimore, Maryland 21202
Phone 410-333-2548
Fax: 410-333-2552
Email: mmgdeal@mmggroup.com

STATE OF MARYLAND
MARYLAND DEPARTMENT OF TRANSPORTATION

PAYMENT BOND

Principal	Business Address of Principal
Name of Surety: A corporation of the State of _____ and authorized to do business in the State of Maryland	
PENAL SUM OF THIS PAYMENT BOND (express in words and figures)	**DESCRIPTION OF CONTRACT** Contract Number: Contract Name or Description:
DATE OF BOND (Shall be no later than date on Contract)	**DATE OF CONTRACT** (To be filled in by the Adm.)
OBLIGEE	
State of Maryland by and through the following Administration acting for the Maryland Department of Transportation: MARYLAND TRANSIT ADMINISTRATION	

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal named above and Surety named above, being authorized to do business in Maryland, and having business address as shown above, are held and firmly bound unto the Obligee named above, for the use and benefit of claimants as hereinafter defined, in the Penal Sum of this Payment Bond stated above, for the payment of which Penal Sum we bind ourselves, our heirs, executors, administrators, personal representatives, successors, and assigns, jointly and severally, firmly by these co-sureties, bind ourselves, our successors and assigns, in such Penal Sum jointly and severally as well as severally only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each co-surety binds itself, jointly and severally with the Principal, for the payment of such sum as appears above its name below, but if no limit of liability is indicated, the limit of such liability shall be the full amount of the Penal Sum.

WHEREAS, Principal has entered into or will enter into a contract with the State, by and through the Administration named above acting for the State of Maryland, which contract is described and dated

as shown above, and incorporated herein by reference. The contract and all items incorporated into the contract, together with any and all changes, extensions of time, alterations, modifications, or additions to the contract or to the work to be performed thereunder or to the Plans, Specifications, and Special Provisions, or any of them, or to any other items incorporated into the contract shall hereinafter be referred to as the "Contract".

WHEREAS, it is one of the conditions precedent to the final award of the Contract that these presents be executed.

NOW THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and materials furnished, supplied and reasonably required for use in the performance of the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect, subject to the following conditions:

1. A claimant is defined to be any and all of those persons supplying labor and materials (including lessors of the equipment to the extent of the fair market value thereof) to the Principal or its subcontractors and subcontractors in the prosecution of the work provided for in the Contract, entitled to the protection provided by Section 9-113 of the Real Property Article of the Annotated Code of Maryland, as from time to time amended.

2. The above named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been in full may, pursuant to and when in compliance with the provisions of the aforesaid Section 9-113, sue on this Bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant and have execution thereon. The Obligee shall not be liable for the payment of any costs or expenses of any such suit.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligation on this Payment Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

This Payment Bond shall be governed by and construed in accordance with the laws of the State of Maryland and any reference herein to Principal or Surety in the singular shall include all entities in the plural who or which are signatories under the Principal or Surety heading below.

IN WITNESS WHEREOF, Principal and Surety have set their hands and seals to this Payment Bond. If any individual is a signatory under the Principal heading below, then each such individual has signed below on his or her own behalf, has set forth below the name of the firm, if any, in whose name he or she is doing business, and has set forth below his or her title as a sole proprietor. If any partnership or joint venture is a signatory under the Principal heading below, then all members of each such partnership or joint venture have signed below, each member has set forth below the name of the partnership or joint venture, and each member has set forth below his or her title as a general partner, limited partner, or member of joint venture, whichever is applicable. If any corporation is a signatory under the Principal or Surety heading below, then each such corporation has caused the following: the corporation's name to be set forth below, a duly authorized representative of the corporation to affix below the corporation's seal and to attach hereto a notarized corporate resolution of power of attorney authorizing such action, and each such duly authorized representative to sign below and set forth below his or her title as a representative of the corporation. If any individual acts as a witness to any signature below, then each such individual has signed below and has set forth below his or her title as a witness. All of the above has been done as of the Date of Bond shown above.

In Presence of:
Witness:
_____ as to

Individual Principal

_____(SEAL)

In Presence of:
Witness:

_____ as to
_____ as to
_____ as to

Co-Partnership Principal

_____(SEAL)
(Name of Co-Partnership)

By:_____(SEAL)
_____(SEAL)
_____(SEAL)

Attest:

_____
Corporate Secretary

Corporate Principal

_____
(Name of Corporation)

By: _____ AFFIX CORPORATE SEAL
President

_____
(Surety)

Attest: (SEAL)

_____
Signature
Bonding Agent's Name: _____

Agent's Address _____

By: _____ AFFIX CORPORATE SEAL

Title _____

_____
(Business Address of Surety)

Approved as to legal form and sufficiency this
_____ day of _____ 20 __

_____
Asst. Attorney General

STATE OF MARYLAND
MARYLAND DEPARTMENT OF TRANSPORTATION

PERFORMANCE BOND

Principal	Business Address of Principal
Name of Surety A corporation of the State of _____ and authorized to do business in the State of Maryland	
PENAL SUM OF THIS PERFORMANCE BOND (express in words and figures)	**DESCRIPTION OF CONTRACT** Contract Number: Contract Name or Description:
DATE OF BOND (Shall be no later than Date on Contract)	**DATE OF CONTRACT** (To be filled in by the Adm.)
OBLIGEE	
STATE OF MARYLAND By and through the following Administration acting for the Maryland Department of Transportation: MARYLAND TRANSIT ADMINISTRATION	

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal named above and Surety named above, being authorized to do business in Maryland, and having business addresses as shown above are held and firmly bound unto the Obligee named above in the Penal Sum of this Performance Bond stated above, for the payment of which Penal Sum we bind ourselves, our heirs, executors, administrators, personal representatives, successors, and assigns, jointly and severally, firmly by these presents. However, where Surety is composed of corporations acting as co-sureties, bind ourselves, our successors and assigns, in such Penal Sum jointly and severally as well as severally only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each co-surety binds itself, jointly and severally with the Principal, for the payment of such sum as appears above its name below, but if no limit of liability is indicated, the limit of such liability shall be the full amount of the Penal Sum.

WHEREAS, Principal has entered into or will enter into a contract with the State of Maryland, by and through the Administration named above acting for the State of Maryland, which contract is described and dated as shown above, and incorporated herein by reference. The contract and all items incorporated into the contract, together with any and all changes, extensions of time, alterations, modifications, or additions to the contract or to the work to be performed thereunder or to the Plans, Specifications, and Special Provisions, or any of them, or to any other items incorporated into the contract shall hereinafter be referred as "the Contract."

WHEREAS, it is one of the conditions precedent to the final award of the Contract that these presents be executed.

NOW, THEREFORE, during the original term of said Contract, during any extensions thereto that may be granted by the Administration, and during the guarantee and warranty period, if any, required under the Contract, unless otherwise stated therein, this Performance Bond shall remain in full force and effect unless and until the following terms and conditions are met:

1. Principal shall well and truly perform the Contract; and

2. Principal and Surety shall comply with the terms and conditions in this Performance Bond.

Whenever Principal shall be declared by the Administration to be in default under the Contract, the Surety may, within 15 days after notice of default from the Administration, notify the Administration of its election to either promptly proceed to remedy the default or promptly proceed to complete the contract in accordance with and subject to its terms and conditions. In the event the Surety does not elect to exercise either of the above stated options, then the Administration thereupon shall have the remaining contract work completed, Surety to remain liable hereunder for all expenses of completion up to but not exceeding the penal sum stated above.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligation on this Performance Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

This Performance Bond shall be governed by and construed in accordance with the laws of the State of Maryland and any reference herein to Principal or Surety in the singular shall include all entities in the plural who or which are signatories under the Principal or Surety heading below.

IN WITNESS WHEREOF, Principal and Surety have set their hands and seals to this Performance Bond. If any individual is a signatory under the Principal heading below, then each such individual has signed below on his or her own behalf, has set forth below the name of the firm, if any, in whose name he or she is doing business, and has set forth below his or her title as a sole proprietor. If any partnership or joint venture is a signatory under the Principal heading below, then all members of each such partnership or joint venture, and each member has set forth below his or her title as a general partner, limited partner, or member of joint venture, whichever is applicable. If any corporation is a signatory under the Principal or Surety heading below, then each such corporation has caused the following: the corporation's name to be set forth below, a duly authorized representative of the corporation to affix below the corporation's seal and to attach

hereto a notarized corporate resolution of power of attorney authorizing such action, and each such duly authorized representative to sign below and set forth below his or her title as a representative of the corporation. If any individual acts as a witness to any signature below, then each such individual has signed below and has set forth below his or her title as a witness. All of the above has been done as of the Date of Bond shown above.

In Presence of:

Witness:
_____ as to

Individual Principal

_____(SEAL)

In Presence of:

Witness:
_____

Co-Partnership Principal

_____(SEAL)
(Name of Co-Partnership)

_____ as to

By:_____(SEAL)

_____ as to

_____(SEAL)

_____ as to

_____(SEAL)

Attest:

_____ as to
Corporate Secretary

Corporate Principal
_____
(Name of Corporation)

By: _____
President

AFFIX
CORPORATE
SEAL

Attest:
(SEAL)

_____
Signature
Bonding Agent's Name: _____

_____
Agent's Address

_____
(Surety)

By: _____

AFFIX
CORPORATE
SEAL

Title _____

_____
(Business Address of Surety)

Approved as to legal form and sufficiency this

_____ day of _____ 20 __

_____
Asst. Attorney General

BID PROTESTS

All protests relating to this solicitation, the selections and/or award must be filed in writing with the Administration's Procurement Officer, and within the time limitation set forth in the Code of Maryland Regulations (COMAR) 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 to be followed by aggrieved actual or prospective bidders, or offerors is contained in COMAR 21.10. A written summary of this procedure will be provided, upon request, by the Contract Administration Department of the Maryland Transit Administration located at 6 Saint Paul Street, Baltimore, MD 21202-1614.

MARYLAND TRANSIT ADMINISTRATION

CONTRACTOR SAFETY & HEALTH PLAN GUIDELINES

2011

Contract No. T-1038-0140

MTA PROJECT SPECIFIC
CONTRACTOR SAFETY & HEALTH PLAN GUIDELINES

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MARYLAND TRANSIT ADMINISTRATION
POLICY STATEMENT

ADMINISTRATOR'S POLICY STATEMENT ON CONSTRUCTION AND SYSTEM SAFETY PROGRAM PLAN

The Maryland Transit Administration (MTA) was organized to provide safe, reliable and effective service to all users. Safety is a primary concern that affects all levels of MTA activities, including planning, design, construction, testing, and operations and maintenance of all MTA transportation systems. Therefore, all MTA personnel and appropriate contractors are charged with the responsibility of ensuring the safety of passengers, employees, property and the general public which come in contact with the MTA system.

The Office of Safety, Quality Assurance and Risk Management (OSQARM) is empowered and authorized to develop, implement and administer a comprehensive, integrated and coordinated System Safety Program, including a specific plan to identify, prevent, control and resolve unsafe conditions during design, construction, testing, and operations and maintenance of MTA transportation systems.

Accordingly, the Office of Safety, Quality Assurance and Risk Management is empowered to order the cessation of unsafe activities or operations which are evaluated as presenting an immediate and serious hazard within the system and to conduct unannounced inspections aimed at identifying and eliminating unsafe practices, operations and/or conditions not corrected by immediate management/supervision.

3/11/11
Administrator

3/11/11
Deputy CAO & Chief Engineer

3/11/11
Chief Safety Officer, OSQARM

2. ***DEFINITIONS***

***MTA*- Maryland Transit Administration**	- The body charged with the expansion and renovation of the Transit System.
Contract	- The written agreement by and between the *MTA* and a Contractor.
Contractor	- Any individual, firm, or corporation undertaking maintenance, construction, or other services under Contract with the *MTA*.
Contractor's Safety Engineer	- A full time safety professional employed by the Contractor to manage the Contractor's safety efforts.
Contractor's Safety Supervisor	- A Contractor's employee separate from the superintendent hired to perform various tasks, including safety and other related duties, such as traffic control, utility coordination, etc.
Contractor Safety& Health Plan Guidelines	- The safety and loss prevention program established by the *MTA* to control the hazards and risks associated with the contracted projects.
Employer	- Any individual, firm, or corporation, except the *MTA* who provides direct manual and non-manual labor or service personnel at or emanating from the Site either by written or verbal Contract.
Insured's	- The Authority, Consultants, Contractors, Architects, Engineers, Subcontractors, and any other party named as insured's on the Certificates of Insurance signed by a duly authorized representatives of the Insurance Carriers.

OCIP	- The Owner-Controlled Insurance Program under which Worker's Compensation, Employer's Liability, Commercial General Liability, and Excess/Umbrella Liability insurance's are procured and paid for by the *MTA* for all Contractors and all tiers of Subcontractors providing direct manual or non-manual labor or service personnel at or emanating from the Project.
Resident Engineer	- Authorized representative of the *MTA* to supervise administration of a contract
Safety Committee	- A committee designated by *MTA* responsible for the coordination, direction, and management of the Contractor Safety & Health Plan.

3. ***PLAN ADMINISTRATION:***

Purpose: These Contractor Safety & Health Plan Guidelines have been prepared to ensure the health and safety of all contractor employees by providing a consistent program for all contractors to follow and abide. The Contractor Safety & Health Plan Guidelines cannot possibly address all conditions that may arise; therefore, this plan establishes the minimum requirements and is not a complete working guide. These Contractor Safety & Health Plan Guidelines address both safety and health service issues.
The Contractor Project Specific Safety & Health Plan has been established to promote safety and to prevent, limit, reduce, and control hazards and risks associated with Maryland Transit Administration Project. The Contractor Project Specific Safety & Health Plan goals are to:

- Prevent personal injuries and property damage
- Achieve greater efficiency
- Reduce direct and indirect costs

The effectiveness of the Owner-Controlled Insurance Program will depend upon the active participation and sincere cooperation of the Contractor's supervisors and employees, and the coordination of their efforts in carrying out the following responsibilities:

1. Plan all work to eliminate bodily injury, property damage and loss of productive time.

2. Comply with Federal, State and Local laws, ordinances, industry standards and the requirements established in the Contractor Safety & Health Plan Guidelines.

3. Maintain a system of prompt detection and correction of unsafe practices and conditions.

4. Establish and conduct an educational program to stimulate and maintain interest and cooperation of employees. The education program shall include safety meetings and training programs, the use of personal protective equipment and mechanical guards, and prompt notification and investigation of all accidents or claims to attempt to determine the causes and take reasonable corrective action when possible.

4. ***GENERAL REQUIREMENTS***

A. Contractors: (construction only)
OSHA Standards (29 CFR part 1926)
The Contractor shall provide two (2) copies of the most recent OSHA Standards for the Construction Industry (29 CFR Part 1926). One (1) copy shall be given to the MTA RE and remain the property of the MTA. One (1) copy shall be retained in the Contractor's Field Office.

1. Compliance with Contractor Safety & Health Plan:

Contractor's personnel who fail to comply with the site safety requirements shall not be considered qualified to perform services or work at the *MTA* Project. Such personnel denied site access for noncompliance with the site safety requirements, at the Resident Engineer's, or at his representative's request, shall not be granted site access for other services or work. Contractors who fail to control personnel actions regarding safety shall have their contract terminated. Contractors working at the *MTA* Project shall comply with, but not be limited to, the Occupational Safety and Health Act (OSHA),

Department of Transportation (DOT), Federal Railroad Administration, Federal Transit Administration (FTA) *MTA's* Safety Rules, Procedures, and site safety requirements. The Resident Engineer or his representative shall determine the Contractor's compliance with the site safety requirements.

2. Contractor Policy:

Each Contractor shall comply with all safety, fire, security policies, procedures, and safe work practices, as well as any other appropriate safety procedures specified in the contract. These combined safety requirements constitute the minimum safety performance required from each Contractor; all subcontractors must adhere to the General Contractor's Project Specific Safety & Health Plan. The Contractor cannot delegate the safety responsibility to the subcontractors, suppliers or other persons. The Office of Safety, Quality Assurance and Risk Management (OSQARM) and *MTA* Construction Division Safety will have final authority regarding contractor safety compliance.

3. Contractor Project Specific Safety & Health Plan:

Each Contractor shall have a written Project Specific Safety & Health Plan, in accordance with the contract, which addresses the service or work to be performed under the contract. The plan will provide the details commensurate with the services or work to be performed. **Within five calendar (5) days after issuance of NITA (Notice of Intent to Award) for the Contract the Contractor shall submit, at a minimum, a written "General Safety & Health Plan"** to the Administration. **Within five calendar (5) after the NTP (Notice To Proceed) the contractor must then submit a complete "Project Specific Safety & Health Plan" for approval.** *MTA* Construction Division Safety will review and comment on the Contractor's "Project Specific Safety & Health Plan". The Office of Safety, Quality Assurance and Risk Management will review, comment and approve the Contractor's "Project Specific Safety & Health Plan" With regards to the approval of the Contractor Project Specific Safety & Health Plan; work shall proceed as determined by the Administration. The Administration retains the right to prohibit the start of work until the Contractor's' Project Specific Safety & Health Plan" is approved by the Office of Safety Quality Assurance Risk Management. *A delay in submitting the Contractor Project Specific Safety & Health Plan will not constitute grounds for contract schedule extension or delay claim.*

The plan shall fully describe the Contractor's commitments for meeting its obligations to provide safe and healthful working conditions for its employees, the public, and generally contribute to and enhance safety at the project site. The Contractor Project Specific Safety & Health Plan must reference standards, codes, rules, and regulations applicable to construction activities in the state and local jurisdiction. The Contractor Project Specific Safety & Health Plan shall include, but not be limited to, provisions of the Contractor Safety & Health Plan Guidelines.

The plan shall define the duties and responsibilities of employees at all levels as they pertain to the execution of and compliance with the Contractor Project Specific Safety & Health Plan.

4. ***Alcohol and Substance Abuse Policy:***

The use of drugs and alcohol and their effects produce a serious threat and ***ARE NOT TOLERATED*** on any *MTA* project. The Contractor and all sub-tier contractors shall be responsible for implementing and maintaining an effective Substance Abuse Policy as part of the Contractor Project Specific Safety & Health Plan. Any costs incurred in the adoption, implementation, or administration of the Contractor/Subcontractors Substance Abuse Policy shall be the responsibility of the Contractor/Subcontractor. The policy shall address pre-employment, periodic, for cause and post accident testing.

5. Designation of Safety Representatives:

Each Contractor shall designate a competent Engineer/Supervisor to implement their Project Specific Safety & Health Plan. This responsible individual's name and résumé will be given to the Resident Engineer for approval by the Office of Safety, Quality Assurance and Risk Management. This individual may be required to appear for a personal interview by the Office of Safety, Quality Assurance and Risk Management. When the nature of the contract warrants, *MTA* may request the Contractor to employ a full-time qualified Contractor Safety Engineer/Supervisor. This designated person is required to have training appropriate to the nature of the work performed.

6. Safety Orientation:

The Contractor shall establish a written safety orientation and training program to provide employees with information regarding:

- The Contractor Project Specific Safety & Health Plan;
- Applicable safety rules and regulations;
- The responsibility of each employee to formally acknowledge receipt of the safety rules and safety orientation and training prior to performing or being assigned duties on the project.

The safety orientation and training programs shall address the responsibilities of the hourly employees, supervisory employees and management employees. Example: Personal Protective Equipment one must use, how to report any unsafe condition, and hazards present in the assignment and general work area.

Copies of written documentation of safety orientation and training programs shall be provided to the Resident Engineer promptly after they are conducted (See Form108, *Job Orientation Acknowledgement Form*).

All Contractor and subcontractor employees of any tier performing work on or near the right-of-way of any *MTA* Rail System shall successfully complete the appropriate railway training course prior to start of work. Contractors and subcontractor employees who have not successfully completed the training course shall be removed from the Project.

7. Accident Investigation, Reporting, and Recordkeeping:

The Contractor shall verbally notify the Resident Engineer within twenty (20) minutes of any safety incident. Events to be reported immediately by the Contractor to Resident Engineer are:

- Near misses and minor accidents with a potential of serious injury or death;
- Serious accidents or injuries;
- Fatalities.

The Contractor is responsible for the prompt reporting of all occupational injuries and illnesses incurred by any site personnel or in any way related to project work.

Upon notification of an accident, the Contractor shall immediately secure the scene, investigate the circumstances of the accident and complete the *Incident Investigation Report* (see Form 102) and *Witness Statement* (see Form 102A). The investigation should include obtaining physical and photographic evidence. Completed forms are to be submitted to the Resident Engineer within eight (8) hours. Forms are to include sufficient and thorough detail. In completing this report, the Contractor shall review the

circumstances leading to the accident, review with the employee how the accident could have been prevented and the measures to be taken to prevent recurrence.

The Contractor shall cooperate with all resulting accident investigations and reporting. Additional documentation shall be submitted as required.

A. Serious/Fatal Accident Investigation:

Immediately, after a serious/fatal accident, an investigation team will begin a thorough investigation. The Resident Engineer, *MTA's* Construction Division Safety Officer and the Contractor's Safety Engineer/Supervisor will lead the investigation. It will be the responsibility of Resident Engineer and the Contractor to see that all documentation such as written statements, photographs, and drawings are maintained. A report of the investigation shall be made to the Office of Safety, Quality Assurance and Risk Management, the *MTA* Construction Management Division Safety, and the *MTA* Insurance Broker as soon as practical, but no later than 8:30 a.m. the following day.

B. Near-Miss Incidents:

All near-miss incidents shall be reported by using Form 102 *Incident Investigation Report* and Form 102A *Witness Statement.* Once completed these forms are to be forwarded to the Resident Engineer.

All near-miss incidents shall be investigated by the Contractor's Safety Engineer/Supervisor to ensure corrective and preventive measures are taken. This may involve working with and/or assigning responsibilities to other personnel. Near-miss incidents should also be reviewed by the Contractor during safety meetings so all employees are aware of the near-miss incidents, the potential for injury, and the actions necessary to prevent a recurrence.

C. Return-to-Work:

The Contractor and its subcontractors of any tier shall include, as part of their Contractor Project Specific Safety & Health Plan, a Return-to-Work program (also known a "Light Duty" or "Modified Work") to any injured employee who is released by a medical doctor with a signed release return-to-work form with restrictions, modifications, or alternative work. The Contractor shall develop a Return-to-Work program outlining how this will be accomplished. The Contractor and/or subcontractors shall hold a discussion with the Office of Safety, Quality Assurance and Risk Management, the *MTA* Construction Division Safety, and the *MTA* Insurance Broker prior to any injured employee being laid-off or terminated from a Return-to-Work program.

5. ***ROLES AND RESPONSIBILITIES***

A. Contractor's Project Manager:

The Contractor's Project Manager shall:

1. Be responsible for the supervision of the Safety Engineer/Supervisor in carrying out the duties and responsibilities of the position.
2. Plan and implement work to comply with the stated objectives of the Contractor Project Specific Safety & Health Plan.
3. Comply with the provision of the contract dealing with safety and accident requirements.
4. Cooperate with *MTA's* designated safety representatives.

5. Authorize necessary immediate action to correct substandard safety conditions or acts reported or observed.
6. Attend safety meeting as required by the Resident Engineer.

B. Contractor's Safety Engineer/Supervisor:

The Contractor's Safety Engineer/Supervisor shall perform daily safety inspections of the contractor's and subcontractor's job sites to eliminate unsafe acts and/or conditions. The Contractor's Safety Engineer/Supervisor shall ensure that all of the contractor's employees are made aware of the steps to take in the event of an accident and the location of first-aid facilities. The position requires this individual to perform the following:

1. Provide timely reports in writing of any observed unsafe condition or practices, or violations of job security regarding safety issues; and take corrective actions. (See Form 110).

2. Investigate all accidents and implement immediate corrective action.

3. Report all injuries and accidents in a timely manner in accordance with federal and state laws and *MTA* requirements.

4. Provide Job Foremen with appropriate training materials to conduct weekly "tool box" safety meetings. Attend Engineer/Supervisor weekly "toolbox" safety meetings to evaluate the effectiveness of these meetings.

5. Review safety meeting reports submitted by Job Foremen and take necessary action to ensure that the Job Foremen hold meaningful weekly safety meetings.

6. Assist in the preparation of all accident investigation and reporting procedures.

7. Implement safety-training programs for supervisors and employees applicable to their specific responsibilities.

8. Be responsible for the control, availability and use of necessary safety equipment, including personal protective equipment and apparel for the employees.

9. Coordinate the safety activities with *MTA* personnel, and Insurer's safety representative, and take necessary steps to promptly implement safety recommendations.

10. Coordinate the public relations aspects of the Contractor Project Specific Safety & Health Plan with *MTA*.

11. Attend special safety meetings held or sponsored by *MTA*, the Insurer, or the Insurance Administrator. The safety Engineer/Supervisor is expected to participate in these sessions.

12. Ensure that adequate first-aid supplies and personal protective equipment are available at the work site and that personnel are qualified to administer first aid as required by contract.

13. Maintain Material Safety Data Sheets (MSDS) and provide unobstructed access to MSDS on the job site.

14. Advise the *MTA* R.E of any known hazardous operations that could adversely impact *MTA* employees or the public.

C. Contractor's On-Site Management Representative:

This person will ensure compliance with provisions of the contract, including the Contractor Project Specific Safety & Health Plan, OSHA, MOSH, and other agency and industry safety requirements and standards. Additional duties of the senior on-site Contract Representative or Project Manager shall include the following:

1. Review and direct immediate action to correct substandard safety conditions brought to his/her attention.
2. Take an active part in all supervisory safety meetings, including the discussion of observed unsafe work practices or conditions, a review of the accident experience and corrective actions, and encouragement of safety suggestions from employees.
3. Cooperate with the *MTA*, Consultants, and safety representatives of the Insurance Broker or Insurance Carrier.

D. Contractor's Safety Supervisor:

The Contractor Safety Supervisor will perform daily safety inspections of the Contractor's and Subcontractor's job sites to eliminate unsafe acts and/or conditions. The Contractor's Safety Supervisor will ensure the contractor's employees are made aware of steps to take in the event of an accident and the location of first aid facilities. The position requires the individual to perform the following:

1. Provide timely reports in writing of any observed unsafe conditions or practices, or violations of job safety issues; and take corrective action.
2. Investigate accidents and implement corrective action.
3. Report all injuries in a timely manner in accordance with federal and state laws and regulations and the Contractor Project Specific Safety & Health Plan.
4. Provide appropriate training materials to conduct weekly "tool box" safety meetings, and attend to evaluate the effectiveness of the meeting.
5. Review safety meeting reports and takes necessary action to ensure meaningful weekly safety meetings are held.
6. Assist in the preparation of accident investigations and reporting.
7. Implement safety-training programs for supervisors and employees applicable to their specific responsibilities.
8. Ensure the control, availability, maintenance, and proper use of necessary safety equipment, including personal protective equipment and apparel for the employees.
9. Coordinate safety activities with the *MTA's* Consultants and the Insurance Carrier safety representatives, and take necessary steps to promptly implement safety recommendations.
10. Attend regularly scheduled and any special safety meetings held or sponsored by the *MTA's* safety representatives or Consultants. The Contractor's Safety Supervisor shall participate in these meetings.
11. Ensure adequate first aid supplies are available at the work site and sufficient personnel are qualified to administer first aid and CPR as required.

E. Contractor's Employees:

Every contractor employee has the responsibility to comply with all health and safety regulations and directives, and to participate in the identification and control of hazards.

Additional responsibilities include but are not limited to:

1. Report health and safety hazards that they become aware of;
2. Follow established health and safety procedures;
3. Report injuries or illnesses that may be workplace related;
4. Properly utilize personal protective equipment when required;
5. Cooperate with and assist in investigations of accidents;
6. Inspect all equipment prior to use and report any unsafe condition to your supervisor immediately.

F. Safety Committee:

The Office of Safety, Quality Assurance and Risk Management and the *MTA* Construction Division Safety shall have three primary functions:

1. Leadership: Provide coordination, leadership, and direction for the Contractor Project Specific Safety & Health Plan.

2. Enforcement: Monitor the management of the Contractor Project Specific Safety & Health Plan to ensure the plan is maintained and enforced by all personnel.

3. Recommendations: Recommended resolutions to safety problems not routinely resolved by the Project Safety Engineers/Supervisors or Resident Engineers.

The Committee shall meet as required by the Chairperson. Members may request the Chairperson to call a meeting when the need develops. The Committee membership consists of:

- Resident Engineer/acting Chairperson
- Office of Safety, Quality Assurance and Risk Management Representative
- General Contractor (GC) Project Manager
- GC On-site Safety Engineer/Supervisor
- Insurance Safety Consultant
- Broker Insurance Safety Consultant
- *MTA* Construction Division Safety Representative

G. Modification of Contractor Project Specific Safety and Health Plan:

The *MTA* reserves the right to require the Contractor to modify, at any time, any portion of the Plan that is not in conformance with Federal, State, or Local codes and regulations, or with the *MTA* Contractor Safety & Health Plan Guidelines.

6. ***SAFETY REQUIREMENTS:***

A. Safety Concerns:

The Safety Concern Form is to be utilized as a means to express safety concerns when other mechanisms have not addressed and/or corrected the issue in a timely manner.

To document the concern and help in its tracking, The Safety Concern Form (See Form 116, *Safety Concern)* is available and is located throughout the site. Once a Safety Concern Form is completed, forward it to the Resident Engineer who will review it and determine the appropriate action.

B. Safety Meetings:

Safety break or "tool box" meetings shall be held on a weekly basis at a minimum by each Contractor. It is recommended that a specific date and time be set up for these meetings. A meeting agenda should consist of at least the following:

- Statistics and performance review;
- Injury and accident reviews which include the reason(s) the accident occurred and a discussion on the corrective actions taken to prevent recurrence;
- Review and discussion of any outstanding items;
- Five-minute safety talk on a pertinent subject to the work performed.
- The Safety Meetings shall be documented and copied to the Resident Engineer (see Form 109, *Tool Box Safety Meeting*).

C. Safety Inspections:

The Contractor shall conduct daily safety inspections for each shift worked in accordance with contract specifications. Any unsafe conditions and/or acts detected during the safety inspections, or at any other time, should be corrected immediately and reported on Form 110, *Contractor Daily Safety Audit Checklist.* Completed copies, indicating action taken and date completed, shall be submitted daily to the RE's office for review and verification of completion of required action.

The Resident Engineer shall maintain in their office the daily inspection reports and shall communicate to the *MTA* Construction Division Safety and the Office of Safety, Quality Assurance and Risk Management any trends and suggestions for improvement.

Any person on site has the authority to stop any job having the potential to be immediately dangerous to life and health. When a job is stopped, the Resident Engineer, and Site Superintendent shall be notified immediately so corrective actions can be taken. Until corrective actions are taken, the job will not commence.

Safety violations found by other safety inspectors shall be reported to the Resident Engineer and the Contractor's on-site Safety Engineer/Supervisor who will ensure that the proper personnel are contacted so corrective measures are taken.

D. First Aid:

The Contractor shall have adequate first aid supplies on-site and first aid supplies shall be accessible for immediate use. Written procedures shall be developed to ensure that first aid supplies are replaced promptly if used, and are not missing or depleted.

Sufficient personnel shall be available at the work site(s) to render first aid. The first aid personnel shall be and have valid CPR and first aid certifications. (U.S. Bureau of Mines, American Red Cross, or an equivalent training program that can be verified.)

E. Safety Compliance:

Compliance with the safety requirements is mandatory. The Contractor's supervisory staff or the Safety Engineer/Supervisor who is unable or unwilling to assure performance in compliance with the safety obligations will not be acceptable for supervision. If substandard performance warrants, the person shall be removed from the project.

The Contractor shall be held responsible for safety compliance of their Subcontractor(s). Any Contractor and/or Subcontractor(s) or employee(s) who fails to comply with the project safety requirements will be considered unqualified to perform services or work at the *MTA*.

1. Noncompliance:

In the event the Resident Engineer deems it necessary to notify the Contractor in writing of noncompliance with any of the safety requirements contained in the safety regulations, by any governmental agency with the authority to enforce safety regulations or authorized representative of the *MTA*, the Resident Engineer shall:

A. Notify the Contractor in writing of the noncompliance.
B. Exercise the right to issue a suspend-work order stopping all or part of the work if the Contractor fails or refuses to take corrective action to abate the noncompliance notice in the specified time.
C. Deny any claim or request from the Contractor for adjustment for additional time or money on the suspended work order issued under these circumstances.
D. Require the removal of an employee or piece of equipment or correction of a situation that is deemed to be unsafe.

2. Contractor Analysis Report:

In the event that a Contractor and/or Subcontractor has been uncooperative on safety or contractual issues, the Resident Engineer shall prepare a report documenting the problem encountered. This report will form an historical record, which will be available to determine future course of action. This report will be reviewed by Office of Safety, Quality Assurance and Risk Management prior to being sent to the Contract Officer with recommendation for disciplinary action including removal from the project of an individual or termination of the contract.

F. Tours and Site Visitors:

Only visitors authorized by the *MTA* shall be allowed on a project. The following guidelines have been prepared as general instructions for organization, direction and safe conduct of such tours on *MTA's* Project Sites:

1. Escorted Visitors:

While on the job site, non-construction personnel or groups shall be accompanied at all times by an authorized representative from the Contractor, *MTA*, or designee familiar with the job site (Especially on any right of way).

2. Notification and Tours:

Personnel tours that do not involve technical inspections need to be cleared through the *MTA* Media Relations Department. Allowing a minimum 24-hour advance notice the Media Relation Department will contact the Resident Engineer at the sites to be visited to coordinate the tour and to make sure the necessary safety precautions are taken

Safety Awareness: All visitors must be informed, before entering the job site, the need for careful, orderly conduct and notified of any special hazards that may be encountered. All visitors and tour groups must comply with the safety precautions required, including the use of personal protective equipment, such as eye protection, hard hats, and reflective clothing that may be required. An adult will accompany children between the ages of 12 -15. No child will be allowed to accompany a tour under the age of 12.

G. Protection of the Public and Property:

The Contractor shall take the necessary precautions to protect the general public (individuals not contractually related to the project) from injury or damage to property and shall follow the contract requirements. The precautions to be taken shall at a minimum:

1. Perform no work in any area occupied or in use by the public unless specifically permitted by the contract or in writing from the *MTA* or designated Consultant.

2. Maintain public use of work areas where necessary involving sidewalks, entrances to buildings, lobbies, corridors, aisles, stairways, and vehicular roadways, protect the public with appropriate guardrails, barricades, temporary fences, overhead protection, temporary partitions, shields, and adequate visibility. Such protection shall guard against harmful radioactive rays or particles, flying materials, falling or moving materials and equipment, hot or poisonous materials, explosives and explosive atmospheres, flammable or toxic liquids and gases, open flames, energized electric circuits, or other harmful exposures.

3. Keep sidewalks, entrances to buildings, lobbies, corridors, aisles, doors, or exits that remain in use by the public clear of obstructions to permit safe ingress and egress of the public at all times.

4. Appropriate warnings, conspicuous signs and instructional safety signs shall be posted where necessary. In addition, a signalman shall control the movement of motorized equipment in areas where the public might be endangered.

5. Provide sidewalk shed canopies, catch platforms, and appropriate fences when it is necessary to maintain public pedestrian traffic adjacent to the erection, demolition or structural alteration of outside walls on any structure.

6. Provide temporary fences around the perimeter of above ground operations adjacent to public areas except where a sidewalk shed or fence is provided by the contract or as required (2) above. Perimeter fences shall be at least six (6) feet high. They may be constructed of wood or metal

frame and sheathing, wire mesh or a combination of both. When the fence is adjacent to a sidewalk near a street intersection, at least the upper section of the fence shall be open wire mesh from a point not over four (4) feet above the sidewalk and extending at least twenty-five (25) feet in both directions from the corner of the fence or otherwise required by local jurisdiction involved.

7. Provide warning signs and lights, during periods of severely restricted visibility, and continuously from dusk to sunrise along the guardrails, barricades, temporary sidewalks, and at every obstruction to the public as needed. They shall be placed at both ends of such protection or obstructions and not over twenty (20) feet apart alongside of such protection or obstruction.

8. Provide temporary sidewalks when a permanent sidewalk is obstructed by the Contractor's operations. They shall be in accordance with the requirements of the local ordinances. Guardrails shall be provided on both sides of temporary sidewalks.

9. Provide guardrails on each side and vehicular and pedestrian, bridges, ramps, runways, and platforms. Pedestrian walkways elevated above adjoining surfaces, or walkways within six (6) feet of the top of excavated slopes or vertical banks shall be protected with guardrails, except where sidewalk sheds or fences are provided. Guardrails shall be made of rigid materials capable of withstanding a force of at least two hundred (200) pounds applied in any direction at any point in their structure. Their height shall be approximately forty-two (42) inches. Top rails and posts may be two inches by four inches (2 x 4) dressed wood or equal materials. Posts shall not be more than eight (8) feet apart.

10. Provide barricades where sidewalk shed fences or guardrails as referenced above are not required between work areas and pedestrian walkways, roadways or occupied buildings. Barricades shall be secured against accidental displacement and shall be maintained in place except where temporary removal is necessary to perform the work. When a barricade is temporarily removed, a watchman shall be placed at all openings.

11. Prohibit fuel-burning types of lanterns, torches, flares or other open flame devices.

12. Maintain all equipment, devices and structures so as to not pose a hazard to the public, property or employees, and to perform their intended functions properly at all times.

H. Traffic Control:

All work shall be planned well in advance to prevent traffic obstructions, public and *MTA* inconvenience, and lost work time. Therefore, a vehicle and/or pedestrian traffic plan shall be included as part of the Contractor Project Specific Safety & Health Plan. The plan shall include:

1. Traffic conditions;
2. Existing traffic controls;
3. Physical features;
4. Visibility restrictions;
5. Problems of access to private property;
6. Business access and activities;
7. The type, number and location of signs, barricades, lights and other traffic devices required for the work;
8. Means of mitigating any adverse effect upon the blind or other physically handicapped.

Flaggers are required:

1. Where workers or equipment intermittently block a traffic lane;
2. Where plans or permit allow the use of one lane for two directions of traffic (one flagger is required for each direction of traffic);
3. Where the safety of the public and/or workers determines there is a need.
4. Flaggers shall be certified.

I. Emergency Procedures:

The Contractor's emergency procedures should be continually reviewed and adjusted to provide maximum effectiveness. All such procedures are to be included in the Contractor Project Specific Safety & Health Plan and coordinated with the Resident Engineer.

The Contractor shall develop written procedures for, but not limited to the following events:

- Injury;
- Fire;
- Utilities damage – gas, water, electric, sewer, communications;
- Other potential emergency situations

Emergency procedures shall designate specific responsibilities for execution of and compliance with the Contractor's emergency plan.

Methods of promptly summoning Emergency Service Personnel and communication with the Resident Engineer shall be included in the procedure and made available at the job site before construction begins.

Actions to be taken during emergencies should be discussed at "tool box" safety meetings regularly.

J. Media Relations and Safety:

In any emergency affecting the safety of persons or property, the Contractor shall act immediately, as necessary and appropriate to prevent or minimize the threatened damage, injury or loss. The Contractor shall notify the Resident Engineer immediately of the situation and all actions taken.

For all press inquiries for emergencies, news releases or announcements related to the job, photo session, the Contractor shall refer the press to the *MTA* Media Relations.

The Contractor should make no statements until authorized by the *MTA's* Office of Media Relations.

7. ***SPECIFIC SAFETY STANDARDS***

A. Personal Protective Equipment:

OSHA Reference 1926.100-106, Subpart E, "Personal Protective and Life-Saving Equipment."

Minimum requirements for this section are:

- Hard Hats: Approved ANSI Z89.1-1969 hard hats shall be worn at all times while on the construction site. Hard Hats shall be worn properly with the bill forward unless the eye

protection prevents this, as with welders.

- Eye Protection: This is a 100% eye protection project. Employees must wear ANSI Z87 approved safety glasses with side shields 100% of the time while in the construction areas.

- Clothing: Full-length trouser without excessive length or flared bottoms is required. Shirts must cover the entire mid-section and the sleeves must cover the entire shoulder. Sleeveless shirts, tank tops, net shirts, halter tops, and any clothing with derogatory language or offensive photographs shall not be worn on the construction site.

  ANSI Class II High Visibility Reflective Clothing will be worn at all times when in the right of way of rail, highway, or area of construction.

  Flame resistant clothing must be worn for all electrical, welding / hot work

- Work Shoes: A serviceable pair of ANSI Z.41.1-1967 work shoes or boots made of leather or similar material shall be worn. Steel toe shoes and metatarsal covers are required for all track and rail operations, operating jackhammers, earth compacting equipment, and other areas when designated. Tennis shoes, sandals and other similar shoes are not permitted.

Other requirements may include, but not be limited to:

- Respirators: Respirators shall be worn when required.

- Hearing Protection: Hearing protection shall be worn when required.

- Fall Protection: Guardrail systems, safety nets, or personal fall protection must be used during any activity where a worker is exposed to a fall hazard greater than four (4) or six (6) feet depending on the work involved. Full body safety harnesses with seat support and shock absorbing lanyards are the only acceptable fall protection outside of safety rails and nets.

B. Housekeeping:

OSHA Standard 1926.25, Subpart C, "General Safety & Health Provisions"

C. Guardrails and Perimeter Protection:

OSHA Standard 1926, Subpart M, "Floor and Wall Openings"

D. Concrete and Form Work:

OSHA Standard 1926, Subpart Q, "Concrete and Masonry Construction"

E. Reinforced Steel (Rebar)

OSHA Standard 1926, Subpart Q, Concrete and Masonry Construction

F. Excavations, Trenching, and Shoring:

OSHA Standard 1926, Subpart P, "Excavation", including appendix A-F

G. Fire Protection and Prevention:

OSHA Standard 1926, Subpart F, "Fire Protection and Prevention"; National Fire Protection Association (NFPA) Regulations; local fire codes. The Contractor shall, in addition to complying with the Federal, State, and Local Fire Codes and regulations, prohibit the presence or use of open fire. The Contractor shall require that temporary heating or warming devices be UL approved.

H. Flammable and Combustible Liquids:

OSHA Standard 1926, Subpart F, "Fire Protection and Prevention"; National Fire Protection Association (NFPA) Regulations; local fire codes.

I. Confined Area (Space) Entry:

OSHA Standard 1910.146, “Permit Required Confined Spaces”.

All confined space entry work is to be discussed with the RE and the on-site Safety Engineer/Supervisor forty-eight (48) hours prior to entry. *The Confined Space Entry Permit* (Form 107, Attachments) shall be filled out by the Contractor and kept at the jobsite. The *MTA* Office of Safety, Quality Assurance & Risk Management (OSQARM) shall be notified forty eight (48) hours prior to confined space entry. All completed, terminated or expired permits shall be submitted to the OSQARM within twenty four (24) hours of completion, termination, or expiration; Resident Engineer shall receive duplicate copy.

Evaluating the Environment:

Tests for oxygen deficiency, flammability, and toxicity are to be made before any entry into a confined space.

J. Mobile and Tower Crane Safety:

OSHA Standard 1926.550-556, Subpart N -"Cranes, Derricks, Hoists, Elevators and Conveyors".

K. Rigging Requirements:

OSHA Standard 1926.250-252, Subpart H - "Material Handling, Storage, Use and Disposal".

L. Environmental Policy Statement:

Refer to Section 01570 “Environmental Protection” of the contract.

The environmental control issues will be specifically detailed within the individual bid packages, as they are developed.

M. Hazard Communication Program Responsibilities:

OSHA Standard 1926.59, Subpart D, - "Occupational Health and Environmental Controls”.
OSHA Standard 1910.1200, “Hazard Communication”.

All chemicals brought on *MTA* property require prior approval from The Office of Safety, Quality Assurance & Risk Management. (Form 117). Parts one (1) and two (2) of Form 117 must be completed for each MSDS submitted for evaluation.

N. Use of Explosives/Blasting:

OSHA Standard 1926.900, Subpart U- "Blasting and Use of Explosives"

8. ***APPLICABLE GOVERNMENT AGENCY AND INDUSTRY SAFETY STANDARDS:***

The Contractor shall comply with, but is not limited or precluded to, the safety standards and provisions of the following agencies, associations, councils, societies, etc.

- Regulation, 49, CFR, Parts 27, 37, and 3 U.S. Department of Transportation (DOT) ("American with Disabilities Act").
- Regulation 40 CFR 261 Environmental Protection Agency (EPA) Titled: Identification and Listing of Hazardous Waste (Implemented by State DER (Dept. of Environmental Resources).
- Regulation 40 CFR 403 General Pretreatment Regulations For Existing And New Sources Of Pollution (Sewer)
- Regulation 49 CFR, Part 29, "Drug Free Workplace Act".
- Regulation 49 CFR, Part 653, 654 and 655, "Prevention of Alcohol and Prohibitive Drug Misuse in Transit Operations".
- Regulation 49 CFR 659 "Rail Fixed Guideway Systems: State Safety Oversight
- Federal Transit Administration (FTA) and incorporated documents by reference or submission to and acceptance by *MTA* and includes:

    1. MIL-STD-882B "System Safety Program Plan Requirements"
    2. FTA "Recommended Emergency Preparedness Guidelines for Rail Transit Systems"

- OSHA Standards 29 CFR 1926, Construction Standards
- OSHA Standards 29 CFR 1910, General Industry Standards
- COMAR 09.12.20 thru 33. Maryland Occupational Safety and Health
- COMAR Title 26 Maryland Department of the Environment,
- Underwriters Laboratories, Inc.
- U.S. Army, Corp of Engineers
- American Society for Testing of Materials (ASTM)
- American National Standards Institute (ANSI)
- National Fire Protection Association (NFPA)
- Local and State Building and Fire Code Standards

Contractor Project Specific Safety and Health Plan Forms

Form 102
- **Incident Investigation Report**

Form 102A
- **Witness Statement**

Form 107
- **Confined Space Entry Permit**

Form 108
- **Job Orientation Acknowledgement**

Form 109
- **Tool Box Safety Meeting**

Form 110
- **Contractor Daily Safety Audit Checklist**

Form 112
- **Safety Observation Notice**

Form 116
- **Safety Concern**

Form 117
- **MSDS Evaluation Request**

Form 118
- **Hot Work Permit**

INCIDENT INVESTIGATION REPORT

Form 102

PART 1

Date of Incident:	Time of Incident:	Date of Investigation:
Company:		Contract Number:
Location of Incident:		
Describe what the employee was doing at the time of the incident:		
Did injury result? Yes/No ____.	If yes ;Employee Name(s) ;SSN(s) ;Proceed to Part 2	

PART 2

Body part(s) affected:		
Disposition: Employee Sent to Type of Injury:	0Doctor 0Emergency Room 0Personal Physician 0On-Site Medical Station 0Other	0Employee refused treatment 0Result impression 01st Aid Only 0Medical Recordable 0Lost Time or Restricted Duty
Employee Supervisor:		
Witnesses:		
Circle the Number of Identifying Contributing Factors: 1. Absent/Improper Guarding 2. Defective Equipment 3. Weather/Temperature 4. Inappropriate PPE 5. Inadequate Housekeeping 6. Slippery/Uneven Walking Surface 7. Improper Layout of Work Area 8. Inadequate Ventilation 9. Inadequate Lighting or Noise Control 10. Improper Storage or Placement of Materials 11. Insect/Animals in Work Area 12. No At Risk Condition Identified 13. Other _____	14. Operating Without Authority 15. Improper Use of Equipment 16. Inadequate Procedures 17. Use of Defective Equipment/Tools 18. PPE Not Used 19. Inadequate/Inappropriate Training 20. Improper Position or Posture 21. Horseplay 22. Altercation 23. No At Risk Act Identified 24. Other _____	

PART 3

How Did The Incident Occur?		
What Object or Substance was Involved?		
Any Previous or Similar Incidents?	Project Specific:	Company Wide:
What Factors Contributed to the Incident		

Was an SPA/JSA developed for the task being performed? Yes/No _____. If yes, attach a copy.

What corrective actions are being taken to prevent recurrence? Also list the person responsible for implementing and the target completion date for each item.

_____

_____

_____

Supervisor/Investigation Team Members: _____ _____

Name(s) Signature(s)/Date

WITNESS STATEMENT
Form 102A

Name: _____ Title: _____

Social Security Number: _____ Date: _____ Time: _____

Temporary Address: _____ Phone No. _____

Permanent Address: _____ Phone No. _____

_____

Location at Time of Incident: _____

Describe, to the best of your knowledge, what happened just before, during, and just after the incident:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

_____
Signature

Attach to Incident Report

FORM 102A 2/00

MTA Maryland

Confined Space Entry Permit

Permit valid for eight (8) hours only

Date Issued:	**Time Issued:**	**Date Expires:**	**Time Expires:**
Job Site:		**Equipment worked on:**	
Worked to be Performed:			
Supervisor: (Print)		**(Phone)**	
Attendant: (Print)		**(Phone)**	
Entrant: (Print)		**Entrant:** (Print)	
Entrant: (Print)		**Entrant:** (Print)	
Communication Procedures:			
Rescue Procedures as arranged & verified by Supervisor (Include phone numbers):			
Supervisor, Attendant, Entrant have successfully completed required trained:		Yes:	No:

Atmospheric Check: (Various Levels) Before Isolation & Ventilation	Date:	Time:	Oxygen: > 19.5%	Explosives: <10% LFL	Toxic % PPM <10ppm H_2S
Atmospheric Check: (Various Levels) After Isolation & Ventilation	Date:	Time:	Oxygen: > 19.5%	Explosives: <10% LFL	Toxic % PPM <10ppm H_2S
Atmospheric Tester's Signature:					
Direct Reading Gas Monitor:	Test Date:	Make:	Model #:	Serial #:	

Requirements Completed:	N/A	Yes	No
a) Lockout Tag out			
b) Line(s) Broken, Capped, Blanked			
c) Purge, Flush & Vent			
d) Ventilation			
e) Secure Area (Fall Protection)			
f) Respirator (s)			
g) Emergency Personnel Notified			
h) Full Body harness w/"D" Ring			
i) Retrieval Equipment			
j) Fire Extinguishers			
k) Lighting (Explosion Proof)			
l) Protective Clothing			

Continuous Monitoring: (Various Levels) Every 2 hours	Date:	Time:	Oxygen: > 19.5%	Explosives: <10% LFL	Toxic % PPM <10ppm H_2S
	Date:	Time:	Oxygen: > 19.5%	Explosives: <10% LFL	Toxic % PPM <10ppm H_2S
	Date:	Time:	Oxygen: > 19.5%	Explosives: <10% LFL	Toxic % PPM <10ppm H_2S
	Date:	Time:	Oxygen: > 19.5%	Explosives: <10% LFL	Toxic % PPM <10ppm H_2S
Continuous Tester's Signature:					

Material Safety Data Sheets Approved:	N/A	Yes	No
Known Hazards:			

Supervisor Authorizing All Conditions Satisfied

Print: **Signature:** **Date:**

This permit is to be kept on the job site. The MTA Office of Safety, Quality Assurance & Risk Management (OSQARM) must be notified 48 hours prior to confined space entry. All completed, terminated and expired permits are to be submitted to the OSQARM within 24 hours of completion, termination or expiration. Phone: 410-454-7143 Fax: 410-454-7138

JOB ORIENTATION ACKNOWLEDGEMENT FORM
Form 108

My signature below acknowledges my completion of the project specific safety orientation and review of the security rules and regulations. I agree to adhere to these, as well as all other specific project rules and regulations.

Check as covered:

☐ Eye Protection	☐ Fire Protection
☐ Head Protection	☐ Interim Life Safety Measures
☐ Foot Protection	☐ Drug Policy
☐ Clothing Requirements	☐ Employee's Guide to WC Managed Care
☐ Fall Protection	☐ MSDS Procedure
☐ Scaffold Tagging Requirements	☐ Security
☐ Work Permit	☐ Lockout Procedures
☐ Hot Work Permit	

Project Identification Data Sheet

Please Print Clearly

Last Name: _____ First Name: _____

SSN: _____-____-_____ Employer: _____

Trade: _____Contact Number: _____

Signature: _____Date: _____

A Photo ID will be required at the time the Project ID is issued.

TOOL BOX SAFETY MEETING
Form 109

This form is to be completed by supervisors for all safety meetings conducted.
Use reverse side if necessary

DATE:	
PRIME CONTRACTOR:	
SUBCONTRACTOR:	
CONDUCTED BY:	
SUBJECT(S)	
DISCUSSED:	

ATTENDEES		
PRINT NAME	BADGE #	SIGN NAME

Safety Instructor Comments:

Employees Comments:

CONTRACTOR DAILY SAFETY AUDIT CHECKLIST

Form 110

This list is intended to be used as a starting point for your company. Add exposures that are specific to your construction activities as necessary. Look for other unsafe acts and conditions, and then document them so that corrective action can be taken and recorded

Company Name_____

PROJECT NAME:_____

DATE:_____

JOB/PROJECT #: _____

SUPERVISOR: _____

Reported injuries, and corrective actions, since last safety survey: (i.e. cut hand, debris in eye, back strain, etc..)

_____

_____

_____

_____

_____

	AREA/ITEM	STATUS Ok / Not Ok	PROBLEM AND CORRECTIVE ACTION	Control Completion Date/Initials
1	**Housekeeping**			
	Walkways, exits, work areas, clear	☐ ☐		
	Nails bent over or removed from scrap	☐ ☐		
	Waste materials properly placed/cleaned up	☐ ☐		
	Hazardous construction materials controlled	☐ ☐		
	Waste bins emptied and placed throughout site			
	Designated lunch areas kept clean and trash cans available	☐ ☐		
2	**Fall Protection**			
	Scaffolds over 7 ½" properly tied off and guard rails in place	☐ ☐		
	Scaffold planks and footings properly placed	☐ ☐		
	Interior stair railings in place	☐ ☐		
	Roof/floor openings properly protected	☐ ☐		
	Ladders in good mechanical condition	☐ ☐		
	Ladders properly used by tradespersons	☐ ☐		
	Safety harnesses used if required, good anchorage points	☐ ☐		
	Other	☐ ☐		

3	**Falling Material**			
	Construction materials secured to prevent them falling on workers	☐ ☐		
	Construction materials secured to prevent them from being blown by wind or knocked over the edge of the roof	☐ ☐		
	Pallets properly stacked and not tipping	☐ ☐		
	Other	☐ ☐		
4	**Electrical**			
	Electrical extension cords not frayed or cut exposing internal wiring	☐ ☐		
	Electrical tool cords not frayed or cut exposing internal wiring	☐ ☐		
	Grounding (GFCI) in use as required	☐ ☐		
	Adequate lighting in work areas	☐ ☐		
	Other	☐ ☐		
5	**Personal Protective Equipment**			
	Safety Glasses / Goggles as required	☐ ☐		
	Hard Hats if required	☐ ☐		
	Gloves if required	☐ ☐		
	Sturdy work shoes/boots or steel toed shoes if required	☐ ☐		
	Other	☐ ☐		
6	**Machinery**			
	Properly guarded	☐ ☐		
	Properly used	☐ ☐		
	Other	☐ ☐		
7	**Fire Protection**			
	Flammables properly used/stored	☐ ☐		
	Fire extinguishers on hand	☐ ☐		
	Protective guards in place during welding and soldering to prevent flame from reaching combustible materials in the building walls	☐ ☐		
	Other	☐ ☐		

8	**Public / Worker Protection**			
	Barricades in place as necessary	☐ ☐		
	Trenches 5’ and greater properly sloped or shored	☐ ☐		
	Operations (such as rebar bending, etc.) not being conducted in active street	☐ ☐		
	Fences installed as necessary/planned	☐ ☐		
	Free standing chain link fences protected from falling on sidewalks/work areas in the event of unexpected high winds	☐ ☐		
	Other	☐ ☐		
		☐ ☐		
9	**Vehicle Operation on Jobsite**			
	Backup warning signals in operation	☐ ☐		
	Speed properly controlled	☐ ☐		
	Properly parked	☐ ☐		
	Other	☐ ☐		
		☐ ☐		
10	**Behavior Based Safety (BBS)**	☐ ☐		
	Employees following safety rules	☐ ☐		
	Unsafe acts observed (i.e. unsafe lifting/material handling could lead to a muscle strain)	☐ ☐		
	Good safety culture observed (i.e. employees follow safety rules when they are on their own and no one is observing them).	☐ ☐		
	Other areas of behavior that need to be addressed	☐ ☐		
		☐ ☐		
11	**OTHER**	☐ ☐		
		☐ ☐		
		☐ ☐		
		☐ ☐		
		☐ ☐		
		☐ ☐		

JOB/PROJECT #: _____

SUPERVISOR: _____

Reported injuries, and corrective actions, since last safety survey: (i.e. cut hand, debris in eye, back strain, etc..)

_____

_____

_____

_____

SAFETY OBSERVATION NOTICE
Form 112

To Prime Contractor: _____ Date: _____

The Resident Engineer is formally notifying the Prime Contractor Party that the following condition(s) are in non-compliance with the safety requirement established for the Project:

_____

_____

_____

_____

Originator: _____

Prime Contractor's Corrective Action: Date: _____

_____

_____

_____

_____

Corrective Action Completed: ☐Yes ☐ No

Safety *Engineer/Supervisor*/Designee: _____ Date: _____

FOLLOW UP

☐ Complete
☐ Incomplete
☐ 2nd Notice Sent: _____
☐ Completion Sign-off
Originator: _____ Date: _____

cc: _____/_____
OSQARM / MTA Construction Division Safety

.

FORM 112 2/00

SAFETY CONCERN
Form 116

Date;_____	NO._____
Here's **MY CONCERN.** Describe safety condition that should be improved, changed, or corrected. (Please print, type or write clearly – use black ink. If more room is needed, attach additional sheets.	
Here's **MY RECOMMENDED CORRECTIVE ACTION**	

Name:_____ Contractor:_____

Address:_____ Employee No:_____

Telephone #/Ext._____ Receipt Acknowledged:_____
Resident Engineer

FORM 116 2/00

HERE'S MY SAFETY CONCERN
Instructions

1. Enter your concern on the Safety Concern blank.

    a. Use sheets of plain paper if you need additional space.
    b. Draw a sketch if you think it will help.

2. In the lower portion of the SC blank, enter your name, address, telephone number or extension, department, and employee number so the canary copy can be returned to you with response to your concern.

3. Seal the completed form and any attachments in an envelope and submit to:

Resident Engineer

FORM 116 2/00

MARYLAND TRANSIT ADMINISTRATION

Form 117

Material Safety Data Sheet (MSDS) Evaluation Request

Send to this form along with a legible English language MSDS and any other related information to:
Dennis Rafferty Sr., Manager Occupational Safety & Health, 1515 Washington Blvd., Baltimore, Md. 21230
drafferty@mta.maryland.gov

PART 1 (Completed by Sales Representative)

Name Of Product To Be Evaluated:

Date

Manufacture's Name, Address & Phone:

Sales Representative's Name And Phone Number:

Distribution Company's Name, Address & Phone:

PART 2 (Completed by End User – MTA or Contractor)
Describe the location and intended use. IE – Spray application on vehicle to remove graffiti.

Location Used:

Intended Use:

Requested By		**Date**

PART 3 (Office of Safety Determination)

Date

This Product Is:

- ☐ **Approved For Test Only See Restrictions Below**
- ☐ **Approved For MTA Use As Directed**
- ☐ **Approved With Attached Restrictions Below**
- ☐ **Not Approved For MTA Use**

Restrictions:

MTA MSDS Reference Number:

Approved By:

Rev 03.11 djr Form 117

MARYLAND TRANSIT ADMINISTRATION

FORM 118

HOT WORK PERMIT

DATE ISSUED _____ VALID UNTIL _____

BUILDING _____ BUILDING # _____ PROJECT # _____

LOCATION OF WORK _____

CONSTRUCTION PROJECT MANAGER/PHONE # _____

CONTRACTOR/PHONE # _____

The location where this work will take place will be examined before the start of cutting/welding operations and all the appropriate precautions (**including any that exceed those outlined below**) will be taken.

Signed (at issue of permit) _____ Date _____

Print name _____

FIRE SAFETY PRECAUTIONS

BEFORE THE WORK - ***All*** of the following precautions must be taken:

- ❑ Cutting and/or welding equipment must be thoroughly inspected and found to be in good repair, free of damage or defects.
- ❑ A multi-purpose dry chemical, portable fire extinguisher must be located such that it is immediately available to the work and is fully charged and ready for use.
- ❑ At least one fire alarm pull station or means of contacting the fire department (i.e. site telephone) must be available and accessible to person(s) conducting the cutting/welding operation.
- ❑ Floor areas under and at least 35 feet around the cutting/welding operation must be swept clean of combustible and flammable materials.
- ❑ All construction equipment fueling activities and fuel storage must be relocated at least 35 feet away from the cutting/welding operation.

Where applicable, the following precautions will also be taken before the work begins:

- ❑ Fire resistant shields (fire retardant plywood, flameproof tarpaulin, metal, etc.), must cover combustible floors.
- ❑ Spark/slag catchers (fire retardant plywood, flameproof tarpaulins, metal, etc.) must be suspended below any elevated cutting/welding operation.

- ❑ All floor and wall openings must be covered to prevent sparks/slag from traveling to other, unprotected areas.
- ❑ Containers in or on which cutting/welding will take place must be purged of flammable vapors.

DURING / AFTER THE WORK - The following precautions will be taken:

- ❑ Person(s) must be assigned to a fire watch during and for at least 30 minutes after all cutting/welding ceases.
- ❑ Fire watch person(s) are to be supplied with multi purpose dry chemical, portable fire extinguisher and trained in its use.
- ❑ A fire alarm pull station or means of contacting the fire department (i.e. site telephone) available and accessible to fire watch person(s).

The location where this work will take place has been **examined before the start** of cutting/welding operations and all the appropriate precautions have been taken. *Responsible party to sign under Signature 1 for each date.*

The work area and all adjacent areas to which sparks and heat might have spread (including floor levels above and below and on opposite side of walls) were **inspected 30 minutes after** the cutting and or welding operations ceased for the day and were found to be fire safe. *Responsible party to sign under Signature 2 for each date.*

	Signature 1	Signature 2
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND TRANSIT ADMINISTRATION

GENERAL PROVISIONS FOR CONSTRUCTION CONTRACTS

OCTOBER, 2001

Contract No. T-1038-0140

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GENERAL PROVISIONS
GP - SECTION 1
DEFINITIONS AND TERMS

GP-1.01 GENERAL

Wherever in these General Provisions or in other Contract Documents the following terms or abbreviations are used, the meaning shall be as follows:

GP-1.02 ORGANIZATIONAL STRUCTURE

The Maryland Department of Transportation is composed of the following Administrations:

(i) Maryland Port Administration
(ii) Maryland Transit Administration
(iii) State Highway Administration
(iv) Maryland Aviation Administration
(v) Motor Vehicle Administration; and
(vi) Office of the Secretary, Administration

GP-1.03 ORGANIZATIONAL DEFINITIONS

Administration - The word "Administration" shall mean any one of the Administrations within the Maryland Department of Transportation, as listed in GP-1.02.

Administrator - The chief executive officer of an Administration.

Department - The word "Department" shall mean the Maryland Department of Transportation.

Engineer - Any person designated by the Administrator or the procurement officer, acting directly or through his duly authorized representative, such representative acting within the scope of the particular duties assigned to him or of the authority given him.

Inspector - The authorized representative of the procurement officer assigned to make detailed inspection of any or all portions of the work, or materials therefor.

Procurement Officer - Any person authorized by a State agency in accordance with law or regulations to formulate, enter into, or administer Contracts or make written determinations and findings with respect to them. The term also includes an authorized representative acting within the limits of authority.

Secretary - The chief executive officer of the Maryland Department of Transportation.

GP-1.04 ABBREVIATIONS

AAN	**A**merican **A**ssociation of **N**urserymen
AAPA	**A**merican **A**ssociation of **P**ort **A**uthorities
AAR	**A**ssociation of **A**merican **R**ailroads
AASHTO	**A**merican **A**ssociation of **S**tate **H**ighway and **T**ransportation **O**fficials
ACI	**A**merican **C**oncrete **I**nstitute
AIA	**A**merican **I**nstitute of **A**rchitects
AIEE	**A**merican **I**nstitute of **E**lectrical **E**ngineers
AISC	**A**merican **I**nstitute of **S**teel **C**onstruction
AISI	**A**merican **I**ron and **S**teel **I**nstitute
ANSI	**A**merican **N**ational **S**tandards **I**nstitute
ARA	**A**merican **R**ailway **A**ssociation
AREA	**A**merican **R**ailway **E**ngineering **A**ssociation
ASCE	**A**merican **S**ociety of **C**ivil **E**ngineers
ASHRAE	**A**merican **S**ociety of **H**eating, **R**efrigeration and **A**ir-Conditioning **E**ngineers
ASLA	**A**merican **S**ociety of **L**andscape **A**rchitects
ASME	**A**merican **S**ociety of **M**echanical **E**ngineers
ASTM	**A**merican **S**ociety for **T**esting and **M**aterials
ATA	**A**merican **T**ransit **A**ssociation
AWWA	**A**merican **W**ater **W**orks **A**ssociation
AWS	**A**merican **W**elding **S**ociety
AWPA	**A**merican **W**ood **P**reservers **A**ssociation
AGC	**A**ssociated **G**eneral **C**ontractors of America
BOCA	**B**uilding **O**fficials **C**onference of **A**merica
COMAR	**C**ode **o**f **Ma**ryland **R**egulations
CRSI	**C**oncrete **R**einforcing **S**teel **I**nstitute
EEI	**E**dison **E**lectric **I**nstitute
EIA	**E**lectronic **I**ndustries **A**ssociation
EPA	**E**nvironmental **P**rotection **A**gency
FAA	**F**ederal **A**viation **A**dministration, U.S. Department of Transportation
FCC	**F**ederal **C**ommunications **C**ommission
FHWA	**F**ederal **H**igh**w**ay **A**dministration, U.S. Department of Transportation
FRA	**F**ederal **R**ailway **A**dministration, U.S. Department of Transportation
FSS	**F**ederal **S**pecifications and **S**tandards, General Services Administration
IEEE	**I**nstitute of **E**lectrical and **E**lectronic **E**ngineers
IES	**I**lluminating **E**ngineers **S**ociety
IPCEA	**I**nsulated **P**ower **C**able **E**ngineers **A**ssociation
IRT	**I**nstitute for **R**apid **T**ransit
MBMA	**M**etal **B**uilding **M**anufacturers' **A**ssociation
MSMT	**M**aryland **S**tandard **M**ethod of **T**ests (as developed by the State Highway Administration)
MUTCD	**M**anual on **U**niform **T**raffic **C**ontrol **D**evices

NBFU	**N**ational **B**oard of **F**ire **U**nderwriters
NBS	**N**ational **B**ureau of **S**tandards
NEC	**N**ational **E**lectric **C**ode
NEMA	**N**ational **E**lectrical **M**anufacturers' **A**ssociation
NFPA	**N**ational **F**ire **P**rotection **A**ssociation
OSHA	**O**ccupational **S**afety and **H**ealth **A**dministration
RLMI	**R**eflector and **L**amp **M**anufacturers' **I**nstitute
SAE	**S**ociety of **A**utomotive **E**ngineers
SAWP	**S**ociety of **A**merican **W**ood **P**reservers
ULI	**U**nderwriters **L**aboratories, **I**ncorporated
UMTA	**U**rban **M**ass **T**ransportation **A**dministration, U.S. Department of Transportation

GP-1.05 DEFINITIONS

Award - The decision by a procurement agency to execute a purchase agreement or Contract after all necessary approvals have been obtained.

Bid - A statement of price, terms of sale, and description of the supplies, services, construction or construction-related services offered by a bidder to the State in response to an Invitation for Bids.

Bid Bond - See Proposal Guaranty.

Bid Form - The approved form on which an Administration requires bids to be set forth and submitted.

Bidder - A person formally submitting a bid for the work contemplated, acting directly or through a duly authorized representative.

Board - The Board of Public Works of the State of Maryland.

Business - A corporation, partnership, individual, sole proprietorship, joint venture, or any other legal entity through which commercial activity is conducted.

Calendar Day - Every day shown on the calendar, Saturdays, Sundays and holidays included.

Change Order - A written order signed by the responsible procurement officer, directing a Contractor to make changes which the changes clause of a Contract authorizes the procurement officer to order with or without the consent of the Contractor.

Construction - The process of building, altering, repairing, improving or demolishing any structure, building, or other improvement to real property.

Contract - Any agreement entered into by a procurement agency for the acquisition of supplies, services, construction, construction related services, architectural services or engineering services.

Contract does not include:

(1) Collective bargaining agreements with employee organizations or agreements creating employer employee relationships, as defined in Article 4A, Section 15A(a) (3), Annotated Code of Maryland.

(2) Medicaid, Medicare, Judicare, or similar reimbursement contracts which user eligibility and cost are set by law or regulation.

Contract Documents - The written agreement executed between an Administration and the successful bidder, covering the performance of the work and furnishing of labor, equipment and materials, by which the Contractor is bound to perform the work and furnish the labor, equipment and materials, and by which the Administration is obligated to compensate him therefor at the mutually established and accepted rate or price. The Contract shall include the Invitation for Bids, Notice to Contractors, Instructions to Bidders, Proposal, Contract Forms and Bonds, General Provisions, Specifications, Supplemental Specifications, all Special Provisions, all Technical Provisions, all Plans and Notices to Proceed, also any written Change Orders and Supplemental Agreements that are required to complete the construction of the work in an acceptable manner, including authorized extension thereof.

Contract Drawings - See definition of "Plans".

Contract Item (Pay Item) - An item of work specifically described and for which a price, either unit or lump sum, is provided. It includes the performance of all work and the furnishing of all labor, equipment, and materials, described herein or described in any Supplemental Specifications or Special Provisions.

Contract Modification - Any written alteration in the Specifications, delivery point, date of delivery, Contract period, price, quantity, or other provision of any existing Contract, whether accomplished in accordance with a Contract Provision, or by mutual action of the parties to the Contract. It includes change orders, extra work orders, supplemental agreements, Contract amendments, or reinstatements.

Contractor - Any person having a Contract with a procurement agency. Contractor does not include an employee with an employment Contract, or an employee organization with a collective bargaining agreement.

Day - Calendar day unless otherwise designated.

Invitation for Bids - Any document, whether attached or incorporated by reference, used for soliciting bids under procurement by competitive sealed bidding and small procurement procedures including requests for quotations.

Materials - Any substances specified for use in the construction of the project and its appurtenances.

Notice to Contractors - The advertisement for Bids for all required work or materials. Such advertisement will indicate the location and magnitude of the work to be done or the character and quantity of the material to be furnished and the time and place of the opening of bids.

Notice to Proceed - A written notice to the Contractor of the date on or before which he shall begin the prosecution of the work to be done under the Contract.

Payment Bond - Security as stated in COMAR 21.06.07.01B as a guarantee that Contractor will pay in full all bills and accounts for materials and labor used in the work, as provided by law.

Performance Bond - Security as stated in COMAR 21.06.07.01B, guaranteeing complete performance of the Contract.

Person - Any individual or a corporation, partnership, sole proprietorship, joint stock company, joint venture, unincorporated
association, union, committee, club, or other organization or legal entity.

Plans - The official drawings issued by the Administration as part of the Contract Documents, including those incorporated in the Contract Documents by reference.

Proposal - The response by an offeror to a request for proposals issued by a procurement agency to obtain goods or labor. The response may include but is not limited to an offeror's price and terms for the proposed Contract, and description of technical expertise, work experience and other information as requested in the solicitation. As used herein the word "proposal" means "bid".

Proposal Guaranty - The security, in the form stated in COMAR 21.06.07.01B, designated in the Proposal, to be furnished by the offeror as a guaranty of good faith to enter into a Contract with the State, if the work of constructing the improvement is awarded to him.

Responsible Bidder or Offeror - A person who has the capability in all respects to perform fully the Contract requirements, and the integrity and reliability that shall assure good faith performance.

Responsive Bid - A bid submitted in response to an Invitation for Bids that conforms in all material respects to the requirements contained in the Invitation for Bids.

Specification - A written description of functional characteristics, or the nature of a construction item to be procured. It may include a statement of any of the user's requirements and may provide for inspection, testing, or preparation of a construction item before procurement.

State - The State of Maryland acting through its authorized representative.

Subcontractor - Any person undertaking the construction of a part of the work under the terms of the Contract, by virtue of an agreement with the Contractor, who, prior to such undertaking, receives the (consent of the surety and the) approval of the Administration.

Superintendent - The executive representative of the Contractor authorized to receive and execute instructions from the procurement officer, and who shall supervise and direct the construction.

Supplemental Specifications - Additions and revisions to the Standard Specifications. Generally include new or improved procedures, construction items or materials developed subsequent to the publication of Standard Specifications.

Surety - The corporate body bound with and for the Contractor, for the full and complete performance of the Contract, and for the payment of all debts pertaining to the work. When applying to the Bid Bond, it refers to the corporate body which engages to be responsible in the execution by the bidder of a satisfactory Contract.

Work - Work shall be understood to mean the furnishing of all labor, materials, equipment, and other incidentals necessary to the successful completion of the project and the carrying out of all the duties and obligations imposed by the Contract.

GP - SECTION 2
BIDDING REQUIREMENTS AND CONDITIONS

GP-2.01 BID IRREVOCABLE

Unless otherwise provided in the Invitation for Bids, bid prices are irrevocable for 90 days following bid opening.

GP-2.02 CONTENTS OF BID FORMS

All papers included in, bound thereto or attached to the bid form are necessary parts thereof and shall not be detached, separated or altered. The Plans, Specifications, Supplemental Specifications, referred to in the Specifications, and all other Contract Documents will be considered a part of the bid form whether attached thereto or not.

GP-2.03 INTERPRETATION OF QUANTITIES IN BID SCHEDULE

Where designated as estimated quantities, the quantities in the prepared bid schedule are approximate only. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the Contract and as provided in GP-4.04, Variations in Estimated Quantities.

GP-2.04 SITE INVESTIGATION

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

GP-2.05 TAXES - RESPONSIBILITY FOR PAYMENT, EXEMPTIONS, FORMS TO FILE, ETC.

(a) The Contractor is responsible for, and by submitting a bid agrees to pay, all retail sales, income, real estate, sales and use, transportation and special taxes applicable to and assessable against any materials, equipment, processes and operations incident to or involved in the construction. The Contractor is responsible for ascertaining and acquainting himself with such taxes and making all necessary arrangements to pay same.

(b) The Contractor shall indicate its Federal Tax Identification or Social Security number on the face of each invoice billed to the Administration.

(c) The Administration or the Comptroller of the Treasury may withhold any payment under this Contract until the Contractor and any subcontractors performing any duties under this Contract have paid all State taxes or other obligations due the State of Maryland. The taxes or other obligations shall be resolved either by set-off of the amount due the Contractor against the amounts due the State or by direct payment.

GP-2.06 PREPARATION OF BID

(a) The bidder shall submit his bid upon the blank form(s) furnished by the Administration. The bidder shall specify a price in dollars and cents for each pay item given, and shall show the products of the respective unit prices and quantities written in figures in the column provided for that purpose, together with the total amount of the bid obtained by adding the amounts of the several items.

(b) The bid form(s) shall be filled out legibly in ink or typed. The bid, if submitted by an individual, shall be signed by such member or members of the partnership as have authority to bind the partnership; if submitted by a corporation, the same shall be signed by an officer, and attested by the corporate secretary or an assistant corporate secretary. If not signed by an officer, as aforesaid, there must be attached a copy of that portion of the By-Laws or a copy of a Board resolution, duly certified by the corporate secretary, showing the authority of the person so signing on behalf of the corporation. In lieu thereof, the corporation may file such evidence with the Administration, duly certified by the corporate secretary, together with a list of the names of those officers having authority to execute documents on behalf of the corporation, duly certified by the corporate secretary, which listing shall remain in full force and effect until such time as the Administration is advised in writing to the contrary. In any case, where a bid is signed by an Attorney in Fact, the same must be accompanied by a copy of the appointing document, duly certified. All bids shall be signed in ink. All erasures or alterations shall be initialed by the signer in ink.

(c) **Bid Samples and Descriptive Literature**. If the Invitation for Bids requires the bidder to furnish samples or descriptive literature, it shall be submitted with the bid, unless the Invitation for Bids provides otherwise.

(d) Offerors shall identify those portions of their proposals which they deem to be confidential, proprietary information or trade secrets and provide any justification of why such materials should not be disclosed by the State under the Maryland Public Information Act, Section 10-611 et seq. of the State Government Article of the Annotated Code of Maryland.

GP-2.07 PROPOSAL GUARANTY

(a) No bid will be considered for any Contract in excess of $100,000 unless accompanied by a guaranty in an amount not less than 5 percent of the amount bid, or such amount as may be specified elsewhere in the bid documents and made payable to the State of Maryland.

(b) Acceptable forms of security for bid guaranty shall be:

(1) A bond in a form satisfactory to the State underwritten by a surety company authorized to do business in this State;

(2) A bank certified check, bank cashier's check, bank treasurer's check, or trust account;

(3) Pledge of securities backed by the full faith and credit of the United States government or bonds issued by the State of Maryland; or

(4) Cash - if submitted pursuant to COMAR 21.06.07.01C.

GP-2.08 DELIVERY OF BIDS

Each bid must be submitted in a sealed envelope plainly marked to indicate its contents. When sent by mail, the sealed bid must be addressed to the Administration at the address and in care of the official in whose office the bids are to be received. All bids shall be filed prior to the time and at the place specified in the Notice to Contractors. Bids received after the time for opening of bids will be treated in accordance with the provisions of GP-2.12.

GP-2.09 COMMUNICATIONS AND INTERPRETATIONS - PRIOR TO BID OPENING

Any information regarding the requirements or the interpretation of any provision of the General Provisions, Special General Provisions, Specifications or any part of the bidding documents shall be requested, in writing, from the procurement officer, and delivered no later than 10 days prior to the scheduled date of bid opening. Responses to questions or

inquiries having any material effect on the bids shall be made by written addenda, or by written notice sent to all prospective bidders. **DO NOT MAKE VERBAL INQUIRIES**.

Any verbal interpretations or oral pre-bid statements made by State employees or their representatives shall not be binding upon the State.

GP-2.10 AMENDMENTS TO INVITATIONS FOR BIDS

(a) **Form**. Each amendment to an Invitation for Bids shall be in writing and identified as such.

(b) **Acknowledgements**. Unless otherwise provided, the bidder shall acknowledge receipt of all amendments.

GP-2.11 PRE-OPENING MODIFICATION OR WITHDRAWAL OF BIDS

(a) **Procedure**. Bids may be modified or withdrawn by written notice received in the office designated in the Invitation for Bids before the time and date set for bid opening. A telegraphic modification or withdrawal received by telephone from the receiving telegraph company office before the time and date set for bid opening shall be effective if the telegraph company confirms the telephone message by sending a written copy of the telegram showing that the message was received at the telegraph company's office before the time and date set for bid opening.

(b) **Disposition of Bid Security**. If a bid is withdrawn in accordance with this regulation, the bid security, if any, shall be returned to the bidder.

GP-2.12 LATE BIDS, LATE WITHDRAWALS, AND LATE MODIFICATION

(a) **Policy**. Any bid received at the place designated in the solicitation after the time and date set for receipt of bids is late. Any request for withdrawal or request for modification received at the place designated in the solicitation after the time and date set for receipt of bids.

(b) **Treatment**. A late bid, late request for modification, or late request for withdrawal may not be considered. Late bids will be returned to the bidder unopened. Upon written approval of the Office of the Attorney General, exceptions may be made when a late bid, withdrawal, or modification is received before Contract award, and the bid, withdrawal, or modification would have been timely but for the action or inaction of State personnel directing the procurement activity or their employees.

NOTE: Provision GP-2.12(b) does not apply to Federal Aid projects.

GP-2.13 OPENING AND RECORDING OF BIDS

(a) **Opening and Recording**. Bids and modifications shall be opened publicly, at the time, date, and place designated in the Invitation for Bids. The name of each bidder, the bid price, and such other information as is deemed appropriate shall be read aloud or otherwise made available. This information also shall be recorded at the time of bid opening. The bids shall be tabulated or a bid abstract made. The opened bid shall be available for public inspection at a reasonable time after bid opening but in any case before Contract award except to the extent the bidder designates trade secrets or other proprietary data to be confidential as set forth in COMAR 21. Material so designated shall accompany the bid and shall be readily separable from the bid in order to facilitate public inspection of the nonconfidential portion of the bid. Prices, makes, and model or catalog numbers of the items offered, deliveries, and terms of payment shall be publicly available at a reasonable time after bid opening but in any event before Contract award regardless of any designation to the contrary at the time of bid opening.

(b) **Confidential Data**. The procurement officer shall examine the bids to determine the validity of any requests for nondisclosure of trade secrets and other proprietary data identified in writing. Confidential, proprietary information, and trade secrets furnished by a bidder or offeror may be disclosed to another State agency if there is a need for the information and may not be disclosed outside of State government except as provided by the Public Information Act or other applicable laws of this State.

GP-2.14 MISTAKES IN BIDS

(a) **Mistakes Discovered Before Opening**. A bidder may correct mistakes discovered before the time and date set for bid opening by withdrawing or correcting the bid as provided in GP-2.11.

(b) **Confirmation of Bid**. If the procurement officer knows or has reason to conclude that a mistake may have been made, the bidder may be required to confirm the bid. Situations in which confirmation may be requested include obvious, apparent errors on the face of the bid or a bid unreasonably lower than the other bids submitted. If the bidder alleges mistake, the bid may be corrected or withdrawn upon written approval of the Office of the Attorney General if any of the following conditions are met:

(1) If the mistake and intended correction are clearly evident on the face of the bid document, the bid shall be corrected to the intended correct bid and may not be withdrawn. Examples of mistakes that may be clearly evident on the face of the bid document are typographical errors, errors in extending unit prices, transposition errors, and arithmetical errors.

(2) A bidder may be permitted to withdraw a low bid if:

(a) A mistake is clearly evident on the face of the bid document but the intended correct bid is not similarly evident; or

(b) The bidder submits proof of evidentiary value which clearly and convincingly demonstrates that a mistake was made.

(c) **Mistakes Discovered After Award**. Mistakes may not be corrected after award of the Contract except when the procurement officer and the head of a procurement agency makes a determination that it would be unconscionable not to allow the mistake to be corrected. Changes in price are not permitted. Corrections shall be submitted to and approved by the Office of the Attorney General.

GP-2.15 MINOR IRREGULARITIES OR INFORMALITIES

(a) **General**. Minor irregularities or informalities in bids, as defined below, may be waived if the procurement officer determines that it shall be in the State's best interest. The procurement officer may either give a bidder an opportunity to cure any deficiency resulting from a technicality or minor irregularity in its bid, or waive the deficiency where it is to the State's advantage to do so.

When at any public opening of bids, a bid appears to be irregular, as herein specified, this fact may be announced when read. Said bid shall be read as other bids and then referred to the procurement officer for consideration and appropriate action thereon in accordance with these General Provisions, Law and Regulation.

A minor irregularity is one which is merely a matter of form and not of substance or pertains to some immaterial or inconsequential defect or variation of a bid or proposal from the exact requirement of the solicitation, the correction or waiver of which would not be prejudicial to other bidders or offerors. The defect or variation in the bid or proposal is immaterial and inconsequential when its significance as to price, quantity, quality, or delivery is trivial or negligible when contrasted with the total cost or scope of the supplies or services being procured and the intent and meaning of the entire bid or proposal is clear.

GP-2.16 CANCELLATION OF INVITATIONS FOR BIDS

(a) Before opening of bids a solicitation may be canceled in whole or in part when the State determines this action is fiscally advantageous or otherwise in its best interest.

(b) When a solicitation is canceled before bid opening, the bids shall be returned to the vendors submitting them and notice of cancellation shall be included.

GP-2.17 REJECTION OF INDIVIDUAL BIDS OR PROPOSALS

(a) Any bid may be rejected in whole or in part when it is in the best interest of the State to do so.

(b) Reasons for rejection of a bid may include but are not limited to:

(1) The bid is not responsive i.e., it does not conform in all material respects to the solicitation.

(2) Unreasonable price;

(3) The bidder submitting the bid is determined to be nonresponsible. A determination of nonresponsibility may be made for, but is not limited to, any of the following reasons:

(a) Bidder debarred or ineligible and period of debarment or ineligibility not expired.

(b) The unit prices contained in a bid are unbalanced.

(c) Evidence of collusion among bidders.

(d) Inadequate quantity and/or quality of experience, plant, equipment, financing, manpower or other resources required to perform the Contract.

(e) Bidder's workload which, in the judgement of the Administration, might hinder or prevent the prompt completion of the subject work if awarded.

(f) Default by the bidder on other Contracts.

(g) Failure to pay or satisfactorily settle all reasonable and just bills due for labor and material on prior or current Contracts.

(h) The same person has an interest in more than one bid on a Contract exclusive of being named by another bidder as a subcontractor.

(i) Failure to perform satisfactorily on other Contracts awarded, and the conditions leading to unsatisfactory performance remain unresolved.

(j) Any other reason affecting the bidder's ability to perform, or record of business integrity.

(k) Bidder not otherwise qualified and eligible to receive an award under applicable laws and regulations.

(4) The bidder or offeror fails to supply information to the procurement officer promptly, after notification from the procurement officer that such information is required in connection with a determination to be made pursuant to this GP-2.17.

GP-2.18 REJECTION OF ALL BIDS

(a) After opening of bids or proposals but before award, all bids or proposals may be rejected in whole or in part when the procurement officer, with the approval of the agency head or his designee, determines that this action is fiscally advantageous or otherwise in the State's best interest.

(b) A notice of rejection of all bids shall be sent to all vendors that submitted bids, and bids which have been opened shall be retained by the Administration.

GP-2.19 BID EVALUATION AND AWARD

(a) **General**. The Contract is to be awarded to the responsible and responsive bidder whose bid meets the requirements and evaluation criteria set forth in the Invitation for Bids, and is either the lowest bid price or lowest evaluated bid price.

(b) **Determination of Lowest Bidder**. Bids shall be evaluated to determine which bidder offers the lowest cost to the State in accordance with the evaluation criteria set forth in the Invitation for Bids.

Except as otherwise provided under GP-2.14 Mistakes in Bids:

(1) The unit price will govern in the event of a discrepancy between the unit price bid and the extended price (product of unit price multiplied by the quantity).

(2) The sum of the extended prices will govern in the event of a discrepancy between the total lump sum bid and the extended prices.

(3) The written words will govern in the event of a discrepancy between the prices written in words and the prices written in figures.

(4) If a unit price has been omitted, the unit price will be determined by dividing the extended price by the quantity.

The Administration reserves the right to make the award by item, or groups of items, or total bid if it is in the best interest of the State to do so unless the bidder specifies in his bid that a particular or progressive award is not acceptable.

(c) **Award**. Upon determination of the lowest bidder, review of the bid for responsiveness, and satisfaction that the bidder is responsible, the Contract may be awarded to that bidder. A Contract may be awarded to a bidder offering a higher quality item than that designated in the Invitation for Bids if that bidder is also the lowest responsive and responsible bidder.

GP-2.20 TIE BIDS

(a) **Definition**. Tie bids are responsive bids from responsible bidders that are identical in price, terms and conditions and which meet all the requirements and evaluation criteria set forth in the Invitation for Bids.

(b) **Award**. In the instance of tie bids, the award shall be made in accordance with COMAR 21.05.02.14. If identical low bids are received from an in-State and out-of-State bidder, the award shall be made to the in-State bidder. If identical low bids are received from in-State bidders or from out-of-State bidders, a drawing shall be conducted, and a witness shall be present to verify and certify the result.

GP-2.21 RESIDENT BUSINESS PREFERENCE

(a) When awarding a Contract by competitive sealed bidding, if the State in which a nonresident firm submitting the lowest responsible bid is located gives a competitive advantage to its resident businesses, a procurement agency may give an identical competitive advantage to the Maryland firm submitting the lowest responsive and responsible bid in order to determine Contract award.

(b) A competitive advantage may include:

(1) A percentage preference;

(2) An employee residency requirement;

(3) Any other provision that favors a nonresident firm over a Maryland firm.

(c) This provision GP-2.21 shall not apply if it conflicts with any Federal grant or regulation affecting this Contract.

GP-2.22 MULTIPLE OR ALTERNATE BIDS

Unless multiple or alternate bids are requested in the solicitation, these bids may not be accepted. However, if a bidder clearly indicates a base bid, it shall be considered for award as though it were the only bid submitted by the bidder.

GP-2.23 BID PROTESTS

A bid protest must be in writing and filed with the procurement officer. Oral objections, whether or not acted on, are not protests.

(a) **Time for Filing**.

(1) A bid protest shall be filed not later than 7 days after the basis for protest is known or should have been known, whichever is earlier.

(2) A protest based on alleged improprieties in the solicitation which are apparent before the bid opening or the closing date for receipt of initial proposals shall be filed before the opening date or the closing date for receipt of initial proposals.

(b) **Content of Written Protest**.

(1) Name and address of protestor.

(2) Bid or Contract number.

(3) Reasons for protest.

(4) Supporting exhibits, evidence or documents to support claim. If not available within filing time, indicate expected availability date.

(5) Mark envelope "protest".

Bid protests will be resolved pursuant to COMAR 21.10.02.

GP - SECTION 3
AWARD AND EXECUTION OF CONTRACT

GP-3.01 AWARD OF CONTRACT (See GP-2.19)

Written notice of award shall be sent to the successful bidder. A Notice of Award may be rescinded at any time prior to execution of the Contract by the Administrator.

GP-3.02 RETURN OF PROPOSAL GUARANTY

All proposal guaranties, except those of the three lowest bidders, will be returned immediately following opening and the review of the proposals. The guaranty of the three lowest bidders will be returned following the execution of the Contract and approval by the Board, if required. The Contractor has the right to substitute a bid bond for other bid security at any time prior to return of the proposal guaranty.

GP-3.03 PERFORMANCE BOND AND PAYMENT BOND REQUIREMENTS

(a) Acceptable security for performance and payment shall be as stated in COMAR 21.06.07.01B.

(b) **Performance and Payment Bonds**. A performance and payment bond is required for all construction Contracts in excess of $100,000, each in the amount equal to at least 100 percent of the Contract price. The bonds shall be delivered by the bidder to the Administration no later than the time the Contract is to be executed. If the bidder fails to deliver the required bonds, his bid shall be rejected, his bid security shall be enforced, and award of the Contract may be made to the next lowest responsive and responsible bidder.

(1) The required performance bond shall be in the form specified in COMAR 21.07.02.10, Exhibit A.

(2) The required payment bond shall be in the form specified in COMAR 21.07.02.10, Exhibit B.

GP-3.04 EXECUTION OF CONTRACT

(a) The Contract shall be effective only upon receipt by the Administration of the proper, executed Contract form, and performance and payment bonds (if required), approval by the Board of Public Works, (if required), and execution of the Contract by the Administration.

(b) After a Notice of Award, as provided in GP-3.01, has been issued to a bidder, the Administration shall forward the formal Contract form and the appropriate forms for the payment and performance bonds (if any) to the bidder for execution. The bidder will execute the Contract form and return

same, together with fully executed payment and performance bonds (if any), to the Administration within 10 days after receipt of same. After receipt of properly executed Contract form and payment and performance bonds, (if any), the Administration will execute the Contract within 60 days and forward the bidder a copy; provided, however, that the Board has approved the Contract if such approval is required. If the Administration fails to execute the Contract and the period of irrevocability has expired, the bidder may, as its sole remedy, withdraw its bids.

GP-3.05 FAILURE TO EXECUTE CONTRACT

Failure of the bidder to execute the Contract and file acceptable security as defined in GP-3.03 within the time aforesaid shall be just cause for the annulment of the award and the forfeiture of the proposal guaranty which shall become the property of the State of Maryland, not as a penalty but in liquidation of damages sustained. Award may then be made to the next lowest responsive, responsible bidder or the work may be readvertised and constructed under Contract or otherwise, as the Administration may decide.

GP - SECTION 4
SCOPE OF WORK

GP-4.01 INTENT OF CONTRACT

(a) The Contractor shall (within specified tolerances) perform all work in accordance with the lines, grades, typical cross sections, dimensions, and other data shown on the Plans or as modified by written orders including the furnishing of all materials, implements, machinery, equipment, tools, supplies, transportation, labor, and all other things necessary to the satisfactory prosecution and completion of the project in full compliance with the Contract requirements.

(b) The documents composing the Contract Documents are intended to be complementary, and to describe the construction and completion of the work. Anything mentioned in the Specifications and not shown on the Contract drawings, or shown on the Contract drawing and not mentioned in the Specifications shall be of like effect as if it is shown or mentioned in both.

(c) Omissions from the drawings or Specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and Specifications or which are customarily performed shall not relieve the Contractor from performing such omitted or misdescribed details of work, but they shall be performed as if fully and correctly set forth and described in the drawings and Specifications.

GP-4.02 GENERAL PROVISIONS CONTROLLING

In the event of a conflict between these General Provisions and any other provision of the Contract Documents, these General Provisions shall prevail unless such other provision expressly provides to the contrary.

GP-4.03 ENTIRE CONTRACT

The Contract Documents represent the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations or agreements either written or oral.

GP-4.04 VARIATIONS IN ESTIMATED QUANTITIES

Where the quantity of a pay item in this Contract is an estimated quantity and where the actual quantity of such pay item varies more than 25 percent above or below the estimated quantity stated in this Contract, an equitable adjustment in the Contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 125 percent or below 75 percent of the estimated quantity. If the quantity variation is such as to cause an increase in the time

necessary for completion, the procurement officer shall, upon receipt of a written request for an extension of time within 10 days from the beginning of the delay, or within a further period of time which may be granted by the procurement officer before the date of final settlement of the Contract, ascertain the facts and make the adjustment for extending the completion date as in his judgment the findings justify.

GP-4.05 DIFFERING SITE CONDITIONS

(a) The Contractor shall promptly, and before such conditions are disturbed, notify the procurement officer in writing of:

(1) Subsurface or latent physical conditions at the site differing materially from those indicated in this Contract; or

(2) Unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract. The procurement officer shall promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under this Contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the Contract modified in writing accordingly.

(b) No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in (a) above; provided however, the time prescribed therefor may be extended by the State.

(c) No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Contract.

GP-4.06 CHANGES

(a) The procurement officer may unilaterally, at any time, without notice to the sureties, if any, by written order designated or indicated to be a change order, make any change in the work within the general scope of the Contract, including but not limited to changes:

(1) In the Specifications (including drawings and designs);

(2) In the method or manner of performance of the work;

(3) In the State-furnished facilities, equipment, materials, services, or site; or

(4) Directing acceleration in the performance of the work.

(b) Any other written order or an oral order including a direction, instruction, interpretation or determination from the procurement officer that causes any such change, shall be treated as a change order under this clause, provided that the Contractor gives the procurement officer written notice stating the date, circumstances, and source of the order and that the Contractor regards the order as a change order.

(c) Except as herein provided, no order, statement, or conduct of the procurement officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment hereunder.

(d) Subject to paragraph (f), if any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this Contract, whether or not changed by any order, an equitable adjustment shall be made and the Contract modified in writing accordingly. Provided, however, that except for claims based on defective specifications, no claim for any change under (b) above shall be allowed for any costs incurred more than 20 days before the Contractor gives written notice as therein required; and provided further, that in the case of defective Specifications for which the State is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with such defective Specifications.

(e) If the Contractor intends to assert a claim for an equitable adjustment under this clause, he shall, within 30 days after receipt of a written change order under (a) above or the furnishing of written notice under (b) above, submit to the procurement officer a written statement setting forth the general nature and monetary extent of such claim, unless this period is extended by the State. The statement of claim hereunder may be included in the notice under (b) above.

(f) Each Contract modification or change order that affects Contract price shall be subject to the prior written approval of the procurement officer and other appropriate authorities and to prior certification of the appropriate fiscal authority of fund availability and the effect of the modification or change order on the project budget or the total construction cost. If, according to the certification of the fiscal authority, the Contract modification or change order will cause an increase in cost that will exceed budgeted and available funds, the modification or change order may not be made unless sufficient additional funds are made available or the scope of the project is adjusted to permit its completion within the project budget.

(g) No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Contract.

GP-4.07 NEGOTIATED PAYMENT PROVISION

If the Contractor is entitled to an equitable adjustment, the Contractor shall be allowed to add the following maximum percentages for overhead and profit to his costs for labor and materials:

(a) Twenty percent may be added by the Contractor for overhead and profit for work performed by his own forces.

(b) Fifteen percent may be added by the subcontractor for overhead and profit for work performed by the subcontractor; the Contractor may add an additional 5 percent of the subcontractor's costs for labor and materials.

(c) The provisions of paragraphs (a) and (b) above apply only to price adjustments negotiated prior to completion of the added or changed work and do not apply to work performed on a force account basis as provided for in paragraph GP-9.02 or Variations In Estimated Quantities as provided for in GP-4.04.

GP-4.08 UNAUTHORIZED WORK

Work done contrary to or regardless of the instructions of the procurement officer; work done beyond the lines and grades shown on the Contract Drawings, or as given; or any extra work done without written authority will be considered as unauthorized and at the expense of the Contractor and will not be measured or paid for. Work so done may be ordered removed and/or replaced at the Contractor's expense.

GP-4.09 FINAL CLEAN UP

Upon completion of the work specified in the Contract and before final payment will be made, the construction area and all other adjoining areas, other than those owned by him, occupied by the Contractor during the construction of said Contract shall be cleaned of all surplus and discarded materials, spilled materials, excess materials left deposited on the permanent work as a result of the Contractor's operations, false work, and rubbish and temporary structures and buildings, that were placed thereon by the Contractor. The adjoining areas mentioned above, outside the normal pay limits for seeding, will be reshaped, seeded and mulched, or otherwise restored as directed by the procurement officer at the Contractor's expense.

GP-4.10 WARRANTY OF CONSTRUCTION

(a) In addition to any other warranties at law or set out elsewhere in this Contract, the Contractor warrants for one year after final acceptance of the work, that work performed under this Contract conforms to the Contract requirements and is free of any defect of equipment, material or design furnished, or workmanship performed by the Contractor or any of his sub-contractors or suppliers at any tier. With respect to any part of the work which the State takes possession of prior to final acceptance,

such warranty shall continue for a period of one year from the date the State takes possession. Under this warranty, the Contractor shall remedy at his own expense any such failure to conform or any such defect. In addition, the Contractor shall remedy at his own expense any damage to State owned or controlled real or personal property, when that damage is the result of the Contractor's failure to conform to Contract requirements or any such defect of equipment, material, workmanship, or design. The Contractor shall also restore any work damaged in fulfilling the terms of this clause. The Contractor's warranty with respect to work repaired or replaced hereunder will run for one year from the date of such repair or replacement.

(b) The State shall notify the Contractor in writing within a reasonable time after the discovery of any failure, defect, or damage.

(c) Should the Contractor fail to remedy any failure, defect, or damage described in (a) above within a reasonable time after receipt of notice thereof, the State shall have the right to replace, repair, or otherwise remedy such failure, defect, or damage at the Contractor's expense.

(d) In addition to the other rights and remedies provided by this clause, all subcontractors', manufacturers', and suppliers' warranties expressed or implied, respecting any work and materials shall, at the direction of the State, be enforced by the Contractor for the benefit of the State. In such case if the Contractor's warranty under (a) above has expired, any suit directed by the State to enforce a subcontractor's, manufacturer's or supplier's warranty shall be at the expense of the State. The Contractor shall obtain any warranties which the subcontractors, manufacturers, or suppliers would give in normal commercial practice.

(e) If directed by the procurement officer, the Contractor shall require any such warranties to be executed in writing to the State.

(f) Notwithstanding any other provision of this clause, unless such a defect is caused by the negligence of the Contractor or his subcontractors or suppliers at any tier, the Contractor shall not be liable for the repair or any defects of material or design furnished by the State nor for the repair of any damage which results from any such defect in State furnished material or design.

(g) The warranty specified herein shall not limit the State's rights under GP-5.13 Acceptance clause of this Contract.

GP - SECTION 5
CONTROL OF THE WORK

GP-5.01 AUTHORITY OF THE PROCUREMENT OFFICER

(a) The procurement officer shall decide all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the rate of progress of said work; all questions which may arise as to the interpretation of any or all Plans and Specifications; and all questions as to the acceptable fulfillment of the Contract on the part of the Contractor.

(b) The procurement officer shall determine the amount and quantity of work performed and materials which are to be paid for under the Contract.

(c) The procurement officer shall have the authority to suspend the work wholly or in part due to the failure of the Contractor to carry out provisions of the Contract.

GP-5.02 CONFORMITY WITH CONTRACT REQUIREMENTS

All work performed and all materials furnished shall be in conformity with the Contract requirements.

In the event the procurement officer finds the materials or the finished product in which the materials are used or the work performed are not in reasonably close conformity with the Contract requirements and have resulted in an inferior or unsatisfactory product, the work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor.

In the event the procurement officer finds the materials or the finished product in which the materials are used are not in conformity with the Contract requirements but that acceptable work has been produced, he shall then make a determination if the work shall be accepted. In this event, the procurement officer will document the basis of acceptance by a change order which will provide for an appropriate adjustment in the Contract price. Any action taken pursuant to this paragraph may not result in an increase of the Contract price.

GP-5.03 DISCREPANCIES IN THE CONTRACT DOCUMENTS

In the event the Contractor discovers any discrepancies in the Contract Documents, he shall immediately notify the procurement officer. The procurement officer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the Contract.

GP-5.04 COOPERATION BY CONTRACTOR

The Contractor will keep available on the project site at all times one complete set of Contract Documents.
The Contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the procurement officer and his inspectors in every way possible.

The Contractor shall assign to the Contract as his agent, a competent superintendent capable of communicating in English and capable of reading and thoroughly understanding the Contract Documents and thoroughly experienced in the type of work being performed, who shall receive instructions from the procurement officer or his authorized representatives. The superintendent shall have full authority to execute the order or directions of the procurement officer without delay, and to promptly supply such materials, equipment, tools, labor and incidentals as may be required. Such superintendence shall be furnished irrespective of the amount of work sublet. Said superintendent shall be on the project site at all times when the work is in progress.

GP-5.05 COOPERATION WITH UTILITIES

It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions and that no additional compensation will be allowed for delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

The Contractor shall have responsibility for notifying all affected utility companies prior to the necessity of performing any work on their utilities and shall cooperate with them in achieving the desired result. All damage to utility facilities caused by the Contractor's operations shall be the responsibility of the Contractor.

GP-5.06 COOPERATION BETWEEN CONTRACTORS

(a) Separate Contractors on adjoining or overlapping work shall cooperate with each other as necessary. Such cooperation shall include:

(1) Arrangement and conduct of work;

(2) Storage and disposal of materials, etc., by each in such manner as to not unnecessarily interfere with or hinder the progress of the work being performed by other Contractors. Contiguous work shall be joined in an acceptable manner.

(b) The Administration and Department shall have the right, at any time, to Contract for and perform other work on, near, over or under the work covered by this Contract. In addition, other work may be performed under the jurisdiction of another Administration or State agency. In such cases, when a dispute arises among Contractors, the procurement officer will

decide which of the procurement officers will have jurisdiction over said dispute. The Contractor shall cooperate fully with such other Contractors and carefully fit his own work to such other work as may be directed by the procurement officer.

(c) The Contractor agrees that in the event of dispute as to cooperation the procurement officer will act as referee. The Contractor agrees to make no claims against the Administration for any inconvenience, delay or loss experienced by them because of the presence and operations of other Contractors.

GP-5.07 AUTHORITY AND DUTIES OF INSPECTORS

Inspectors shall be authorized to inspect all work done and all material furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication or manufacture of the materials to be used. The inspector is not authorized to revoke, alter or waive any requirements of the Contract, nor is he authorized to approve or accept any portion of the complete project. He is authorized to call the attention of the Contractor to any failure of the work or materials to conform to the Contract. He shall have the authority to reject materials or suspend the work until any questions at issue can be referred to and decided by the procurement officer. Inspectors shall perform their duties at such times and in such manner as will not unnecessarily impede progress on the Contract.

The inspector shall in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter. Any advice, instruction, direction or other order which the inspector may give the Contractor shall not be construed as binding the procurement officer in any way, or releasing the Contractor from fulfilling all of the terms of the Contract.

Where there is disagreement between the Contractor (or his representative) and the inspector, such as refusal by the Contractor to use properly approved material, performing work not in compliance with Plans and Specifications, and/or refusing to suspend work until problems at issue can be referred to and decided by the procurement officer, the inspector will immediately direct the procurement officer's attention to the issues of disagreement. If the Contractor still refuses to make corrections, comply or suspend work, the procurement officer will prepare and deliver in writing to the Contractor, by mail or otherwise, a written order suspending the work and explaining the reason for such shutdown. As soon as the inspector is advised of the delivery of the shutdown order, the inspector shall immediately leave the site of the work and any work performed during the inspector's absence will not be accepted or paid for and may be required to be removed and disposed of at the Contractor's expense.

GP-5.08 INSPECTION OF WORK

All materials and each part or detail of the work shall be subject at all times to inspection by the procurement officer or his authorized representative, and the Contractor will be held strictly to the materials, workmanship, and the diligent execution of the Contract. Such inspection may include mill, plant or shop inspection, and any material furnished under the

Contract is subject to such inspection. The procurement officer, or his representative, shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the procurement officer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standards required by the Contract. Should the work thus exposed or examined prove acceptable, adjustments in Contract time and price will be made pursuant to Section GP-4.06 for the uncovering or removing, and the replacing of the covering or making good of the parts removed. Should the work so exposed or examined prove unacceptable, the uncovering, or removing and replacing, shall be at the Contractor's expense.

When the United States Government or any railroad, corporation or other agency is to pay a portion of the cost of the work covered by this Contract, their respective representatives shall have the right to inspect the work.

GP-5.09 REMOVAL OF DEFECTIVE WORK

All work and materials which do not conform to the requirement of the Contract will be considered unacceptable, unless otherwise determined acceptable under the provisions in GP-5.02.

Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, found to exist shall be removed and replaced by work and
materials which shall conform to the Specifications or shall be remedied otherwise in an acceptable manner authorized by the procurement officer.

Upon failure on the part of the Contractor to comply promptly with any order of the procurement officer, made under the provisions of these General Provisions the procurement officer shall have authority to cause defective work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs from any monies due or to become due the Contractor under this Contract.

GP-5.10 LOAD RESTRICTIONS

(a) The Contractor shall comply with all State and local requirements pertaining to speed, size and weight of motor vehicles.

(b) The Administration may indicate in the Contract load restrictions on any road or structure within the vicinity of the project.

(c) The Contractor shall take into account any and all posted bridges, the crossing of which might be contemplated by the work on the Contract. No loads in excess of posted limits will be allowed in the prosecution of the work on any Contract, unless the required permits are obtained from the appropriate State and local governmental agencies.

(d) The Contractor shall consider possible detrimental effects of operating heavy paving and grading equipment contiguous to retaining walls, pipe culverts, arches, forms for concrete work as well as construction existing prior to this Contract.

(e) The procurement officer shall have the right to limit passage of heavy equipment (plus loads) when such passage or usage is causing apparent or visible damage to embankments, paving, structures or any other property.

(f) Within the Baltimore City limits, the Department of Transit and Traffic of the City of Baltimore has jurisdiction for oversize and overweight vehicle movements. Permits are obtainable from the Transit and Traffic Department.

GP-5.11 MAINTENANCE OF WORK DURING CONSTRUCTION

(a) The Contractor shall maintain the work during construction and until acceptance. This maintenance shall constitute continuous and effective work prosecuted as required with adequate equipment and forces to the end that all parts of the work be kept in satisfactory condition at all times.

(b) Particular attention shall be given to drainage, both permanent and temporary. The Contractor shall use all reasonable precautionary measures to avoid damage or loss that might result from accumulations and concentrations of drainage water, and material carried by such water and such drainage shall be diverted or removed when necessary to prevent damage to excavation, embankments, surfacing, structures or property. Suitable measures shall be taken by the Contractor to prevent the erosion of soil in all construction areas where the existing ground cover has been removed.

(c) All cost of maintenance work during construction and before final acceptance shall be included in the price bid and the Contractor will not be paid additional amount for such work, except as otherwise provided.

(d) In the event that the Contractor's work is ordered shutdown for failure to comply with the provisions of the Contract, the Contractor shall maintain the entire project as provided herein, and provide such ingress and egress for local residents or tenants adjacent to the project site, for tenants of the

(e) project site, and for the general public as may be necessary during the period of suspended work or until the Contract has been declared in default.

(f) On projects where traffic flow is maintained, the Contractor shall be responsible for repair of all traffic damages to the work, either partially or totally completed, until such time as the work is accepted by the procurement officer. Responsible, as used here, shall mean the responsibility for restoration, and the cost thereof unless otherwise expressly provided for in the Special Provisions.

GP-5.12 FAILURE TO MAINTAIN ENTIRE PROJECT

Failure on the part of the Contractor, at any time, to comply with the provisions of GP-5.11 above, will result in the procurement officer's immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 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.

GP-5.13 ACCEPTANCE FOR MAINTENANCE

(a) **Partial Acceptance for Maintenance**. If at any time during the performance of the work the Contractor substantially completes a unit or portion of the work, he may request the procurement officer to make final inspection of that unit. If the procurement officer finds upon inspection that the unit has been satisfactorily completed in compliance with the Contract, he may accept that unit as being completed and the Contractor may be relieved of further maintenance responsibility for that unit. Generally, partial acceptance for maintenance will only be considered when the Administration feels that such action is in the public interest. Such partial acceptance for maintenance shall in no way void or alter any of the terms of the Contract.

(b) **Final Acceptance for Maintenance**. Upon due notice from the Contractor of presumptive completion of the entire project, the procurement officer shall make a construction inspection and if at such inspection all construction provided for and contemplated by the Contract is found completed, such inspection shall constitute the final inspection and the procurement officer shall make the acceptance for maintenance as of that date, and the Contractor shall be notified of such acceptance in writing. After acceptance for maintenance the Administration will assume responsibility for maintenance except where otherwise provided by the Contract.

(c) If, however, at any construction inspection any work in whole or in part is found unsatisfactory, the procurement officer shall give the Contractor the necessary instructions as to the work required for final completion and acceptance for maintenance. The Contractor forthwith shall comply with and execute such instructions. Upon completion of such work, another

inspection shall be made which shall constitute the final inspection if the said work is found to have been completed satisfactorily. In such event, the procurement officer shall make the acceptance for maintenance and the Contractor shall be notified as aforesaid. After final acceptance for maintenance, the Administration will assume responsibility for maintenance except where otherwise provided by the Contract.

(d) Unless otherwise provided in this Contract, acceptance by the State shall be made as promptly as practicable after completion and inspection of all work required by this Contract, or that portion of the work that the procurement officer determines can be accepted separately. Acceptance shall be final and conclusive except as regards latent defects, fraud, such gross mistakes as may amount to fraud or the State's rights under any warranty or guarantee or any claims or counter claims reserved by the State.

GP-5.14 CLAIMS

Unless a shorter period is prescribed by law or elsewhere in this Contract,

(a) The Contractor shall file a written notice of claim for extension of time, equitable adjustment, extra compensation, damages, or any other matter (whether under or relating to this Contract) with the procurement officer within 30 days after the basis for the claim is known or should have been known, whichever is earlier.

(b) Contemporaneously with or within 30 days of the filing of a notice of a claim, but no later than the date that final payment is made, a Contractor shall submit the claim to the appropriate procurement officer. The claim shall be in writing and shall contain:

(1) An explanation of the claim, including reference to all Contract provisions upon which it is based;

(2) The amount of the claim;

(3) The facts upon which the claim is based;

(4) All pertinent data and correspondence that the Contractor relies upon to substantiate the claim; and

(5) A certification by a senior official, officer, or general partner of the Contractor or subcontractor, as applicable, that, to the best of the person's knowledge and belief, the claim is made in good faith, supporting data are accurate and complete, and the amount requested accurately reflects the Contract adjustment for which the person believes the Administration is liable.

(c) The claim shall also contain itemized supporting data for the elements of cost the Contractor claims to have incurred or it will incur. This data shall be in sufficient detail to permit analysis by the Administration of material, labor, equipment, subcontract and overhead costs as well as profit and shall include all work covered by the claim, whether deleted, added, or changed. Subcontract cost shall be supported by similar detailed data.

(d) A notice of claim or a claim that is not filed within the prescribed time shall be dismissed.

GP-5.15 DISPUTES

(a) This Contract is subject to the provisions of Title 15, Subtitle 2, State Finance and Procurement Article (Dispute Resolution) of the Annotated Code of Maryland and COMAR 21.10 (Administrative and Civil Remedies).

(b) Except as otherwise may be provided by law, all disputes arising under or as a result of a breach of this Contract that are not disposed of by mutual agreement shall be resolved in accordance with this clause.

(c) As used herein, "claim" means a written demand or assertion by one of the parties seeking, as a legal right, the payment of money, adjustment or interpretation of Contract terms, or other relief, arising under or relating to this Contract.

A voucher, invoice, or request for payment that is not in dispute when submitted is not a claim under this clause. However, if the submission subsequently is not acted upon in a reasonable time, or is disputed either as to liability or amount, it may be converted to a claim for the purpose of this clause.

(d) A claim shall be made in writing and submitted to the procurement officer for decision in consultation with the Office of the Attorney General.

(e) When a claim cannot be resolved by mutual agreement, the Contractor shall submit a written request for final decision to the procurement officer. The written request shall set forth all the facts surrounding the controversy.

(f) The Contractor, at the discretion of the procurement officer, may be afforded an opportunity to be heard and to offer evidence in support of his claim.

(g) The procurement officer shall render a written decision on all claims within 180 days of receipt of the Contractor's written claim, unless the time is extended by mutual agreement of the parties. If a decision is not issued within 180 days, the procurement officer shall notify the Contractor of the time within which a decision shall be rendered and the reasons for such time extension. The decision shall be furnished to the Contractor, by certified mail, return receipt requested, or by any other method that provides evidence

of receipt. The procurement officer's decision shall be deemed the final action of the State.

(h) The procurement officer's decision shall be final and conclusive unless the Contractor mails or otherwise files a written appeal with the Maryland State Board of Contract Appeals within 30 days of receipt of the decision.

(i) Pending resolution of a claim, the Contractor shall proceed diligently with the performance of the Contract in accordance with the procurement officer's decision.

GP - SECTION 6
CONTROL OF MATERIAL

GP-6.01 GENERAL

All materials shall meet all quality requirements of the Contract. In order to expedite the inspection and testing of the materials, the Contractor shall notify the procurement officer in writing of the sources from which he proposes to obtain all materials requiring approval, testing, inspection, or certification prior to incorporation into the work as soon as possible after receipt of notification of award of the Contract.

GP-6.02 STORAGE AND HANDLING OF MATERIALS

Materials shall be so stored as to assure the preservation of their quality and acceptability for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection. Approved portions of the right-of-way or project site may be used for storage purposes and for the placing of the Contractor's plant and equipment; such storage areas must be restored to their original condition by the Contractor at his expense. Any additional space required must be provided by the Contractor at his expense.

Materials shall be handled in such a manner as to preserve their quality and acceptability for the work.

GP-6.03 UNACCEPTABLE MATERIALS

(a) Materials represented by samples taken and tested in accordance with the specified tests and failing to meet required values shall be considered to be defective regardless of prior tests or approvals.

(b) Unless otherwise allowed by the procurement officer as set forth below, defective materials shall be removed from the site with any tags, stamps or other markings implying conformance with Specifications removed or obliterated.

(c) Where defects can be corrected, the Contractor may propose such corrective action as he deems appropriate to the procurement officer. The procurement officer may approve the corrective action but in so doing does not assume responsibility for the success thereof. Retests will be made to determine the acceptability of the material after corrective measures have been taken. No person other than the procurement officer may change any provision of the Specifications or the Contract without written authorization.

(d) The cost of replacing, correcting and/or removal of defective material will be the responsibility of the Contractor.

(e) The cost of repairing or replacing other materials damaged by the installation, correction and/or removal of defective materials will be the responsibility of the Contractor.

GP-6.04 ADMINISTRATION FURNISHED MATERIAL

The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Administration. Materials furnished by the Administration will be delivered or made available to the Contractor at the point or points specified in the Special Provisions. The cost of handling and placing all materials, after they are delivered to the Contractor, shall be considered as included in the Contract price for the item in connection with which they are used.

The Contractor shall be held responsible for all material delivered to him, and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges.

In cases where materials are supplied by the Administration and incorporated in the Contract work by the Contractor, materials inspection and acceptance will not be prerequisite for acceptance of the final product as the product pertains to these items.

GP - SECTION 7
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

GP-7.01 COMPLIANCE WITH LAWS

The Contractor hereby represents and warrants that:

(a) It is qualified to do business in the State of Maryland and that it will take such action as, from time to time hereafter, may be necessary to remain so qualified;

(b) It is not in arrears with respect to the payment of any monies due and owing the State of Maryland, or any department or unit thereof, including, but not limited to the payment of taxes and employee benefits, and that it shall not become so in arrears during the term of this Contract;

(c) It shall comply with all Federal, State and local laws, regulations and ordinances applicable to its activities and obligations under this Contract, including the provisions of COMAR Title 21 that are applicable to construction Contracts and which are incorporated herein by reference; and

(d) All requirements set forth in Federal assistance instruments applicable to this Contract shall be satisfied. Therefore, to the extent that the requirements which are specified in the assistance instrument conflict with regulations adopted under COMAR Title 21, the former shall control.

GP-7.02 PERMITS AND LICENSES

(a) The Contractor shall procure at his own expense such permits, licenses, insurance and governmental approval as may be necessary in order to comply with Federal, State and local laws, ordinances and regulations in performance of the work. He shall further give all notices necessary and incidental to the due and lawful prosecution of the work.

(b) Federal permits, from the U.S. Corps of Engineers, Environmental Protection Agency, and/or United States Coast Guard, for erection of structures in tidal waters will be obtained by the Administration and the Contractor shall comply with the requirements of such permits. Any required Federal permits, however, desired by the Contractor for temporary structures such as docks, piers, anchorages, etc., must be applied for and obtained by the Contractor.

GP-7.03 PATENTED DEVICES, MATERIALS AND PROCESSES

If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner and a copy of such agreement shall be filed with the Administration; if no such agreement is made or filed as noted, the Contractor and the surety

shall indemnify and save harmless the State, any affected third party, or political subdivision from any and all claims for infringement by reason of the use of any such
patented design, device, materials or process, or any trademark or copyright, and shall indemnify, protect and save harmless the State, its officers, agents and employees with respect to any claim, action, cost or judgement for patent, trademark or copyright infringement, arising out of purchase or use of materials, construction, supplies, equipment or services covered by this Contract.

GP-7.04 FEDERAL PARTICIPATION

When the United States Government pays all or any portion of the cost of a project, the work shall be subject to the inspection of the appropriate federal agency. Such inspection shall in no sense make the federal government a party to this Contract, and will not interfere, in any way, with the rights of either party hereunder.

GP-7.05 CONSTRUCTION SAFETY AND HEALTH STANDARDS

It is a condition of this Contract, and shall be made a condition of each subcontract entered into pursuant to this Contract, that the Contractor and any subcontractor shall not require any laborer or mechanic employed in performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety, as determined under construction safety and health standards and regulations (Title 29, Code of Federal Regulations, Part 1926, formerly Part 1518, as revised from time to time) promulgated by the United States Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standard Act, (83 Stat. 96) and under any construction safety and health standards and regulations promulgated by the Commissioner of Labor and Industry in accordance with the Maryland Occupational Safety and Health Act, Article 89, Section 28 thru 49A, inclusive, Annotated Code of Maryland (as the same may be amended from time to time).

The Contractor and each subcontractor shall permit inspection without delay and at any reasonable time on any premises where the work is being performed by a federal or state inspector authorized to investigate compliance with the above mentioned federal and state statutes and regulations.

The Contractor further agrees to correct any violations found to exist during such inspection within a reasonable time after the issuance of any citation, unless he contests the validity thereof through the appropriate administrative and judicial process.

GP-7.06 PUBLIC CONVENIENCE AND SAFETY

The Contractor at all times shall conduct the work in such a manner as to ensure the least practicable obstruction to all forms of traffic. The convenience of the general public, tenants, and of the residents along and/or adjacent to the improvement shall be provided for. Equipment and/or materials stored upon the project shall be placed so as to cause a minimum of obstruction to the public. Sprinkling shall be performed at the direction of the procurement officer. The Contractor shall, unless otherwise specified, provide and maintain in passable condition such temporary access, roads and bridges as may be necessary to

accommodate traffic diverted from the project under construction, or using the project under construction and shall provide and maintain in a safe condition temporary approaches to, and crossings of the project. Existing Department facilities planned to be removed, but which might be of service to the public during construction are not to be disturbed until other and adequate provisions are made. Existing mailboxes shall be maintained or reset in positions accessible to the public and to mail deliveries during construction and subsequent to construction in their final locations in a satisfactory condition. On Department facilities occupied by railroad tracks, temporary platforms for the entrance and exit of passengers to and from the railway cars shall be provided and maintained in an approved manner by the Contractor. Fire hydrants on or adjacent to the project shall be kept accessible to fire apparatus at all times, and no material or obstruction shall be placed within 15 feet of any such hydrant. All footways, gutters, sewer inlets and portions of the project adjoining the work under construction shall not be obstructed more than is absolutely necessary. Work closed down for the winter or at any other times shall be left entirely accessible at all points to fire apparatus.

GP-7.07 DETOURS

Detours may be indicated in the Contract Documents, or at the Contractor's request traffic may be detoured over approved routes along existing roads when acceptable to the procurement officer. Detours over existing State roads will be designated, marked and maintained by the appropriate Administrations. All other detours will be the responsibility of the Contractor.

GP-7.08 BARRICADES AND WARNING SIGNS

The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the public. All highways and other Department facilities closed to vehicular traffic shall be protected by effective barricades, and obstructions shall be illuminated during hours of darkness with electric lights.

The Contractor shall erect warning signs in advance of any place on the project where operations may interfere with the use of the facility by vehicular traffic, and at all other points where the new work crosses or coincides with an existing roadway or traffic lane(s). Such warning signs shall be constructed and erected in accordance with the Manual on Uniform Traffic Control Devices, or as directed.

The Contractor shall furnish, erect and maintain warning and direction signs in the number required by the procurement officer and at locations designated by the procurement officer throughout the limits of the project. For street and highway type traffic, the signs shall conform in every respect to the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways. Signs must be freshly painted and adequately reflectorized before being placed on any project. No work may be performed or begun unless an adequate number of signs of the proper category are in place.

In cases where the Contractor's sequence of operations results in grade differentials which would be hazardous to vehicular traffic the Contractor shall, at the direction of the procurement officer provide suitable substantial traffic barriers to the extent determined by the procurement officer.

GP-7.09 FLAGGING OF MOTOR VEHICLE TRAFFIC

For all construction Contracts requiring the flagging of motor vehicles licensed for operation on the highways of Maryland, said flagging shall be conducted as specified in the Manual on Traffic Control Devices for Streets and Highways.

GP-7.10 MAINTENANCE OF TRAFFIC

Unless otherwise noted in the Special Provisions, it shall be the Contractor's responsibility to maintain pedestrian and vehicular traffic safely, adequately and continuously on all portions of existing facilities affected by his work. In addition to existing facilities undergoing improvement, this also applies to crossroads, approaches, crossovers and entrances affected or made necessary by his work.

GP-7.11 PRESERVATION AND RESTORATION OF PROPERTY

(a) The Contractor shall not enter upon public or private property (outside of the right-of-way or project area) for any purpose without obtaining permission and he shall be responsible for the preservation of all public and private property, trees, monuments, signs and markers and fences thereon, and shall use every precaution necessary to prevent damage or injury thereto.

All Department signs and markers that are affected by the work shall be carefully removed when grading operations begin and delivered to the procurement officer. The Contractor shall take suitable precaution to prevent damage to underground or overhead public utility structures; shall protect carefully from disturbances or damages all land monuments and property marks until the procurement officer has referenced their location; and shall replace them as directed by the procurement officer.

(b) The Contractor shall be responsible for all damage or injury to property of any character during the prosecution of the work, resulting from any act, omission, neglect or misconduct in his manner or method of executing said work, or at any time due to defective work or materials, and said responsibility shall not be released until the work shall have been completed and accepted. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the work or in consequence of the nonexecution thereof on the part of the Contractor, he shall restore, at his own expense, such property to a condition similar to, or equal to, that existing before such damage or injury, in an acceptable manner. In case of the failure on the part of the Contractor to restore such property or make good such damage or injury, the procurement officer may, upon 48 hours

notice, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any monies due or which may become due the Contractor under this Contract.

GP-7.12 LAND, AIR AND WATER POLLUTION

(a) The Contractor shall incorporate all permanent erosion control features into the work at the earliest practicable time as required by the Contract Documents. Temporary pollution control measures will be used to correct conditions that develop during construction that were not foreseen during design; that are needed prior to installation of permanent pollution control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

(b) The Contractor's attention is directed to the fact that temporary pollution control may include control measures outside the right-of-way or project site where such work is necessary as a direct result of project construction. The procurement officer shall be kept advised of all such off-site control measures taken by the Contractor. This shall not relieve the Contractor of the basic responsibilities for such work.

(c) In case of failure on the part of the Contractor to control erosion, pollution or siltation, the procurement officer reserves the right to employ outside assistance or to use his own forces to provide the necessary corrective measures. All expenses incurred by the procurement officer in the performance of such duties for the Contractor shall be withheld from monies becoming due to the Contractor.

(d) Contractors and suppliers must submit evidence to the Administration that the governing Federal, State and local air pollution criteria will be met. This evidence and related documents will be retained by the Administration for on-site evaluation.

GP-7.13 RESPONSIBILITY FOR DAMAGE CLAIMS

(a) The Contractor shall indemnify and save harmless the State and all of its representatives from all suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work or through the use of unacceptable materials in the construction of the improvement, or on account of any act or omission by the said Contractor, or as a result of faulty, inadequate or improper temporary drainage during construction, or on account of the use, misuse, storage or handling of explosives, or on account of any claims or amounts recovered for any infringement of patent, trademark, or copyright, or from any claims or amounts arising or recovered under the Workmen's Compensation Laws, or any other State or local law, bylaw, ordinance, regulation, order or decree whether by himself or his

employees or subcontractors. The Contractor shall be responsible for all damage or injury to property of any character during the prosecution of the work resulting from any act, omission, neglect or misconduct, in the manner or method of executing said work satisfactorily or due to the nonexecution of said work or at any time due to defective work or materials and said responsibility shall continue until the improvement shall have been completed and accepted.

(b) The Contractor shall conduct his operations upon the right of-way of any railroad company fully within the rules, regulations and requirements of the railroad company. The Contractor shall be responsible for acquainting himself with such requirements as the railroad company may demand.

(c) The Contractor shall be held responsible for any accidents that may happen to the railroad company as a result of his operations.

(d) The Contractor shall not be held responsible for any claims arising from accidents incurred because of any traffic or general use permitted during the time the project or any section thereof is open to traffic under the terms of GP-7.15 except from accidents which are attributable to his negligence.

GP-7.14 LIABILITY INSURANCE

Prior to the start of work on this Contract, the Contractor shall submit to the procurement officer a certificate of insurance indicating that he carries comprehensive general public liability and property damage insurance in the amounts specified elsewhere in the Contract.

GP-7.15 USE AND POSSESSION PRIOR TO COMPLETION

The Administration shall have the right to take possession of or use any completed or partially completed part of the work. Such possession of or use shall not be deemed an acceptance of any work not completed in accordance with the Contract. While the Administration is in such possession, the Contractor shall be relieved of the responsibility for loss or damage to that portion of the work in possession of the Administration, other than that resulting from the Contractor's fault or negligence. If such prior possession or use by the Administration delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment in the Contract price or the time of completion will be made and the Contract shall be modified in writing accordingly.

GP-7.16 CONTRACTOR'S RESPONSIBILITY FOR WORK

(a) Except as herein elsewhere provided, until final acceptance of the work by the Administration, the Contractor shall have the charge and care thereof and shall take every reasonable precaution against injury or damage to any part thereof by the action of the elements, or from any other cause, whether rising from the execution or from the nonexecution of the work. The Contractor, except as herein elsewhere provided, shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of

the above causes before final acceptance and shall bear the expense thereof. Material lost or structures damaged as a result of faulty temporary drainage during construction or the action of the elements shall be replaced or repaired by the Contractor at no cost to the Administration. The Contractor shall make good or replace at his own expense and as required any Administration furnished material which may be broken, lost through fire, theft, or otherwise damaged, or in any way made useless for the purpose and use intended subsequent to delivery to the Contractor by the Administration and prior to final acceptance of the work even though such breakage, damage, loss or uselessness may result from causes beyond the control of the Contractor.

(b) In case of suspension of work for any cause whatever, the Contractor shall be responsible for the project and shall take such precautions as may be necessary to prevent damage to the work, provide for normal drainage and shall erect any necessary temporary structures, signs, or other facilities at his expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under this Contract, and shall take adequate precautions to protect new growth and other important vegetative growth against injury.

GP-7.17 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES

At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone, and power companies, or are adjacent to other property, damage to which might result in expense, loss or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made by the Contractor.

The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication or rearrangement work may be reduced to a minimum and that services rendered by those parties will not be unnecessarily interrupted.

In the event of interruption to utility services as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with the said authority in the restoration of service. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

GP-7.18 PERSONAL LIABILITY OF PUBLIC OFFICIALS

In carrying out any of the provisions of the Contract, or in exercising any power or authority granted to them by or within the scope of the Contract, there shall be no liability upon the Administrator, procurement officer or other authorized representatives, either personally or as officials of the State, it being understood that in all such matters they act solely as agents and representatives of the State.

GP-7.19 NO WAIVER OF LEGAL RIGHTS

The Administration shall not be precluded or estopped by any measurement, estimate, or certificate made either before or after the completion and acceptance of the work and payment therefore, from showing the true amount and character of the work performed and materials furnished by the Contractor, nor from showing that any such measurement, estimate or certificate is untrue or is incorrectly made, nor from showing that the work or materials do not in fact conform to the Contract. The Administration shall not be precluded or estopped, notwithstanding any such measurement, estimate or certificate and payment in accordance therewith, from recovering from the Contractor or his sureties, or both, such damage as it may sustain by reason of his failure to comply with the terms of the Contract. Neither the acceptance by the Administration, or any representative of the Administration, nor any payment for or acceptance of the whole or any part of the work, nor any extension of time, nor any possession taken by the Administration, shall operate as a waiver of any portion of the Contract or of any power herein reserved, or of any right to damages.

The waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach.

GP-7.20 NONDISCRIMINATION IN EMPLOYMENT

(a) Compliance with State Law and Regulations

(1) State Law

The Contractor agrees:

(a) Not to discriminate in any manner against an employee or applicant for employment because of race, color, religion, creed, age, sex, marital status, national origin, ancestry, or physical or mental handicap unrelated in nature and extent so as reasonably to preclude the performance of such employment;

(b) To include a provision similar to that contained in subsection (a), above, in any subcontract except a subcontract for standard commercial supplies or raw materials; and

(c) To post and to cause subcontractors to post in conspicuous places available to employees and applicants for employment, notices setting forth the substance of this clause.

(2) Sanctions for Noncompliance

In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Agreement, the Department shall impose such sanctions as it may determine to be appropriate, including but not limited to:

(a) Withholding of payment to the Contractor under the agreement until the Contractor complies, and/or

(b) Cancellation, termination or suspension of the Agreement in whole or in part.

(b) Compliance with Federal Law

Contractors providing materials, equipment, supplies, or services to the State under this Contract herewith assure the State that they are conforming to the provisions of the Civil Rights Act of 1964 and Section 202 of Executive Order 11246 of the President of the United States of America as amended by Executive Order 11375, as applicable.

The Contractor shall comply with all applicable Federal laws pertaining to nondiscrimination in employment.

GP-7.21 SANCTIONS UPON IMPROPER ACTS

In the event the Contractor, or any of its officers, partners, principals or employees, is convicted of a crime arising out of, or in connection with, the procurement of work to be done or payment to be made under this Contract, the Contract may, in the discretion of the Department, be terminated for default under GP-8.O8.

Section 16-203 of the State Finance and Procurement Article of the Annotated Code, and COMAR 21.08.01, which relate to Contracts with persons convicted of bribery, attempted bribery or conspiracy to bribe are incorporated in this Contract by reference.

Section 11-205 of the State Finance and Procurement Article and COMAR 21.08.03 relating to collusion for purposes of defrauding the State are incorporated into this Contract by reference.

Section 16-101 of the State Finance and Procurement Article and COMAR 21.08.04 relating to debarment for offenses other than bribery are incorporated into this Contract by reference.

GP-7.22 NONHIRING OF EMPLOYEES

No employee of the State of Maryland or any unit thereof, whose duties as such employee include matters relating to or affecting the subject matter of this Contract, shall, while so employed, become or be an employee of the party or parties hereby contracting with said State of Maryland or any unit thereof.

GP-7.23 CHOICE OF LAW

The Parties hereby agree that:

(a) This Contract was made and entered into in Maryland, and under the laws of Maryland.

(b) The law of Maryland shall govern the resolution of any issue arising in connection with this Contract, including, but not limited to, all questions concerning the validity of this Contract; the capacity of the parties to enter therein; any modification or amendment thereto; and the rights and obligations of the parties hereunder.

GP-7.24 CONTINGENT FEE PROHIBITION

(a) The Contractor warrants that it has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee or agent working for the Contractor, to solicit or secure this Contract, and that it has not paid or agreed to pay any person, partnership, corporation, or other entity, other than a bona fide employee or agent, any fee or any other consideration contingent on the making of this Contract.

(b) For breach or violation of this warranty, the Administration shall have the right to terminate this Agreement without liability, or, in its discretion, to deduct from the Contract price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.

GP-7.25 MULTI-YEAR CONTRACTS CONTINGENT UPON APPROPRIATIONS

If the General Assembly fails to appropriate funds or if funds are not otherwise made available for continued performance for any fiscal period of this Contract succeeding the first fiscal period, this Contract shall be canceled automatically as of the beginning of the fiscal year for which funds were not appropriated or otherwise made available; provided, however, that this will not affect either the State's rights or the Contractor's rights under any termination clause in this Contract. The effect of termination of the Contract hereunder will be to discharge both the Contractor and the State from future performance of the Contract, but not from their rights and obligations existing at the time of termination. The Contractor shall be reimbursed for the reasonable value of any nonrecurring costs incurred but not amortized in the price of the Contract. The State shall notify the Contractor as soon as it has

knowledge that funds may not be available for the continuation of this Contract for each succeeding fiscal period beyond the first.

GP-7.26 COST AND PRICE CERTIFICATION

(a) The Contractor by submitting cost or price information certifies that, to the best of its knowledge, the information submitted is accurate, complete, and current as of a mutually determined specified date prior to the conclusion of any price discussions or negotiations for:

(1) A negotiated Contract, if the total Contract price is expected to exceed $100,000 or a smaller amount set by the procurement officer.

(2) A change order or Contract modification, expected to exceed $100,000 or a smaller amount set by the procurement officer.

(b) The price under this Contract and any change order or modification hereunder, including profit or fee, shall be adjusted to exclude any significant price increase occurring because the Contractor furnished cost or price information which, as of the date agreed upon between the parties, was inaccurate, incomplete, or not current.

GP-7.27 CORPORATE REGISTRATION AND TAX PAYMENT CERTIFICATION

Corporations are required to execute a certification of corporation registration and tax payment in the form included in the Contract Documents.

GP-7.28 BUY AMERICAN STEEL ACT

The Provisions of COMAR 21.11.02 pertaining to implementation of the "Buy American Steel" Act (Subtitle 3 of Title 17 of the State Finance and Procurement Article of the Annotated Code of Maryland) are incorporated in this Contract by reference.

GP-7.29 MINORITY BUSINESS ENTERPRISE AND AFFIRMATIVE ACTION

(a) This Contract is subject to Executive Order 01.01.170.15, December 9, 1970; amended by Order 01.01.1976.05, July 9, 1976 (Code of Fair Practices), and COMAR 21.11.04 Contractor's Affirmative Action Plan Review/Approval and Compliance Monitoring Process-DOT. This Contract is also subject to the applicable provisions of Title 14, Subtitle 3 of the State Finance and Procurement Article of the Annotated Code of Maryland; COMAR 21.11.03 Minority Business Enterprise Policies; and provisions of COMAR 11.01.10 which incorporate by reference the current revision of the Minority Business Enterprise Program. Copies of the Minority Business Enterprise Program may be obtained from the Department of Transportation Fair Practices Officer, P.O. Box 548, Hanover, Maryland 21076. This Contract is also subject to all applicable

Federal and State laws and regulations pertaining to Minority Business Enterprise and Affirmative Action.

(b) To the extent any of the above laws or regulations are applicable to this Contract they are specifically incorporated herein.

GP-7.30 PREVAILING WAGE CONTRACTS FOR PUBLIC WORKS

(a) The Provisions of Subtitle 2 of Title 17 of the State Finance and Procurement article of the Annotated Code of Maryland and COMAR 21.11.11 pertaining to Prevailing Wage for Public Works are incorporated in construction Contracts of $500,000 or more by reference.

(b) When all or a portion of the cost of a project is funded by the U.S. Government, and the cost of the project exceeds $2,000 the minimum wage rates and benefits paid to workmen under the Contract shall be those prevailing in the locality as predetermined by the Secretary of Labor pursuant to the Davis-Bacon Act (40 USC 276a to a-7) and Regulations (29 CFR, Part 5) promulgated thereunder. Davis Bacon rates applicable to this agreement, if any, are specified elsewhere in the Contract Document.

GP-7.31 SMALL BUSINESS PROCUREMENTS

If the solicitation for bid indicates that this procurement has been designated for a small business preferences, the appropriate provisions of COMAR 21.11.01 pertaining to small business preferences shall apply and are incorporated herein by reference.

GP-7.32 FINANCIAL DISCLOSURE

The Contractor shall comply with the provisions of Section 13-221 of the State Finance and Procurement Article of the Annotated Code of Maryland which requires that every business that enters into Contracts, leases or other agreements with the State of Maryland or its agencies during a calendar year under which the business is to receive in the aggregate $100,000 or more, shall, within 30 days of the time when the aggregate value of these Contracts, leases or other agreements reaches $100,000, file with the Secretary of the State of Maryland certain specified information to include disclosure of beneficial ownership of the business.

GP-7.33 POLITICAL CONTRIBUTION DISCLOSURE

The Contractor shall comply with the provisions of Article 33, Sections 30-1 through 30-4 of the Annotated Code of Maryland which require that every person that enters into Contracts, leases, or other agreements with the State of Maryland or a political subdivision of the State, including its agencies, during a calendar year under which a person receives in the aggregate $10,000 or more, shall on or before February 1 of the following year file with the Secretary of State of Maryland certain specified information to include disclosure of political contributions in excess of $100 to a candidate for elective office in any primary or general election.

GP-7.34 CONFLICT OF INTEREST LAW

It is unlawful for any State officer, employee, or agent to participate personally in his official capacity through decision, approval, disapproval, recommendation, advice, or investigation in any Contract or other matter in which he, his spouse, parent, minor child, brother, or sister has a financial interest or to which any firm, corporation, association, or other organization in which he has a financial interest or in which he is serving as an officer, director, trustee, partner, or employee is a party, or to which any person or organization with whom he is negotiating or has any arrangement concerning prospective employment, is a party, unless such officer, employee, or agent has previously complied with the provisions of Article 4OA, Subsection 3-101 et seq of the Annotated Code of Maryland.

GP-7.35 PRE-EXISTING REGULATIONS

In accordance with the provisions of Section 11-206 of the State Finance and Procurement Article, Annotated Code of Maryland, the regulations set forth in Title 21 of the Code of Maryland Regulations (COMAR Title 21) in effect on the date of execution of this Contract are applicable to this Contract.

GP-7.36 RETENTION OF RECORDS

(a) The Contractor shall retain and maintain all records and documents, including, but not limited to, cost or pricing data, relating to this Contract for three years after final payment by the State hereunder or any applicable statute of limitations, whichever is longer, and shall make them available for inspection and audit by authorized representatives of the State, including the procurement officer or his designee at all reasonable times.

(b) The Contractor shall include the provisions of paragraph (a) in every subcontract.

GP-SECTION 8
PROSECUTION AND PROGRESS

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.

GP-8.02 NOTICE TO PROCEED

After the Contract has been executed, the Administration will, within the time limit specified by the Administration elsewhere in the Contract Documents, issue to the Contractor a "Notice to Proceed" and this notice will stipulate when the Contractor is expected to begin work. The specified Contract time shall begin on the date stipulated in the Notice to Proceed or, if an earlier start is authorized in the Notice to Proceed, on the day work (other than the erection of the inspection office, construction stakeouts and mobilization) actually starts. Work done prior to receipt of the Notice to Proceed is unauthorized and will not be measured or paid for.

GP-8.03 PROSECUTION OF THE WORK

(a) The Contractor shall begin work promptly within the time specified by the procurement officer and shall notify the procurement officer at least 48 hours before starting work.

(b) After the work has once been started, it shall be prosecuted continuously on all acceptable working days without stoppage until the entire Contract is complete.

(c) Should the prosecution of the work for any reason be discontinued, the Contractor shall notify the procurement officer of his intention to stop and shall also notify the procurement officer at least 24 hours in advance of resuming operations. Said notification shall be confirmed in writing.

GP-8.04 PROGRESS SCHEDULE

(a) Within 30 days after Notice to Proceed, the Contractor shall furnish the procurement officer a "Progress Schedule" showing the proposed order of work and indicating the time required for the completion of the work. Said progress schedule shall be used to establish major construction operations and to check on the progress of the work. The Contractor shall submit revised progress schedules as directed by the procurement officer.

(b) If the Contractor fails to submit the progress schedule within the time prescribed, or the revised schedule within the requested time, the procurement officer may withhold approval of progress payment estimates until such time as the Contractor submits the required progress schedules or may terminate the Contract for default.

(c) If, in the opinion of the procurement officer, the Contractor falls significantly behind the approved progress schedule, the Contractor shall take any and all steps necessary to improve his progress. This may require the Contractor to increase the number of shifts, initiate or increase overtime operations, increase days of work in the work week, or increase the amount of construction plants, or all of them. The procurement officer may also require the Contractor to submit for approval supplemental progress schedules detailing the specific operational changes to be instituted to regain the approved schedule, all without additional cost to the Administration.

(d) Failure of the Contractor to comply with the requirements of the procurement officer under this provision shall be grounds for determination by the procurement officer that the Contractor is not prosecuting the work with such diligence as will insure completion within the time specified. Upon such determination, the procurement officer may terminate the Contractor's right to proceed with the work, or any separable part thereof, in accordance with GP-8.O8 of these General Provisions.

GP-8.05 LIMITATIONS OF OPERATION

The Contractor shall conduct the work at all times in such a manner and in such sequence as will assure the least interference with the public.

GP-8.06 CHARACTER OF WORKMEN, METHODS AND EQUIPMENT

The Contractor shall employ sufficient labor and equipment for prosecuting the several classes of work to full completion in the manner and time required by the Contract.

Workmen must have sufficient skill and experience to perform properly the work assigned to them. All workmen engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactorily.

Any person employed by the Contractor or by any subcontractor who, in the opinion of the procurement officer, does not perform his work in a proper manner or is intemperate or disorderly shall, at the written request of the procurement officer, be removed forthwith by the Contractor or subcontractor employing such foreman or workman, and shall not be employed again in any portion of the work without the approval of the procurement officer.

Should the Contractor fail to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the procurement officer may withhold estimates which are or may become due on the Contract until a satisfactory understanding has been reached.

Equipment to be used on the work shall meet the requirements of the work and produce a satisfactory quality of work. The procurement officer may order the removal and require replacement of any unsatisfactory equipment.

When the methods and equipment to be used by the Contractor in accomplishing the construction are not prescribed in the Contract, the Contractor is free to use any methods or equipment that he demonstrates to the satisfaction of the procurement officer will accomplish the Contract work in conformity with the requirements of the Contract. When the Contract specifies that the construction be performed by the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the procurement officer in writing. If the Contractor desires to use a method or type of equipment other than those specified in the Contract, he may request authority from the procurement officer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed to be used and an explanation of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing construction work in conformity with Contract requirements. If, after trial use of the substituted methods or equipment, the procurement officer determines that the work produced does not meet Contract requirements, the Contractor shall discontinue the use of the substituted method or equipment and shall complete the remaining construction with the specified methods and equipment. The Contractor shall remove the deficient work and replace it with work of specified quality, or take such other corrective action as the procurement officer may direct. No change will be made in basis of payment for the construction items involved nor in Contract time as the result of authorizing a change in methods or equipment under these provisions.

GP-8.07 SUSPENSION OF WORK

(a) The procurement officer unilaterally may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work for a period of time as he may determine to be appropriate for the convenience of the State.

(b) If the performance of all or any part of the work is for an unreasonable period of time, suspended, delayed, or interrupted by an act of the procurement officer in the administration of this Contract, or by his failure to act within the time specified in this Contract (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this Contract (excluding profit) necessarily caused by an

unreasonable suspension, delay, or interruption and the Contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor; or for which an equitable adjustment is provided for or excluded under any other provisions of this Contract.

No claim under this clause shall be allowed:

(1) For any costs incurred more than 20 days before the Contractor shall have notified the procurement officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and,

(2) Unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of a suspension, delay, or interruption, but not later than the date of final payment under the Contract.

GP-8.08 TERMINATION FOR DEFAULT - DAMAGES FOR DELAY - TIME EXTENSIONS.

(a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as shall insure its completion within the time specified in this Contract, or any extension thereof, or fails to complete said work within this time, the State may, by written notice to the Contractor, terminate his right to proceed with the work, or the part of the work as to which there has been delay. In this event the State may take over the work and prosecute the same to completion, by Contract or otherwise, and may take possession of and utilize in completing the work the materials, appliances, and plant as may be on the site of the work and necessary therefore. Whether or not the Contractor's right to proceed with the work is terminated, he and his sureties shall be liable for any damage to the State resulting from his refusal or failure to complete the work within the specified time.

(b) If fixed and agreed liquidated damages are provided in the Contract and if the State so terminates the Contractor's right to proceed, the resulting damage shall consist of such liquidated damages until a reasonable time as may be required for final completion of the work together with any increased costs occasioned the State in completing the work.

(c) If fixed and agreed liquidated damages are provided in the Contract and if the State does not so terminate the Contractor's right to proceed, the resulting damage shall consist of these liquidated damages until the work is completed or accepted.

(d) The Contractor's right to proceed may not be so terminated nor the Contractor charged with resulting damages if:

(1) The delay in the completion of the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, acts of the public enemy, acts of the State in either its sovereign or contractual capacity, acts of another Contractor in the performance of a Contract with the State, fires, floods, epidemics, quarantine, restrictions, strikes, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and,

(2) The Contractor, within 10 days from the beginning of any such delay (unless the procurement officer grants a further period of time before the date of final payment under the Contract), notifies the procurement officer in writing of the causes of delay. The procurement officer shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in his judgment, the findings of fact justify such an extension, and his findings of fact shall be final and conclusive on the parties, subject only to appeal as provided in the "Disputes" clause of this Contract.

(e) If, after notice of termination of the Contractor's right to proceed under the provisions of this clause, it is determined for any reason that the Contractor was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of the parties shall, if the Contract contains a clause providing for termination for convenience of the State, be the same as if the notice of termination had been issued pursuant to the clause. If, in the foregoing circumstances, this Contract does not contain a clause providing for termination for convenience of the State, the Contract shall be equitably adjusted to compensate for the termination and the Contract modified accordingly; failure to agree to any such adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this Contract entitled "Disputes".

(f) The rights and remedies of the State provided in this clause are in addition to any other rights and remedies provided by law or under this Contract.

(g) As used in paragraph (d)(1) of this clause, the term "subcontractors or suppliers" means subcontractors or suppliers at any tier.

GP-8.09 LIQUIDATED DAMAGES

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

For each day that any work shall remain uncompleted beyond the time specified elsewhere in the Contract, the Contractor and/or his surety shall be liable for liquidated damages in the amount provided for in the solicitation, provided, however, that due account shall be taken of any adjustment of specified completion time for completion of work as granted by approved change orders.

GP-8.10 TERMINATION FOR CONVENIENCE OF THE STATE

(a) The performance of work under this Contract may be terminated by the State in accordance with this clause in whole, or from time to time in part, whenever the procurement officer shall determine that such termination is in the best interest of the State. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the Contract is terminated, and the date upon which such termination becomes effective.

(b) After receipt of Notice of Termination, and except as otherwise directed by the procurement officer, the Contractor shall:

(1) Stop work under the Contract on the date and to the extent specified in the Notice of Termination;

(2) Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of the portion of the work under the Contract as is not terminated;

(3) Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by Notice of Termination;

(4) Assign to the State in the manner, at the times, and to the extent directed by the procurement officer, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the State shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;

(5) Settle all outstanding liabilities and all claims arising out of the termination of orders and subcontracts, with the approval or ratification of the procurement officer, to the extent he may require, which approval or ratification shall be final for all the purposes of this clause;

(6) Transfer title and deliver to the State, in the manner, at the times and to the extent, if any, directed by the procurement officer, (a) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced as a part of, or acquired in connection with the performance of the work terminated by the Notice of Termination, and (b) the completed or partially completed

plans, drawings, information, and other property which, if the Contract had been completed, would have been required to be furnished to the State;

(7) Use its best effort to sell, in the manner, at the times, to the extent, and at the price or prices directed or authorized by the procurement officer, any property of the types referred to in (6) above; provided, however, that the Contractor (a) may not be required to extend credit to any purchaser, and (b) may acquire any such property under the conditions prescribed by and at a price or prices approved by the procurement officer; and provided further that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the State to the Contractor under this Contract or shall otherwise be credited to the price or cost of the work covered by this Contract or paid in such other manner as the procurement officer may direct;

(8) Complete performance of such part of the work as may not have been terminated by the Notice of Termination; and

(9) Take any action that may be necessary, or as the procurement officer may direct, for the protection and preservation of the property related to this Contract which is in the possession of the Contractor and in which the State has or may acquire an interest. The Contractor shall submit to the procurement officer a list, certified as to quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of items the disposition of which has been directed or authorized by the procurement officer, and may request the State to remove such items or enter into a storage agreement covering them. Not later than 15 days thereafter, the State shall accept title to such items and remove them or enter into a storage agreement covering the same; provided, that the list submitted shall be subject to verification by the procurement officer upon removal of the items, or if the items are stored, within 45 days from the date of submission of the list, and any necessary adjustment to correct the list as submitted shall be made prior to final settlement.

(c) After receipt of a Notice of Termination, the Contractor shall submit to the procurement officer his termination claim, in the form and with certification prescribed by the procurement officer. This claim shall be submitted promptly but in no event later than one (1) year from the effective date of termination, unless one or more extensions in writing are granted by the procurement officer, upon request of the Contractor made in writing within the one year period or authorized extension thereof. However, if the procurement officer determines that the facts justify such action, he may receive and act upon any such termination claim at any time after the one year period or any extension thereof. Upon failure of the Contractor to submit his termination claim within the time allowed or any extension

thereof, the procurement officer may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

(d) Subject to the provisions of paragraph (c), the Contractor and the procurement officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the total or partial termination of work pursuant to this clause, which amount or amounts may include a reasonable allowance for profit on work done; provided, that such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total Contract price as reduced by the amount of payments otherwise made and as further reduced by the Contract price of work not terminated. The Contract shall be amended accordingly, and the Contractor shall be paid the agreed amount. Nothing in paragraph (e) of this clause, prescribing the amount to be paid to the Contractor in the event of failure of the Contractor and the procurement officer to agree upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, shall be deemed to limit, restrict, or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to the Contractor pursuant to this paragraph.

(e) In the event of the failure of the Contractor and the procurement officer to agree as provided in paragraph (d), upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, the procurement officer shall pay to the Contractor the amounts determined by the procurement officer as follows, but without duplication of any amounts agreed upon in accordance with paragraph (d):

(1) For completed supplies or services accepted by the State (or sold or acquired as provided in paragraph (b)(7) above) and for which payment has not theretofore been made, a sum equivalent to the aggregate price for the supplies or services computed in accordance with the price or prices specified in the Contract, appropriately adjusted for any saving of freight or other charges;

(2) The total of:

(a) The costs incurred in the performance of the work terminated, including initial costs and preparatory expense allocable thereto, but exclusive of any costs attributable to supplies or services paid or to be paid for under paragraph (e)(1) hereof;

(b) The cost of settling and paying claims arising out of the termination of work under subcontracts or orders, as provided in paragraph (b)(5) above, which are properly chargeable to the termination portion of the Contract (exclusive of amounts paid or payable on account of supplies or materials delivered

or services furnished by subcontractors or vendors before the effective date of the Notice of Termination, which amounts shall be included in the costs payable under (a) above); and

(c) A sum, as profit on (a) above, determined by the procurement officer to be fair and reasonable; provided, however, that if it appears that the Contractor would have sustained a loss on the entire Contract had it been completed, no profit shall be included or allowed under this subdivision (c) and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss; and

(d) The reasonable cost of settlement accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the Contract and for the termination and settlement of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to this Contract.

The total sum to be paid to the Contractor under (1) and (2) of this paragraph shall not exceed the total Contract price as reduced by the amount of payments otherwise made and as further reduced by the Contract price of work not terminated. Except for normal spoilage, and except to the extent that the State shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor as provided in (e)(1) and (a) above, the fair value, as determined by the procurement officer, of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to the State or to a buyer pursuant to paragraph (b)(7).

(f) Costs claimed, agreed to, or determined pursuant to (c), (d), (e) and (i) hereof shall be in accordance with COMAR 21.09 (Contract Cost Principles and Procedures) as in effect on the date of this Contract.

(g) The Contractor shall have the right of appeal, under the clause of this Contract entitled "Disputes", from any determination made by the procurement officer under paragraph (c), (e), or (i) hereof, except that if the Contractor has failed to submit his claim within the time provided in paragraph (c) or (i) hereof, and has failed to request extension of such time, he shall have no such right of appeal. In any case where the procurement officer has made a determination of the amount due under paragraph (d), (e), or (i) hereof, the State shall pay to the Contractor the following:

(1) If there is no right of appeal hereunder or if no timely appeal has been taken, the amount so determined by the procurement officer; or,

(2) If an appeal has been taken, the amount finally determined on such appeal.

(h) In arriving at the amount due the Contractor under this clause there shall be deducted:

(1) All unliquidated advance or other payments or account theretofore made to the Contractor, applicable to the terminated portion of this Contract;

(2) Any claim which the State may have against the Contractor in connection with this Contract; and

(3) The agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the Contractor or sold, pursuant to the provisions of this clause, and not otherwise recovered by or credited to the State.

(i) If the termination hereunder be partial, the Contractor may file with the procurement officer a claim for an equitable adjustment of the price or prices specified in the Contract relating to the continued portion of the Contract (the portion not terminated by the Notice of Termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices. Any claim by the Contractor for an equitable adjustment under this clause shall be asserted within ninety (90) days from the effective date of the termination notice, unless an extension is granted in writing by the procurement officer.

(j) The State may, from time to time, under such terms and conditions as it may prescribe, make partial payments and payments on account against costs incurred by the Contractor in connection with the terminated portion of this Contract whenever, in the opinion of the procurement officer, the aggregate of such payments shall be within the amount to which the Contractor shall be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this clause, such excess shall be payable by the Contractor to the State upon demand, together with interest computed at the prime rate established by the State Treasurer for the period from the date such excess payment is received by the Contractor to the date on which the excess is repaid to the State; provided, however, that no interest shall be charged with respect to any such excess payment attributable to a reduction in the Contractor's claim by reason of retention or other disposition of termination inventory until 10 days after the date of the retention or disposition, or a later date as determined by the procurement officer by reason of the circumstances.

(k) Unless otherwise provided for in this Contract, or by applicable statute, the Contractor shall, from the effective date of termination until the expiration of three years after final settlement under this Contract, preserve and make available to the State at all reasonable times at the office of the Contractor but without direct charge to the State, all his books, records, documents and other evidence bearing on the costs and expenses of the Contractor under this Contract and relating to the work terminated hereunder, or, to the extent approved by the procurement officer, photographs, microphotographs, or other authentic reproductions thereof.

GP-8.11 SUCCESSFUL TERMINATION OF CONTRACTOR'S RESPONSIBILITY

A Contract will be considered as successfully fulfilled when the work has been completed in accordance with the terms of the Contract; when final acceptance has occurred; when final payment has been authorized; when all of the obligations of the Contractor and his surety have been complied with; and when final payment has been made.

GP-SECTION 9
PAYMENT

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.

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, 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 and State Finance and Procurement Article, §17-106. This certification may be required by the procurement officer for Contracts of $25,000 or less.

GP-9.02 FORCE ACCOUNT WORK

When the Contractor is required to perform work as a result of additions or changes to the Contract for which there are no applicable unit prices in the Contract, the Administration and Contractor shall make every effort to come to an agreed upon price for the performance of such work. If an agreement cannot be reached, the Administration may require the Contractor to do such work on a force account basis to be compensated in accordance with the following:

(a) **Labor**. For all labor and for foremen in direct charge of the specific operations, the Contractor shall receive the actual wages for each and every hour that said labor and foremen are actually engaged in such work.

(b) **Materials**. For materials accepted by the procurement officer and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth).

(c) **Equipment**. For any machinery or special equipment (other than small tools, whether rented or owned), the use of which has been authorized by the procurement officer, the Contractor shall receive the rates agreed upon in writing before such work is begun, or the Contractor shall receive those rates which may be specified elsewhere in the Special Provisions. For the purpose of definition, equipment with a new cost of $500 or less will be considered small tools.

(d) **Materials and Supplies Not Incorporated in the Work**. For materials and supplies expended in the performance of the work (excluding those required for rented equipment) and approved by the procurement officer, the Contractor shall receive the actual cost of such materials and supplies used. The Contractor shall receive a reasonable allowance for materials used but not expended in the performance of the work.

(e) **Subcontractors**. The Contractor shall receive the actual cost of work performed by a subcontractor. Subcontractor's cost is to be determined as in (a), (b), (c), and (d) above, plus the fixed fee for overhead and profit allowance computed as in (g).

(f) **Superintendence**. No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(g) **Contractor's Fixed Fee**. The procurement officer and the Contractor shall negotiate a fixed fee for force account work performed pursuant to this GP-9.02 by his forces and by his subcontractors, as compensation for overhead and profit for the work performed. Failure of the Contractor and the procurement officer to negotiate a fixed fee consistent with applicable cost principles in COMAR 21.09.01, shall be treated as a dispute pursuant to GP-5.15 and the Contractor shall proceed diligently with the performance of the force account work to completion. The Contractor's fixed fee shall include an amount equal to the sum of 65 percent of (a) which shall include, but not be limited to the following:

(1) Compensation for all costs paid to, or in behalf of, workmen by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits that may be required by collective bargaining

agreement or other employment Contract generally applicable to the classes of labor employed in the work.

(2) Bond premiums, property damage, liability and workmen's compensation insurance premiums, unemployment insurance contributions and Social Security taxes on the force account work.

In addition, the Contractor's fixed fee may include an amount not to exceed 20 percent of (b) and 5 percent of (d), and 5 percent of (e) with the exception of that portion chargeable to equipment as defined above.

(h) **Compensation**. The compensation as set forth above shall be received by the Contractor as payment in full for change order work done on a force account basis. At the end of each day, the Contractor's representative and the procurement officer shall compare records of the cost of work as ordered on a force account basis.

(i) **Statements**. No payment will be made for work performed on a force account basis until the Contractor furnishes the procurement officer duplicate itemized statements of the cost of such force account work detailed as to the following:

(1) Name, classification, date, daily hours, total hours, rate, and extension for such laborer, or foreman.

(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(3) Quantities of materials, prices and extensions.

(4) Transportation of materials.

(5) Payments of items under (i)(1) shall be accomplished by copies of certified payrolls. Under (i)(2) original receipted invoices for rentals must be provided if requested by the procurement officer. Paragraphs (i)(3) and (i)(4) shall be accompanied by original receipted invoices for materials used and transportation charges. If, however, the materials used in the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the Contractor which shall certify that such materials were taken from his stock, that the quantity claimed was actually used and that the price and transportation of the material as claimed represent actual cost. Any request for payment under this Section shall be submitted in the order outlined by the above.

GP-9.03 PROGRESS PAYMENTS

(a) Current Estimates.

(1) Lump Sum Contracts. If requested by the Administration, the Contractor shall furnish an acceptable breakdown of the lump sum Contract price showing the amount included therein for each principal category of the work. Said breakdown shall be in such detail so as to provide a basis for estimating monthly progress payments.

(2) Monthly Estimates. Each month the Administration will pay the Contractor for the Contract value of the work satisfactorily performed during the preceding calendar month, including authorized extras and additions less 5 percent. The 5 percent of the total Contract value retained by the Administration will not be released until final payment (unless partially released in a semi-final payment). Current estimates will be based upon the procurement officer's estimate of quantity (including materials and/or equipment complete in place) satisfactorily performed. In the instance of lump sum items, the procurement officer's estimate shall be the proper fraction of the lump sum items satisfactorily performed during the preceding month. All quantities, estimates and fractions will be reasonably accurate approximations and are subject to correction (a) in subsequent current estimates, (b) in any semi-final estimate and, (c) in final payment. Any and/or all partial payments may be withheld in the event current requirements of the Specifications have not been complied with by the Contractor. Should either the procurement officer or the Contractor be of the opinion that any estimates, quantities and/or fractions (either as to an individual current estimate or accumulations thereof) do not represent a reasonably accurate approximation of actual work, then details questioned shall be reviewed and then any corrections adjusted for in the next current estimate.

(3) Escrow Accounts For Retained Funds. The Contractor may elect to have retained funds paid to an escrow agent who may invest the funds in an approved interest-bearing account which, upon completion of the Contract, will be paid to the Contractor to the extent to which the Contractor is entitled. The Contractor's election to use the escrow account procedure must be indicated on the Contract Documents, and the escrow agreement must be in a form and under terms approved by the Administration. The Contractor shall forfeit his right to the use of the escrow account if he refuses or fails to indicate an election prior to execution of the Contract.

NOTE: This provision GP-9.03, (a)(3) shall not apply if it conflicts with any Federal grant or regulation affecting this Contract.

(b) Semi-Final Estimate Payments.

(1) Upon completion of the project and the acceptance by the Administration of the project for maintenance, the Administration, at the Contractor's request and with consent of surety, will pay the Contractor, within 30 calendar days of said request, what is hereby known as a semi-final estimate payment. Such a semi-final estimate payment will be based upon (a) quantities the Administration has computed and set up as proposed final quantities and (b) a reasonably accurate estimate for those quantities for which the Administration has not yet completed computations. The quantities which the Administration sets forth as proposed final quantities shall be so designated. To arrive at the amount of semi-final estimate payment there shall be deducted from the apparent estimated value of the Contract (a) total of all amounts previously paid to the Contractor as current estimates and (b) sums deemed chargeable against the Contractor properly deductible, including liquidated damages, and as a retainage, a sum not less than 1 percent the total value of the Contract.

(2) In cases where there has been substantial completion of the project and there are remaining only inconsequential or minor work items such as painting, seeding, mulching, or planting to be completed and such items cannot be completed for an extended period of time because of seasonal or weather conditions, there shall be made a semi-final inspection and if the work completed is found by the Administration to be satisfactory, then there is deemed to be partial acceptance on the entire project except for the uncompleted work items. Upon the above referred to partial acceptance, the Administration, within 30 days from such partial acceptance, upon request of the Contractor and with consent of surety, shall pay to the Contractor, what is hereby known as a partial semi-final estimate payment. Such a semi-final estimate payment will be based upon (a) quantities the Administration has computed and set up as proposed final quantities and (b) a reasonably accurate estimate for those quantities for which the Administration has not yet completed computations. The quantities which the Administration sets forth as proposed final quantities shall be so designated. To arrive at the amount of semi-final estimate payment, there shall be deducted from the apparent estimated value of the Contract (a) total of all amounts previously paid to the Contractor as current estimates, and (b) sums deemed chargeable against the Contractor properly deductible, including liquidated damages, and as a retainage, a sum equal to 1 percent of the total value of the Contract. (Said retainage is not to be less than $2,000).

(3) If all retained funds have not been paid to an escrow agent, as provided for in GP-9.03, (a)(3), the Administration shall, upon payment of the semi-final estimate, place the remaining retainage in an interest-bearing escrow account, as designated and on such terms and conditions as specified by the procurement officer. At the time of final payment, any retainage due, and any interest accrued on the retainage due from the time of payment of the semi-final estimate, shall be paid to the Contractor.

GP-9.04 FINAL ACCEPTANCE AND FINAL PAYMENT

(a) When the Contractor has completed a Contract, and it has been accepted for maintenance in accordance with the provisions of GP-5.13, the Administration will promptly proceed:

(1) To make any necessary final surveys;

(2) To complete any necessary computation of quantities; and

(3) To submit to the Contractor, within 60 days after final completion and acceptance of the project by the procurement officer for maintenance, for his consideration, a tabulation of the proposed final quantities. This tabulation shall be accompanied by a statement setting forth: (a) the additional work performed under change orders and/or supplemental agreements; (b) the authorized extension of time; (c) the number of days which have been charged against the Contractor as having been used to complete the Contract, and (d) any deductions, charges or liquidated damages which have been made or imposed.

(b) The Contractor shall then have a period of 10 calendar days, dating from the date upon which he received the aforementioned tabulation from the Administration, in which:

(1) To decide whether or not he will accept final payment upon such a basis, and

(2) To notify the Administration, in writing, of his decision. The Contractor may request an additional period up to 10 calendar days in which to notify the Administration of his decision. In the event the Contractor notifies the Administration that he protests final payment on such a basis, that notification shall outline the reason(s) for said protest.

(c) Upon receipt of a notification of acceptance as provided for in paragraph (b) above, the Administration shall prepare the final estimate and final payment forms and submit them to the Contractor. These forms shall show all data noted in paragraph (a) above, together with deductions for all prior payments.

The Contractor shall execute these forms and return them to the Administration within 30 calendar days from the date they are received for execution and payment. If such signed forms are not received by the Administration within the specified time, the Administration will prepare duplicate forms for execution and payment. Such action by the Administration shall be deemed to constitute acceptance and final payment.

(d) If, under the provisions of paragraph (b) above, the Contractor notifies the Administration of his protest and nonacceptance of the data submitted to him, the Administration shall pay the Contractor a semi-final estimate, or an additional semi-final estimate in the event a semi-final estimate has already been paid based upon the data noted in paragraph (a) above, with deductions for all prior payments. A retainage equal to 1 percent of the total value of the Contract shall be withheld by the Administration. The acceptance of such semi-final estimate, or additional semi-final estimate, shall not be considered as a waiver on the part of the Contractor of his right to pursue his protest and press for acceptance and final payment.

(e) In the event the Contractor does not accept the data submitted to him as described in paragraph (a) above and/or has outstanding a claim filed in accordance with GP-5.14, the procurement officer and the Contractor shall confer at mutually convenient times and endeavor to reconcile all points of disagreement expeditiously. If such reconciliation is accomplished, the Administration will promptly proceed with acceptance and final payment on the reconciled basis and in accordance with the provisions of paragraph (c) above. If reconciliation is not accomplished within 30 days, the decision of the procurement officer shall be reviewed by the Administrator and appropriate legal counsel. After review by the Administrator, the decision of the procurement officer is deemed to be the final action. The procurement officer shall furnish a copy of the final decision to the Contractor by certified mail, return receipt requested. This decision may be appealed by the Contractor to the Maryland State Board of Contract Appeals. This must be done by filing a written notice of appeal to the Appeals Board within 30 days from the date of the final decision. Failure to provide timely notification to the procurement officer shall constitute a waiver by the Contractor of his right under the Disputes Clause and final payment may be made by the Administrator based on the procurement officer's recommendation.

(f) All prior partial estimates and payments shall be subject to correction at the time of acceptance and final payment and if the Contractor has been previously overpaid, the amount of such overpayment shall be set forth in the Final Payment forms and the Contractor hereby agrees that he will reimburse the Administration for such overpayment within six months of receipt of such advice, and his surety will not be granted release from obligations under the terms of the Contract until reimbursement has been made in full.

(g) Payment for the full apparent value of the Contract thus determined shall become due and payable to the Contractor within ninety (90) days after

acceptance of the project by the procurement officer for maintenance, as hereinafter provided. As a condition precedent to final payment, the Contractor shall be required to execute a general release of all claims against the Administration arising out of, or in any way connected with, this Contract.

(h) In accordance with § 7-222 of the State Finance and Procurement Article of the Annotated Code of Maryland, certification must be obtained from the Comptroller of the Treasury, and the Employment Security Administration, that all State taxes have been paid prior to release of final payment on a construction Contract. The check will be processed and mailed only after notification is received from both departments that no State tax is owed.

GP-9.05 LATE PAYMENTS

(a) Payments to the Contractor pursuant to this Contract shall be made no later than 30 days after the State's receipt of a proper invoice from the Contractor. Charges for
late payment of invoices, other than as prescribed by Title 15, Subtitle 1, of the State Finance and Procurement Article, Annotated Code of Maryland, or by the Public Service Commission of Maryland with respect to regulated public utilities, as applicable, are prohibited.

(b) A proper invoice shall include: a description of the items or services provided; the date the goods were received or the inclusive dates the services were rendered; the Contract prices(s); retention, if any; the basis for the billing; the Contract or purchase order number; the Contractor's Federal Tax Identification Number or Social Security Number; the name and address of the proper invoice recipient.

(c) In order to receive payment of interest, the Contractor must submit a proper invoice for accrued interest within 30 calendar days after the payment date of the amount on which the interest is claimed to have accrued. Interest may not be claimed for more than one year following the 31st calendar day after the date that a proper invoice was received, or on amounts representing unpaid interest, or on an amount due under a Contract remaining unpaid for any period prior to July 1, 1983, or if a claim has been filed under State Finance and Procurement Article, Title 15 of Subtitle 2 of the Code.

(d) For the purposes of this Contract an amount will not be deemed due and payable if:

(1) The amount invoiced is inconsistent with the Contract.

(2) The proper invoice has not been received by the person or office specified in the Contract.

(3) The invoice or performance under the Contract is in dispute or the Contractor has failed to otherwise comply with the provisions of the Contract.

(4) The item or services have not been accepted.

(5) The quantity of items delivered is less than the quantity invoiced.

(6) The items or services do not meet the quality requirements of the Contract.

(7) The Contract provides for progress payments, and the proper invoice for the progress payment has not been submitted pursuant to the schedule contained in the agreement.

(8) The Contract provides for withholding a retainage and the invoice is for the retainage, all stipulated conditions for release of the retainage have not been met.

(9) The Contractor has not submitted satisfactory documentation or other evidence reasonably required by the procurement officer or by the Contract concerning performance under the Contract and compliance with its provisions.

GP - SECTION 10
MARYLAND DRIVER/VEHICLE LAWS AND REGULATIONS

GP-10.01 Conformed with Maryland Driver/Vehicle Laws and Regulations

(a) The Contractor shall comply with all Maryland driver licensing and safety, and vehicle safety and registration laws and regulations. Any vehicle which is operated on roadways which are open to traffic must meet these requirements. The applicable laws are summarized in a booklet entitled Trucking in Maryland Handbook available from the State Highway Administration Motor Carrier Division.

(b) For general questions regarding vehicle registration and driver licensing requirements call the Motor Vehicle Administration's Customer Service Center (toll free Maryland only) 1-800-950-1682. For Driver/vehicle safety requirements for heavy trucks and buses call the State Highway Administration Motor Carrier Division at 1-800-543-4564 (Maryland only) or (410) 787-2847.

(c) While Maryland residents must register each motor vehicle or trailer driven on Maryland highways, there are some exceptions to this general requirement concerning non-residents. However, if a non-resident is operating a vehicle(s) in Maryland as described below, the vehicle(s) being operated must be titled and registered in Maryland.

(1) used for transporting persons for hire, compensation, or profit;

(2) regularly operated in carrying on business in this State;

(3) designed, used, or maintained primarily for the transportation or property, or

(4) in the custody of any resident for more than 30 days during any registration year.

(d) In addition to the titling and registration requirements for common vehicles, Maryland defines "Special Mobile Equipment" as a vehicle that:

(1) is not used primarily for highway transportation or people or property; and

(2) is operated or moved on a highway only as an incident to its non-highway use.

Special Mobil Equipment includes a road construction or maintenance machine, mobile crane, ditch digger, well driller, concrete mixer, etc., for which special registration plates (class 4) must be obtained.

SUPPLEMENTARY

GENERAL PROVISIONS FOR

CONSTRUCTION

CONTRACTS

FEDERALLY FUNDED PROJECTS ONLY

JULY 2011

Contract No. T-1038-0140

SUPPLEMENTARY GENERAL PROVISIONS

FOR CONSTRUCTION CONTRACTS

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SGP– SECTION 1

DEFINITIONS AND TERMS

SGP – 1.01 General

These Supplementary General Provisions augment the requirements of the General Provisions for Construction Contracts, dated October 2001, issued by the Department of Transportation of the State of Maryland.

SGP – 1.02 Language, References, Definitions and Terms (GP-1.05)

A. Language

All work pertaining to these Specifications shall be completed as specified in the Contract Documents or as directed by the Engineer. When used in the Specifications, the term "specified" refers to requirements stated herein or included elsewhere in the Contract Documents. Refer to GP-4.01.

Terms such as directed, accepted, acceptable, approved, approval, authorized, determined, designated, established, permitted, required, satisfactory, unacceptable, unsatisfactory and unsuitable are implicitly followed by the words "by the Engineer", to "the Engineer", or "of the Engineer" unless the context clearly indicates a different meaning..

The word "submit" or "submittal" implies that the Contractor shall provide the applicable submittal in writing to the Engineer for approval. If otherwise, the Contract Documents will specify where to make the submittal. No applicable work may proceed without written approval. These requirements apply to all submittals, whether for details, methods, schedules, or materials.

Whenever the verbs "submit,""designate," "notify," "bear," "use," "furnish," "install," "comply" and other like verbs are used without stating the subject, it shall be understood the subject is the Contractor and the action is to be the responsibility of the Contractor unless the context clearly indicates a different meaning

The word "ensure" obligates the Contractor to fulfill a specific requirement or complete an indicated action in conformity with the Contract Documents.

The phrase "remove and dispose" obligates the Contractor to assume possession of the specified material, remove it from the area, and properly dispose of it off site. Even when not specifically addressed, all waste materials shall be disposed of at the appropriate disposal facility.

Unless otherwise specified when terms such as "repair", "restore", "replace", and remove and replace are used in reference to unacceptable work, whatever the reason or

cause for the work being rejected, it shall be implicitly understood that the Contractor shall perform the applicable work in conformance with the Contract Documents, in an acceptable manner, and at no additional cost to the Administration. Refer to GP-5.02, GP-5.09, and GP-7.16.

Unless specifically stated otherwise, all material, labor, equipment, tools, and incidentals necessary to perform and complete the work as specified and detailed in the Contract Documents, including all generally recognize4d and inherent aspects of the work, shall be included in either the lump sum or unit price for the Contract (Pay) item. When specific aspects of the work are listed in Measurement and Payment, it shall be construed to be an all-inclusive list.

B. References

Unless otherwise noted:
Reference to Specifications or procedures beginning with the letters M, R, or T shall be understood to be AASHTO.

Reference to Specifications or procedures beginning with the letters A, B, C, D, E, F, G, ES or P shall be understood to be ASTM.

Reference to Specifications or procedures shall be understood to be the most recently published standard in effect on the date of the opening of bids unless otherwise specified in the Contract Documents.

The words "using", "per", and "meet" or "meeting', when referring to a specification or procedure, imply "in strict accordance with".

C. Definitions (GP 1.05)

The following definitions augment Section 1 of the General Provisions:

Acceptance – The formal written acceptance by the Administration, that all work, or a specific portion thereof, under the Contract has been satisfactorily completed.

Additional Work – Work not required or provided for in the original Contract.

Addendum – Written interpretations and revisions to the Bid Documents issued by the Administration prior to opening of Bids.

Administration – The Maryland Transit Administration (MTA) of the State of Maryland Department of Transportation.

Administrator – The Chief Executive Officer of the Maryland Transit Administration

Beneficial Occupancy – Owner's use of an uncompleted portion of the work. Use does not alter any provisions of the contract and will only be used when the occupancy is in the best interests of the state.

Bid/Proposal Affidavit – The affidavit, in form approved by the Administration, executed by the Bidder, declaring the bidder's status as to commercial nondiscrimination, bribery, non-collusion, and compliance and violation of certain laws and other requirements.

Certification – A written statement, signed by a certifying person, affirming under penalties applicable to perjury, that the contents of a document are true and correct. With respect to a document that states that material and/or work complies with applicable specifications, the document shall (1) include the actual test results that confirm the statement, (2) be on the letterhead of the company or other organization that performed the tests, and (3) be certified by an officer of that company or other organization.

Contract Affidavit – The affidavit, in form approved by the Administration, executed by the Contractor declaring status as to corporate registration, payment of taxes, and bid affirmations.

Construction or Project Site – The area occupied by the project and all nearby areas used by the Contractor or his subcontractors during performance of the work, including areas for storage and/or processing of materials to be incorporated into the work or equipment to be used at the project site.

Contract Time or Completion Date – The number of calendar days shown in the contract indicating the time allowed for the completion of the work contemplated in the contract. In case a calendar date of completion is shown in the contract, in lieu of the number of calendar days, such work shall be completed by the date.

Contract Specifications Book – A set of documents issued by the Administration for the intended work which includes the Notice to Contractors, Bid Forms, General Provisions, Supplementary General Provisions, Special Provisions, Technical Provisions, and other forms and exhibits.

Design and Manufacturing Site – Areas utilized by the Contractor or his subcontractor that are remote from the Construction Site, as defined above, and utilized for design, processing, or manufacture of materials and equipment to be incorporated into the work.

Domestic Manufacture – When referring to metallic items such as structural steel, pipe, reinforcement, bridge rails, etc., the term Domestic Manufacture means those metal products that have been melted and manufactured within the United States.

Equipment – All machinery, tools, and apparatus necessary for the proper construction and acceptable completion of the work, together with the necessary supplies for upkeep and maintenance.

Federal Agencies – Reference to any Federal agency or officer shall be deemed made to any agency or officer succeeding in conformance with law to the

powers, duties, jurisdictions, and authority of the agency or officer mentioned.

Holidays – In the state of Maryland, holidays occur on:

January 1	- New Years Day
3rd Monday in January	- Martin Luther King's Birthday
3rd Monday in February	- Presidents Day
4th Monday in May	- Memorial Day
July 4	- Independence Day
1st Monday in September	- Labor Day
2nd Monday in October	- Columbus Day
November 11	- Veterans Day
4th Thursday in November	- Thanksgiving
December 25	- Christmas

All days of General and Congressional Election (not Primary elections) throughout the State.

If a legal holiday falls on a Saturday, the preceding Friday shall be deemed and treated as a holiday.

If a legal holiday falls on a Sunday, the following Monday shall be deemed and treated as a holiday.

Indicated – A Term meaning as shown on the Contract Drawings, as described in the Specifications, or as required by the other Contract Documents.

Laboratory – The testing laboratory of the State Highway Administration (or other Administrations) or any other testing laboratory designated by the procurement officer.

MdMUTCD – Maryland Manual on Uniform Traffic Control Devices

Plans – The official drawings issued by the Administration as part of the Contract Documents, including those incorporated in the Contract Documents by reference. These include the official approved plans, profiles, typical cross sections, working drawings, and supplemental drawings or exact reproductions that show the location, character, dimensions, and details of the work to be performed.

Provide – In reference to work to be performed by the Contractor, provide means furnish and install complete in place.

Punchlist – A list of incomplete work, to be completed prior to final acceptance.

Questionnaire – The approved form or forms upon which the Contractor shall furnish the information as to his ability to perform the work, his experience

in similar work, the equipment to be used, and his financial condition as related to his ability to finance the work.

Referenced Standards – All materials, equipment and workmanship specified by the number, symbol, or title of a referenced standard shall, unless otherwise specified, comply with the latest edition or revision thereof and all amendments and supplements thereto in effect on the date of the opening of Bids, except where a particular issue is indicated in the reference specifications.

Right of Way – The area acquired and reserved by the Administration for use in constructing the proposed improvement and appurtenances.

Semi-Final Inspection – The walk through inspection for determining action in accordance with General Provision 9.03.b "Semi-Final Estimate Payments"

Special Provisions (SP) – Specifications for a specific item, condition, or requirement applicable to an individual project and not otherwise thoroughly or satisfactorily detailed in the Contract Documents.

Standard Specifications – The most current book of Specifications entitle "Standard Specifications for Construction and Materials" published by State Highway Administration of the Maryland Department of Transportation and intended for general application and repetitive use.

Substantial Completion – The stage in the progress of the Work, where the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use as determined solely by the Owner. Any remaining work shall not impact the owner's operation of work.

Technical Requirements or Technical Provisions – used interchangeably with "Special Provisions."

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SGP – SECTION 2

BIDDING REQUIREMENTS AND CONDITIONS

SGP – 2.01 General

The following Articles augment those contained in Section 2 of the General Provisions.

SGP – 2.02 Taxes – Responsibility for Payment, Exemptions, Forms to be Filed (GP-2.05)

A. Refer to General Provisions Article GP – 2.05.

B. Foreign bidders represent and warrant that their prices do not violate United States laws and regulations and agree to pay any duties assessed and to indemnify, hold harmless, and, upon request, defend the Administration for any loss or expense including but not limited to reasonable attorney's fees that the Administration may incur from any claim, demand, or investigation of alleged violation of the said laws and regulations.

SGP – 2.03 Arrearages

By submitting a response to this solicitation, a bidder shall be deemed to represent that it is not in arrears in the payment of any obligation due and owing the State of Maryland, including the payment of taxes and employee benefits, and that it shall not become so in arrears during the term of the contract if selected for contract award.

SGP – 2.04 Non-Visual Access Clause

A. Subject to COMAR 21.05.08.05 B and C, the Contractor shall comply with the provisions of B and C of this provision.

B. The bidder or offeror warrants that the information technology offered under this bid or proposal (1) provides equivalent access for effective use by both visual and non-visual means; (2) will present information, including prompts used for interactive communications, in formats intended for both visual and non-visual use; (3) if intended for use in a network, can be integrated into networks for obtaining, retrieving, and disseminating information used by individuals who are not blind or visually impaired; and (4) is available, whenever possible, without modification for compatibility with software and hardware for non-visual access. The bidder or offeror further warrants that the cost, if any, of modifying the information technology with compatibility with software and hardware used for used for non-visual access will not increase the cost of the information technology by more than five percent (5%).

C. For the purpose of this regulation, the phrase 'equivalent access' means the ability to receive, use, and manipulate information and operate controls necessary to access and use information technology by non-visual means. Examples of equivalent

access include keyboard controls used for input and synthesized speech, Braille, or other audible or tactile means used for input.

SGP – 2.05 Preparation of Bid (GP-2.06, SGP-10.15)

A. The Bid Form together with all other forms provided, and such other documents as may be specified, executed, and submitted by the Bidder, constitute his Bid. All documents bound with or attached to the Bid Form in the Contract Specification Book are considered a part thereto and shall not be altered when the Bid Form is submitted. Bids shall be submitted in the manner specified herein and in the Notice to Contractors.

B. Bidder shall complete the "Buy America" certification form.

SGP – 2.06 Competency of Bidders

Bidders shall furnish, with their bid, answers to questions contained in the Contractor's Questionnaire. Bids submitted by Bidders with inadequate experience or capacity may be rejected by the Administration.

SGP – 2.07 Explanations

Explanations desired by a prospective bidder regarding the Contract Drawings, Specifications, and other Bid Documents shall be requested in writing from the Administration. Requests shall include the Contract number and name and shall be directed to the address indicated in the Notice to Contractors. Oral explanations or instruction will not be binding. Any addenda resulting from these requests will be mailed to all listed holders of the Bid Documents. The Bidder shall acknowledge the receipt of all addenda in the space provided on the Bid Form.

SGP-2.08 – Bid Irrevocable (GP-2.01)

The bid prices are irrevocable for one hundred eighty (180) calendar days following Bid Opening.

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SGP – SECTION 3

AWARD AND EXCUTION OF CONTRACT

SGP – 3.01 General

The following Article augments those contained in Section 3 of the General Provisions.

SGP – 3.02 Execution of Contract (GP-3.04)

A. Contract Affidavit: Attached to this Contract and made a part thereof is a Contract Affidavit to be executed by the Bidder.

SGP-.303 Preconstruction Meeting

Prior to the commencement of the Work, the Preconstruction conference will be held for the purpose of discussing with the Contractor existing conditions, methods for maintaining and protecting traffic during construction, materials to be ordered, equipment to be used, equal employment regulations, civil rights requirements, other pertinent features of the Contract, and all essential matters pertaining to the prosecution of and the satisfactory completion of the work. At this time, the Contractor and the Procurement Officer will arrange for their authorized representatives to meet and review details of construction, and if appropriate, to walk the project with the contract drawings in hand and carefully observe all pertinent conditions relating to the construction of the work, including the status of right-of-way, structures and obstructions to be removed, altered, or changed.

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SGP – SECTION 4

SCOPE OF WORK

SGP – 4.01 General

The following Article augment Section 4 of the General Provisions.

SGP – 4.02 Value Engineering Change Proposals (VECP)

A. This Article applies to those Value Engineering Change Proposals (VECP's) which are initiated and developed by the Contractor to change the Contract Drawings and Specifications, or other requirements of this Contract. In order to be accepted under this Article, each VECP shall:

1. Be identified as a VECP by the Contractor at the time of submission to the Administration as submitted pursuant to this Article 4.02;

2. Require a change to this Contract;

3. Decrease the Contract Price; and

4. Maintain the items' required functions such as service life, reliability, economy of operation, ease of maintenance, and necessary standardized features and appearance, and not require an unacceptable extension of Contract Time.

B. Any VECP the Contractor submits shall be in sufficient detail to clearly define the proposed change, including:

1. A description of the difference between the existing and the proposed Contract requirements; and the comparative advantages and disadvantages of each;

2. Contract requirements recommended to be changed if the proposal is accepted;

3. A detailed estimate of the amount of the net savings, as defined in SGP-4.02.E., that will result from acceptance of the proposal;

4. A prediction of any effects the proposed change would have on costs of maintenance and operation; and

5. A statement of the time by which the proposal must be accepted so as to obtain the maximum price reduction, noting any effect upon the Contact Time.

C. The Administration may accept or reject part or all of any VECP by giving the Contractor written notice thereof. Until such notice is issued, the Contractor shall remain obligated to perform in accordance with the terms of the Contract. VECPs will be processed expeditiously; however, the Administration shall not be liable for any delay in acting upon any proposal submitted pursuant to this Section. The decision of the Administration as to acceptance of any such proposal shall be final and shall not be subject to the "Disputes" provisions of this Contract.

D. The Contractor has the right to withdraw part or all of any VECP at any time prior to acceptance by the Administration. Such withdrawal shall be made in writing to the Administration but shall not be effective until received by the Procurement Officer. Each VECP submitted by the Contractor shall remain valid for a period of sixty (60) days from date submitted. If the Contractor desires to withdraw the proposal prior to the expiration of this period, he shall be liable for the cost incurred by the Administration in reviewing the proposal.

E. When a VECP submitted pursuant to this Article 4.02 is accepted:

1. An equitable adjustment in the Contract price and in any other affected provisions of the Contract shall be made and the Contract modified in accordance with this Article and the "Changes" or other applicable Sections of this Contract.

2. The net savings resulting from the change shall be shared between the Contractor and the Administration on the following basis:

   a. When only the prime Contractor is involved, he shall receive fifty percent (50%) and the Administration fifty percent (50%) of the net savings resulting from the change.

   b. When a first-tier Subcontractor is involved, he shall receive thirty percent (30%), the prime Contractor thirty percent (30%), and the Administration forty percent (40%) of the net savings resulting from the change. Other subcontractors shall receive a portion of the first-tier subcontractor savings in accordance with the terms of their contract with the first-tier Subcontractor.

3. Net savings shall be determined by deducting from the estimated gross savings, the Contractor's cost of developing and implementing the proposal (including any amount attributable to a subcontractor) and the estimated amount of increased costs to the Administration resulting from the change, such as implementation, inspections, related items, and Administration furnished equipment or property. Estimated gross savings shall include Contractor's labor, material, equipment, overhead, profit, and bond. The Contract price shall be reduced by the sum of the Administration's costs and share of the net savings.

F. The Contractor shall include the provisions of this Article, with this predetermined sharing arrangements contained herein, in all first-tier subcontracts in excess of the Contract value of $25,000 and any other subcontracts which, in the judgment of the Contractor, is of such nature as to offer reasonable likelihood of value engineering cost reductions. At the option of the first-tier Subcontractor, this Article may be included in lower tier subcontracts. The Contractor shall encourage submission of VECP's from Subcontractors; however, it is not mandatory that VECP be submitted nor is it mandatory that the Contractor accept or transmit to the Administration VECP's proposed by his Subcontractors.

G. A VECP identical to one submitted under any other contract, by this or any other Contractor may also be submitted under this Contract.

H. The Contractor may restrict the Administration's right to use any VECP data by marking it with the following statement:

> "This data, furnished pursuant to the Value Engineering Article of this Contract, shall not be duplicated, used or disclosed in whole or in part, for any purpose except to evaluate the VECP, unless the proposal is accepted by the Administration. This restriction does not limit the Administration's right to use information contained in this data if it is or has been obtained, or is otherwise available from the Contractor or from another source, without limitations. When this proposal is accepted by the Administration, the Administration shall have the right to duplicate use, and disclose any data in any manner and for any purpose whatsoever, and have others do so whether under this or any other Administration Contract."

SGP – 4.03 Negotiated Payment Provisions (GP-4.07)

In lieu of General Provision GP-4.07 and unless specified otherwise in the Special Provisions, the following shall prevail:

The requirement of Article SGP-4.03 shall apply only to work at the construction site and only when a contract cost adjustment is negotiated and a Contract modification incorporating the adjustment is executed by the parties. In the event the parties cannot reach a negotiated agreement, the matter becomes a dispute and is subject to General Provision 5.15 "Disputes" or General Provision 5.14 "Claims". In the event of a dispute the markups described below in E. F and G will not be valid. Actual costs will apply.

When the Contractor is entitled to a cost adjustment as a result of additions or changes to the Contract for which there are no applicable unit prices, and the Administration has not directed such work to be performed on a force account basis, subject to the limitations and conditions below, the adjustment in compensation shall be based on costs incurred by the Contractor to the extent that those costs are satisfactorily documented and justified by the Contractor.

A. Labor. The cost of basic hourly wages and fringes for all direct labor and direct-charge foremen required in the performance of the work. Wage and fringe costs shall be in accordance with applicable collective bargaining

agreements or other employment contracts to the extent that these costs are actually paid or payable.

B. Materials. The delivered cost of all materials required for performance of the work. The delivered cost of material includes sales taxes if payable.

C. Equipment. For any machinery or equipment (other than small tools), the use of which is authorized by the Engineer, the compensation will be based on the equipment costs listed in the applicable edition of the Rental Rate Blue Book for Construction Equipment published by Penton Business Media/Equipment Watch For third party rentals, compensation will be made on actual rental rates paid. For purposes of definition, equipment with a new cost of $1,000 or less will be considered small tools.

1. Equipment costs for contractor-owned equipment will be as specified in SGP-9.02 C.1 through C.5.

2. Equipment costs for rental equipment will be as specified in SGP-9.02 C.6.

D. Insurance. The incremental increase in premium costs resulting from the work for workmen's compensation, liability or risk insurance, only in the event that such coverage has not been provided by the Administration under the contract.

E. Supervision, Overhead, and Profit. The Procurement Officer and Contractor shall negotiate a fixed amount to compensate the Contractor for supervision, overhead, and profit for the work performed by the Contractor's and subcontractor's forces. The allowed markup for supervision, overhead (including home office expense) and profit shall not exceed forty-five percent (45 %) of items A and D and ten percent (10%) of items B exclusive of sales tax, and C.2 above. No additional allowance shall be made for small tools and supplies, bond premiums, payroll taxes including FICA, FUTA, and SUTA, or any other costs not specifically reimbursed in items A through D above. The provisions of this paragraph (SGP-4.03E) do not apply to computation of mark-ups if extended costs are allowed per SGP-4.03G.

F. Subcontractors. The Contractor shall receive the cost of work performed by a subcontractor. Subcontractor's costs are to be determined as in A through D above, plus the mark-up allowance computed as in E. The Contractor may receive additional mark-up allowance not to exceed the higher of five percent (5%) or five hundred dollars ($500) of subcontractor's costs as determined in A, B, C.2 and D. However there will not be any such markup for subcontractor's below the first tier. Notwithstanding, actual charges to the Contractor for overhead and profit on work performed or furnished to him by others, no such mark-ups in excess of those specified will be recognized or considered. The provisions of this paragraph and SGP-4.03E do not apply to computation of mark-ups if extended costs are allowed per SGP-4.03G.

G. Extended Overhead. In the event that the Contractor is due extended overhead costs as a result of compensable delays arising from the changed or added work, such actual costs will be computed solely on the basis of those time related costs affected and only allowed when accompanied by sufficient documentation to permit the Engineer to establish their validity.

a) The Contractor shall be compensated for taxes, small tools, supplies, bond premiums, and profit by a mark-up allowance which shall not exceed twenty-five percent (25%) of items A and D, and ten percent (10%) of items B exclusive of sales tax, and C2. Adjustment for extended site (Field overhead) costs will be limited to actual costs without mark-up The adjustment for home office costs (G&A) shall not exceed five percent (5%) of item A, B, C, D, F, & G2, which is the total adjustment before G&A.

b) When extended field and home office overhead costs are allowed, the Contractor shall not be compensated for
   1) the allowed mark-up for supervision, overhead, and profit set forth in Para E above,
   2) The mark-up allowance for subcontractor's work set forth in Para F above.
   3) Overhead costs calculated by any method other than that prescribed in this subsection G.

H. No compensation shall be made in any case for loss of anticipated profits.

I. All of the Contractor's cost records shall be made available to the Administration at the field office as well as the home office for review and audit at all reasonable times including prior to negotiations of the cost under this section.

J. The requirement of Supplementary General provisions Article 4.06 (SGP 4.06) shall apply when a contractor is entitled to an equitable cost adjustment to perform the design work directly attributable to additional work or changes requiring the services of factory or office based professional and/or technical personnel. The contractor shall not be compensated for design work performed by the field staff.

SGP – 4.04 Change Notice (GP-4.06)

The Engineer may use a Change Notice to describe a proposed change to the work pursuant to GP-4.06. Within seven (7) days after receipt of the Change Notice the Contractor shall sign the Change Notice and submit it to the Procurement Officer. The Contractor shall submit a proposal for providing the change work within the time specified in the Change Notice. The Contractor's proposal shall contain a detailed cost breakdown and any adjustment of the change in Contract time for the completion of the work. The cost breakdown shall be separated into added and deleted work and shall show details for labor, materials, equipment and the percentage mark-ups for overhead, profit, and small tools, in accordance with SGP-4.03.

SGP – 4.05 Warranty of Construction (GP-4.10)

In lieu of General Provisions Article GP-4.10, the following shall prevail:

A. In addition to any other warranties available by law or set out elsewhere in this contract, the Contractor warrants that work performed under this contract will conform to the contract requirements and will be free of any defect of equipment, material or design furnished, or workmanship performed by the Contractor or any of his subcontractors or suppliers at time of acceptance and for a period of one (1) year from the date of final acceptance of the work, but with respect to any part of the work which the State takes possession prior to final acceptance, such warranty shall continue for a period of one (1) year from the date the State takes possession. Under this Warranty, the Contractor shall remedy at his own expense any such failure to conform or any such defect. In addition, the Contractor shall remedy at his own expense any damage to State owned or controlled real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements or any such defect of equipment, material, workmanship, or design. The Contractor shall also restore any work damaged in fulfilling the terms of this clause. With respect to work repaired or replaced hereunder, the Contractor warrants that said work will conform to contract requirements and will be free of defects in material, workmanship, and design for a period of one (1) year from the date of completion such repair or replacement.

B. The Administration will give the Contractor prompt written notice of any defects or failures following their discovery. The Contractor shall commence corrective work within ten (10) days following notification by the Administration of the defect or failure and shall diligently prosecute such work to completion, provided that the Administration shall have the right to use unsatisfactory materials and equipment until they can be taken out of service without injury to the Administration. If the Administration exercises the right to use unsatisfactory materials and equipment the Contractor will be permitted to commence corrective work within six (6) months from time of discovery or the defect of failure requiring correction.

C. Replacement parts and repairs shall be subject to approval of the Administration. The Contractor shall bear all costs of corrective work, which shall include necessary disassembly, transportation, reassembly and retesting, as well as repair or replacement of the defective materials or equipment, and any necessary disassembly and reassembly of adjacent work; provided that the Administration will disassemble and reassemble at its expense adjacent materials or equipment not furnished by the Contractor, where necessary to give access to the defective materials or equipment.

D. If the Contractor fails to perform corrective work in the manner and within the time stated, the Administration may proceed to have such work performed at the Contractor's expense and he will honor and pay the costs thereof upon demand, and his sureties will be liable therefor. The Administration will be entitled to all costs and expenses, including reasonable attorney's fees, necessarily incurred upon the Contractor's refusal to honor and pay such costs.

E. In addition to the other rights and remedies provided by this clause, all subcontractor's, manufacturers' and suppliers' warranties expressed or implied, respecting any work and materials shall, at the discretion of the State, be enforced by the

Contractor for the benefit of the State. In such case if the Contractor's warranty under A. above has expired, any suit directed by the State to be at the expense of the State. The Contractor shall obtain any warranties which the subcontractors, manufacturers, or suppliers would give in normal commercial practice.

F. If directed by the Procurement Officer, the Contractor shall require any such warranties to be executed in writing to the State.

G. The rights and remedies of the Administration under this Article are not intended to be exclusive, and do not preclude the exercise of any other rights or remedies provided by this Contract or by law with respect to unsatisfactory work performed by the Contractor.

H. The warranty specified herein shall not limit the State's rights under GP-5.13, Acceptance clause of this contract with respect to latent defects, gross mistake, or fraud.

SGP – 4.06 Negotiated Payment Provision – Professional and Technical Services

A. The provisions of SGP-4.03 apply to Work performance in the field involving craft labor (including supervision, material and equipment) necessary to implement additions or changes to the Contract.

B. The provisions of SGP-4.03 do not apply to design professional and/or technical personnel assigned to the project.

C. When the Contractor is entitled to an equitable adjustment as a result of additions or changes to the Contract which require the services of factory or office-based design professional or technical personnel to perform the design Work directly attributable to the additions or changes, the adjustment in compensation shall be based on the following as documented and justified by the Contractor.

1. Labor - The cost of all design professional and/or technical labor computed on the basis of the actual hourly wage rate paid, not to exceed $75.00/hr, to the individual(s) involved in the performance of the added or changed Work (excluding fringes and mark-ups for taxes, insurance, etc.)

2. Reimbursable Expenses

   a. Travel and Related Expenses - The cost of travel expenses of the Contractor or subcontractor personnel in travel status required for the performance of added or changed Work, as provided in the then current standard Travel Regulations of the State of Maryland.

   b. Printing and Reproduction Costs - The cost of printing, binding, photographs, Photostats, copier costs, reproduction and related expenses, the nature of which is uniformly charged as a project cost under the Contractor's or subcontractor's accounting practices.

c. Long Distance Telephone, Telegraph, Teletype, Freight, Postage and Shipping - These costs will be allowed only to the extent they related to the performance of the added or changed Work.

d. The maximum allowable mark-up for general administrative expenses, supervisions, overhead and profit for the design Work performed, and computer/CAD costs, by the Contractor will be 140% of Item 1 above. The maximum allowable mark-up for supervision, overhead and profit for Work performed by subcontractor(s) will be 140% of the subcontractor's labor cost identified in Item 1 above. The Contractor will be allowed a mark-up of 5% on the total subcontractor's cost.

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SGP – SECTION 5

CONTROL OF THE WORK

SGP – 5.01 General

The following Articles augment Section 5 of the General Provisions.

SGP – 5.02 Superintendence (GP-5.04)

Before starting work, the Contractor shall designate in writing the name, title, qualifications and experience of his proposed representative who, upon approval by the Procurement Officer shall have complete authority to represent and act for the Contractor. The authorized representative or a substitute acceptable to the Procurement Officer shall be present at the site of the work at all times while work is actually in progress on the project. Arrangements for responsible supervision acceptable to the Procurement Officer shall be made for emergency work which may be required during periods when the work is suspended. The Contractor shall notify the Procurement Officer, in writing, when the Contractor desires to change his representative, and shall provide information as specified above for the proposed new representative.

SGP – 5.03 Coordination and Governing Order of Contract Documents

A. The Documents composing the Contract Documents are intended to be complementary, and to describe the construction and completion of the Work. Anything mentioned in the Specifications and not shown on the Contract Drawings, or shown on the Contract Drawings and not mentioned in the Specifications, shall be of like effect as if it is shown or mentioned in both.

B. Precedence of Contract Documents: The Contract Drawings shall govern over the Standard Specifications. The Special Provisions shall govern over the Standard Specifications, and the Contract Drawings. Where work is to be accepted by a municipality, railroad, or utility company, the Reference Utility Standards which apply to materials and workmanship shall govern over the Standard Specifications, the Special Provisions and the Contract Drawings.

C. Should it appear that the Work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall apply to the Procurement Officer for such further written explanations as may be necessary and shall conform to the explanation provided as part of the Contract. If doubts or questions arise regarding the true meaning of the Contract Documents, reference shall be made to the Procurement Officer whose decision thereon will be final.

D. In case of difference between small and large scale drawings, the large scale drawings shall govern. In the event of discrepancy between any drawings and the figure written thereon, the figures shall govern over scaled dimensions, unless otherwise indicated.

E. All materials, workmanship, and testing specified by the number, symbol, or title of a reference standard shall comply with the latest edition or revision thereof and all amendments and supplements thereto in effect on the date of the Bid Opening

SGP – 5.04 Administration Furnished Documents

The Administration will furnish at no cost to the Contractor for his use, five (5) copies of the conformed CD of the Contract Documents including Reference Drawings if applicable.

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SGP – SECTION 6

CONTROL OF MATERIAL

SGP – 6.01 General

The following Articles augment those contained Section 6 of the General Provisions.

SGP – 6.02 Source of Supply and Quality of Materials

A. Furnish all materials required to complete the work, except those specified to be furnished by the Administration. Assure that the materials incorporated into the work conform to the Specifications and Contract Drawings unless changed by prior approval. The materials shall be manufactured, handled, used, identified, controlled, and installed so as to ensure completed work in accordance with the Contract.

B. Use only new materials furnished except as may specifically be provided elsewhere in the Contract Documents.

C. Submit a list of sources of materials pursuant to GP-6.01 and notify the Engineer in sufficient time to permit proper inspection and testing of materials in advance of this use. The list shall be on a form approved by the Procurement Officer.

D. Provided that there would be no violation of the Contractor's patents, copyrights or rights in data, the Contractor agrees that he will neither incorporate any provision in his subcontracts nor enter any agreement, written or oral, either directly or indirectly, with subcontractors which has or may have the effect of prohibiting subcontractor sales directly to the Administration of any supplies, parts, components, equipment or technical information like those manufactured or services like those furnished by such subcontractor under the Contract or under any contract for parts or components furnished under the Contract or any follow-up production contract.

SGP – 6.03 Storage of Materials (GP-6.02)

A. General: Unless otherwise specified in the Special Provisions, the Contractor shall obtain his own area and storage facilities at locations remote from the Administration's right-of way facilities.

B. Reference SGP 9.03 for payment of stored material.

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SGP – SECTION 7

LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

SGP – 7.01 General

The following Articles augment those in contained Section 7 of the General Provisions.

SGP – 7.02 Patented and Copyrighted Devices, Materials, and Processes (GP-7.03)

The Contractor shall report to the Administration, promptly and in reasonable written detail, each notice of claimed patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge. In the event of any claim or suit against the Administration on account of any alleged patent or copyright infringement arises out of the performance of this contract or out of the use of any supplies furnished under the contract, the Contractor shall furnish to the Administration, when requested by the Administration, all evidence and information pertaining to such suit or claim including all evidence and information in the possession of the Contractor. This Notice and assistance requirement shall be included in all subcontracts.

Patents, Copyrights, Intellectual Property

A. If the Contractor furnishes any design, device, material, process, or other item, which is covered by a patent or copyright or which is proprietary to or a trade secret of another, the Contractor shall obtain the necessary permission or license to permit the State to use such item or items.

B. The Contractor agrees that at all times during the term of this Contract and thereafter, works created as a deliverable under this Contract and services performed under this Contract shall be "works made for hire" as that term is interpreted under U.S. copyright law. To the extent that any products created as a deliverable under this Contract are not works for hire for the State, the Contractor shall state why it believes that it should not thereby relinquish, transfer, and assign to the State all of its rights, title, and interest (including all intellectual property rights) to all such products created under this Contract.

C. The Contractor shall hold and save harmless the State of Maryland, including but not limited to the Department and its agents, officers, and employees, from liability of any nature or kind arising out of a claim or suit for or on account of the use of any copyrighted or un-copyrighted composition, trademark, service mark, secure process, patented or unpatented invention, article or appliance furnished or used in the performance of any Contract resulting from this RFP. The Contractor agrees to assume the defense of any and all such suits and pay the costs and expenses incidental hereto, subject to the right of the State to provide additional legal counsel at the State's own expense. If a third party claims that a product infringes that party's patent or copyright, the Contractor will defend the State against that claim at Contractor's expense and will pay all damages, costs and attorney fees that a Court formally awards, provided the State

(i) notifies the Contractor in writing of the claim within a reasonable time after the State's receipt of such claim, with the understanding that the State's failure to give reasonably timely notice shall not relieve Contractor of any obligation hereunder except and to the extent that such failure prejudices Contractors' ability to defend against such claim; and (ii) allows Contractor to control, and cooperates with Contractor in, the defense and any related settlement negotiations.

D. If any products furnished by the Contractor become, or in the Contractor's opinion are likely to become, the subject of a claim of infringement, the Contractor shall, after consultation with the State and at the Contractor's own expense: (a) procure for the State the right to continue using the applicable item, (b) replace the produce with a non-fringing product that, in the State's view, substantially complies with the item's specifications, or (c) modify the item so that it becomes non-infringing and, in the State's view, performs in a substantially similar manner to the original item.

E. In connection with services provided under a Task Order Request for Proposal (TORFP), the Contractor may create, acquire or otherwise have rights in, and may, employ, provide, create, acquire or otherwise obtain rights in various concepts, ideas, methods, methodologies, procedures, processes, know-how, techniques, models, templates and general purpose consulting and software tools, utilities and routines (collectively, the "Contractor Technology"). To the extent that any Contractor Technology is contained in any of the Contract deliverables including any derivative works, the Contractor grants the State a royalty-free, fully paid, worldwide, perpetual, non-exclusive license to use such Contractor Technology in connection with the Contract deliverables for the State's purposes.

F. The Contractor shall not acquire any right, title and interest in and to the copyrights for goods, any and all software, technical information, specifications, drawings, records, documentation, data or derivative works thereof, or other work products provided by the State to the Contractor. In a TORFP, the State may, in its sole discretion, elect to grant the Contractor a worldwide, perpetual, non-exclusive license, for which the State may require compensation, perhaps in the form of a royalty, for the Contractor's internal use to non-confidential Contract deliverables first originated and prepared by the Contractor for delivery to the State.

SGP – 7.03 Emergencies

A. In an emergency at the construction site affecting the safety of life, the work or adjoining property, the Contractor, without special instructions or authorization from the Procurement Officer, shall act to prevent such threatened loss or injury. The Contractor shall notify the Procurement Officer as soon as practicable of the action taken and the status of the emergency.

B. In the event of imminent danger or when peril exists to life, limb or property, the contractor's safety representative, the Procurement Officer or the Administration's Manager of Safety and Systems Assurance have the authority to close down an operation until said unsafe act or unsafe condition has been corrected.

SGP – 7.04 Rights in Technical Data

A. Technical data means any and all information of a scientific or technical nature, regardless of form or characteristics, to be furnished by the Contractor pursuant to this contract. It includes, but is not limited to, documentation of research, experimental, development or engineering work plus the information used to define a design or process or to procure, produce, support, maintain or operated the goods, supplies, systems, and equipment furnished hereunder.

Examples of technical data include research and engineering data, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identification and related information.

B. The Administration, its employees and its consultants, shall have the unlimited right to use, duplicate and disclose, in whole or in part and without charge, all technical data, in any manner and for any purpose when, in the opinion of the Administrator, such use in required by the Administration in the installation, operation, modification, maintenance, repair, replacement, overhaul and training in respect to the Work and the items furnished to the Administration, under the Contract or otherwise obtained by the Administration.

C. Nothing herein shall be construed as modifying or abridging the obligations of the Administration in respect to the provisions of the Public Information Act, Section 10-611 et seq. of the State Government Article of the Annotated Code of Maryland. To assist the Administration the Contractor, if he wishes, shall, as hereinafter described in Article E. below, clearly identify each portion of the technical data it considers a "trade secret" to which the public shall be denied inspection. Contractor acknowledges that such classifications are advisory only.

D. The following categories of technical data shall not be construed or stamped or otherwise identified as "trade secrets":

1. Technical data prepared or required to be delivered under this contract and any subcontracts hereunder for the purpose of identifying sources, part numbers, size, configurations, mating, attachment characteristics, functions characteristics and performance requirements.

2. Manual or instructional materials prepared or required to be delivered under this contract and any subcontracts hereunder, for installation, operation, maintenance, repair, replacement, overhaul and training purposes.

E. If the Contractor determines that any technical data not included in Article D. above, comprises a "trade secret" and decides to impose this classification, he shall clearly identify each portion on each page of such technical data with the words "Trade Secret". On each page on which a "Trade Secret" is identified, the following shall be noted by the Contractor: the prime contract number under which the technical data is to be delivered; the name of the Contractor and any subcontractor asserting the

classification; and a recitation of the Administration's rights as stated in Article B. above. Further, when submitting technical data designated as "Trade Secret", the Contractor shall provide with each such submission a letter justifying the basis for designation each portion so identified.

F. Rights to Records

1. The Contractor agrees that all documents and materials, including but not limited to, reports, drawings, studies, specifications, estimates, tests, maps, photographs, designs, graphics, mechanical, artwork, computations and data prepared by the Contractor for purposes of this Contract shall be the sole property of the State and shall be available to the State at any time. The State shall have the right to use the same without restriction and without compensation to the Contractor other than that specifically provided by this Contract.

2. The Contractor agrees that at all times during the term of this Contract and thereafter, the works created and services performed under this Contract shall be "works made for hire" as that term is interpreted under U.S. copyright law. To the extent that any products created under this Contract are not works for hire for the State, the Contractor hereby relinquishes, transfers, and assigns to the State all of its rights, title, and interest (including all intellectual property rights) to all such products created under this Contract, and will cooperate reasonably with the State in effectuating and registering any necessary assignments.

3. The Contractor shall report to the Department, promptly and in written detail, each notice or claim of copyright infringement received by the Contractor with respect to all data delivered under this Contract.

4. The Contractor shall not affix any restrictive markings upon any data and if such markings are affixed, the State shall have the right at any time to modify, remove, obliterate, or ignore such warnings.

G. Confidentiality

Subject to the Maryland Public Information Act and any other applicable laws, all confidential or proprietary information and documentation relating to either party (including without limitation, any information or data stored within the Contractor's computer systems) shall be held in absolute confidence by the other party. Each party shall, however, be permitted to disclose relevant confidential information to its officers, agents and employees to the extent that such disclosure is necessary for the performance of their duties under this Contract, provided the data may be collected, used, disclosed, stored and disseminated only as provided by and consistent with the law. The provisions of this section shall not apply to information that (a) is lawfully in the public domain; (b) has been independently developed by the other party without violation of this Contract; (c) was already in the possession of such party; (d) was supplied to such party by a third party lawfully in possession thereof and legally permitted to further disclose the information; or (e) which such party is required to disclose by law.

H. Loss of Data

In the event of loss of any State data or records where such loss is due to the intentional act, omission, or negligence of the Contractor or any of its subcontractors or agents, the Contractor shall be responsible for recreating such lost data in the manner and on the schedule set by the Contract Manager. The Contractor shall ensure that all data is backed up and is recoverable by the Contractor.

SGP – 7.05 Audit and Inspection of Records

A. In this clause, the term "Contractor" includes all subcontractors at any tier, the term "Contractor's Records" includes data and records of all subcontractors at any tier, and the term "Administration" includes the MTA, the U. S. Department of Transportation, the Comptroller General of the United States and their authorized representatives.

B. The Contractor shall permit the Administration to inspect, audit, and copy, at any reasonable times, the Contractor's Records in connection with all matters related to the Contract, including the Contractor's performance.

C. The provisions of this clause shall be included in all subcontracts, at any tier, under this Contract.

D. Performance and Compliance Administration reserves the right to examine, copy and audit Contractor's Records in order to evaluate compliance of Contractor with statutory and regulatory requirements as well as all requirements under the terms, conditions, Specifications and provisions of the Contract.

E. Noncompetitive Proposals Administration reserves the right to examine, copy and audit Contractor's Records, if necessary, to permit adequate evaluation of cost and pricing data related to the original proposal, along with the computations and projections used therein. If this audit is performed subsequent to the award of a contract, Administration reserves the right to utilize Contractor's incurred costs to date for its evaluation of Contractor's proposal.

F. Change Orders and Contract Modifications Administration reserves the right to examine, copy and audit Contractor's Records, if necessary, to evaluate cost and pricing data related to Change Order proposals and Contract Modifications and any associated computations and projections, as well as to evaluate Contractor's performance of and compliance with Change Orders issued under the Changes section herein. If this audit is performed subsequent to the submittal off a Change Order proposal or issuance of a Contract Modification, Administration reserves the right to utilize Contractor's incurred costs to date for its evaluation of Contractor's Change Order proposal or Contractor's performance of or compliance with Contract Modification.

G. Adjustable Contracts If all or part of this Contract is a cost-reimbursement, incentive, time and materials, labor-hour, or price re-determinable contract, or

any combination of the these, Contractor shall maintain and Administration shall have the right to examine, copy and audit, Contractor's Records and other evidence sufficient to reflect properly, in accordance with sound and generally accepted accounting principles and practices consistently applied, all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred in the performance of the Contract.

H. Contractor's Records shall include, but not be limited to: accounting records (hard copy, as well as computer readable data if it can be made available); written policies and procedures; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc); original estimates; estimating work sheets; correspondence; Change Order files (including documentation covering negotiated settlements); back-charge logs and supporting documentation; general ledger entries detailing cash and trade discounts and rebates; purchase orders; commitments; agreements; leases; notes and memoranda; daily diaries; superintendent reports; drawings and sketches; receipts,; vouchers; and, any other supporting evidence deemed necessary by Administration to substantiate charges related to the Contract.

I. Contractor's Records shall be open to inspection and subject to audit and/or reproduction by Administration or its representative(s), to the extent necessary to adequately permit evaluation and verification of Contractor's compliance with Contract terms, conditions and requirements, and compliance with provisions for pricing Changer Orders, payments or claims submitted by Contractor or any of its payees.

J. Contractor shall make Contractor's Records available to Administration or its representative(s) at all reasonable times, and Administration or its representative(s) shall be afforded access to all of Contractor's facilities and shall be allowed to interview any of Contractor's employees, pursuant to the provisions of this Section throughout the term of the Contract and until three years after final payment under the Contract. Contractor shall provide adequate and appropriate work space for Administration or its representative(s) to conduct audits in compliance with this Section. Contractor shall cooperate with all audit procedures including the furnishing of a management representation letter upon request of the auditor.

K. Contractor shall require all insurance agents, and suppliers or other payees to comply with the provisions of this Section by insertion of the requirements hereof in a written contract or agreement between Contractor and payee.

L. Contractor shall reimburse Administration, within thirty (30) calendar days after receipt of a written request thereof, the price (including profit) charged for services or quantities not delivered and extras or adjustments not authorized under the Contract as verified by an inspection or audit of Contractor's Records.

M. This Section does not affect or limit any rights, obligations or responsibilities afforded or imposed by the Inspector General's Act of 1978, as amended from time to time, including the right of the Inspector General of the U. S. Department of Transportation to seek information by subpoena.

SGP – 7.06 Notice to the Administration of Labor Disputes

A. Whenever the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Administration.

B. The Contractor shall insert the substance of this Article, including this Paragraph B, in any subcontract hereunder and each such subcontract shall provide that in the event its timely performance is delayed or threatened by delay by any actual or potential labor dispute the subcontractor shall immediately notify his next higher tier subcontractor, or the prime contractor, as the case may be, of all relevant information with respect to such dispute.

SGP – 7.07 Indemnification

This clause supplements and is intended to be harmonious with General Provision GP-7.13. If and to the extent that there is an inconsistency between this clause and General Provision GP-7.13, the provision of this clause shall govern.

The Contractor shall indemnify, save harmless and, at the Administration's or Procurement Officer's request, defend the Administration and Procurement Officer, and their employees and agents, from against any and all suits, actions, legal proceedings, claims, demands, damages, costs and expenses of whatsoever kind of character, including but not limited to attorney's fees and expenses arising out of or by reason of any liability or obligation in any manner caused or occasioned or claimed to be caused or occasioned by an act, omission, fault or negligence of the Contractor or anyone acting on his behalf, including but not limited to lower tier subcontractors and vendors, their subcontractors or sub-vendors, and the employees and agents of any of the foregoing. Such indemnification shall not be construed to include damages or injuries solely arising or occurring from negligent acts of the Administration or its agents.

A. Indemnification

1. The Contractor shall hold harmless and indemnify the State against liability for any costs, expenses, loss, suits, actions, or claims of any character arising from or relating to the performance of the Contractor or its subcontractors under this Contract.

2. The State has no obligation to provide legal counsel or defense to the Contractor or its subcontractors in the event that a suit, claim or action of any character is brought by any person not party to this Contract against the Contractor or its subcontractors as a result of or relating to the Contractor's obligations under this Contract.

3. The State has no obligation for the payment of any judgments or the settlement of any claims against the Contractor or its subcontractors as a result of or relating to the Contractor's obligations under this Contract.

4. The Contractor shall immediately notify the Procurement Officer of any claim or suit made or filed against the Contractor or its subcontractors regarding any matter resulting from or relating to the Contractor's obligations under the Contract. In the event that a claim, suit or action is made or filed against the State as a result of or relating to the Contractor's performance under this Contract, the Contractor agrees to assume the defense of any and all such suits and pay the costs and expenses incidental hereto, subject to the right of the State to provide additional legal counsel at the State's own expense. This section shall survive expiration of this Contract.

SGP – 7.08 Buy American Steel Act (GP-7.28, SGP-10.14)

In addition to the requirements of Article GP-7.28, Article SGP-10.14 shall also be implemented.

SGP – 7.09 Prevailing Wage Contracts for Public Works (GP-7.01D, GP-7.30B)

The requirements of Article GP-7.30B are specifically set forth in Sections 10.09 and 10.10 of these Supplementary General Provisions.

SGP – 7.10 Contractor's Safety Program (GP-7.05)

A. The Contractor's safety representative shall have a thorough knowledge of construction safety and OSHA regulations.

B. The duties of the safety representative shall include maintenance of the Contractor's safety program, enforcement of safe practices, and the use of the safety equipment and personal protective equipment, and other such activities as may be required by OSHA to maintain job safety and accident prevention. Reference MTA Project Safety Plan in the contract Table of Contents as applicable.

C. Contractor Safety and Health Plan

The Contractor Safety & Health Plan shall fully describe the Contractor's commitments for meeting its obligations to provide safe and healthful working conditions for its employees, the public, and generally contribute to and enhance safety at the project. The Contractor Safety & Health Plan must reference standards, codes, rules, and regulations applicable to construction activities in the state and local jurisdiction/authority and the state of Maryland. The Contractor's Plan shall include, but not be limited to, provisions of the Construction Safety Guidelines.

1. Within five calendar (5) days after issuance of Notice of Intent to Award (NITA) for the Contract, the Contractor shall submit, a written "Project Specific Safety & Health Plan" to the Administration for approval. The Administration will review or comment and may approve,

disapprove, or approve conditionally the Contractor's "Project Specific Safety & Health Plan".

2. With regards to the approval of the Contractor Safety & Health Plan, work shall proceed as determined by the Administration.

3. The Administration retains the right to prohibit the start of work until the Contractor's' Project Specific Safety & Health Plan" is approved by the Office of Safety Quality Assurance Risk Management.

4. Failure of the Contractor to submit a plan or approvable plan, the Contractor maybe held in default. A delay in submitting the Contractor Project Specific Safety & Health Plan will not constitute grounds for contract schedule extension or delay claim.

SGP – 7.11 Cost and Price Certification (GP-7.26)

The following paragraph C. is hereby added to GP-7.26:

C. The contractor or subcontractor shall maintain book and records that relate to the cost or pricing date for three (3) years from the date of final payment under the contract, unless a different period is otherwise authorized in the contract. Any cost and pricing information submitted in accordance with this GP-7.26 shall be subject to the provisions of COMAR 21.06.05.02 "Audits."

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SGP – SECTION 8

PROSECUTION AND PROGRESS

SGP – 8.01 General

The following Article augments Section 8 of the General Provisions.

SGP – 8.02 Subcontracting (GP-8.01)

A. Prior to entering into any subcontract for work to be performed at the construction site, the Contractor shall give written notice to the Procurement Officer regarding the prospective subcontractor's qualifications, and the Administration may require a copy of the prospective subcontract.

B. The cost of work performed by skilled and unskilled labor carried on Contractor's own payroll, together with the cost of materials installed, shall be included in the specified minimum percentage specified in General Provision GP-8.01. If, during progress of the work, Contractor requests a reduction in such percentage, and the Procurement Officer determines that it would be to the Administration's advantage, the percentage of work required to be performed by Contractor may be reduced, provided written approval of such reduction is obtained by the Contractor from the Procurement Officer.

C. Reference SGP 9.05 for subcontractor prompt payment.

SGP – 8.03 Notice to Proceed (GP-8.02)

Notice to Proceed will be issued within one hundred eighty (180) days after bid opening, unless mutually extended.

SGP – 8.04 Termination for Default, Damages for Delay, Time Extension (GP-8.08)

A. If the time of contract performance is specified in "calendar days", the following table will be used as the basis for determining allowable time extensions to the contract for "unusually severe weather" at the construction site.

Month	Working Day Delays to the Work Which May Be Expected to Occur as a Result of Normal Weather Conditions	
	Tunnel/Underground Work	Outdoor/Weather Sensitive
January	3	8
February	3	8
March	2	7
April	2	4
May	2	4
June	2	1
July	2	2
August	3	2

	Tunnel/Underground Work	Outdoor/Weather Sensitive
September	1	2
October	1	2
November	1	4
December	2	5

B. Time extensions for weather delays during the months as listed above will only be allowed for working day delays in excess of those numbers listed above and only when those excess days of delay affect the driving activities of the work on projects without a CPM schedule. The calendar days or dates extension will be developed by multiplying the allowable working days extension by one of the following factors, as applicable.

1. Factor of 1.4 for those activities scheduled for five (5) day work week.

2. Factor of 1.2 for those activities scheduled for six (6) day work week.

3. Factor of 1.0 for those activities scheduled for a seven (7) day work.

On projects with a CPM Schedule the impact due to unusually severe weather will be determined by the analysis of the CPM schedule. Time extensions for indoor work will be based on delays to critical activities in the Projects Schedule.

Time extensions granted under this provision are non-compensable.

If the time of contract performance is specified in "working days", the Provisions of this section (SGP-8.04) do not apply.

SGP – 8.05 Liquidated Damages (GP-8.09)

The Administration may recover liquidated damages by deducting the amount thereof from any moneys due or that may become due the Contractor, including current monthly estimated payments.

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SGP – SECTION 9

PAYMENT

SGP – 9.01 General

The following Articles augment Section 9 of the General Provisions.

SGP – 9.02 Force Account Work (GP-9.02)

In lieu of General Provisions Article GP-9.02, the following shall prevail:

When the Contractor is required to perform work as a result of additions or changes to the contract for which there are no applicable unit prices in the contract, the Administration and Contractor shall make every effort to come to an agreed upon price for the performance of such work. If an agreement cannot be reached, the Administration may require the Contractor to do such work on a force account basis to be compensated in accordance with the following:

A. Labor. For all labor and for foremen in direct charge of the specific operations, the Contractor shall receive the actual wages for each and every hour that said labor and foremen are actually engaged in such work.

B. Materials. For materials accepted by the Procurement Officer and used in the performance of the work, the Contractor shall receive the actual cost of such materials, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth).

C. Equipment. For any machinery or equipment (other than small tools) whether rented or owned, the use of which has been authorized by the Procurement Officer, the Contractor shall receive those rates hereinafter specified. For purpose of definition, equipment with a new cost of $1,000 or less will be considered small tools.

1. For owned equipment, the Contractor shall be paid at hourly rates derived from the applicable edition of the Rental Rate Blue Book (RRBB) for Construction Equipment by Penton Business Media/Equipment Watch. The rate to be paid will be the Blue Book monthly ownership rate for the make and model of equipment multiplied by the appropriate rate adjustment factors, divided by 176, plus the RRBB hourly operating cost. The rental rate for each item of equipment will be the sum of the base machine rate, specialized attachment rate as applicable (common attachments are considered included in the base rate) and operating rate(s) established at the time the equipment is being used.

2. For Contractor owned equipment not listed in the RRBB, an equitable hourly rate shall be established by the Procurement Officer based on Contractor furnished cost data and basic information concerning the equipment.

Information required to determine rates includes, but is not limited to, manufacture, year, size, model, capacity, acquisition cost and operating costs, and shall be furnished to the Procurement Officer prior to the use of the equipment.

3. Equipment rates shall apply for equipment in good working condition. The equipment shall be of approved size and capacity to provide the production required for the work to be done. Equipment not meeting these requirements may be used only with the approval of the Procurement Officer and at agreed reduced rates.

4. Equipment at the Construction Site. For use of on site Contractor owned equipment in operation on force account work the Contractor will be paid accordance with the following provisions:

   a. The time to be paid for the use of equipment on the work shall be the number of hours the equipment is in operation on the force account work being performed. Less than thirty (30) minutes will be considered ½ operation. The time shall include the time required on-site to move the equipment to the location of the force account work and return it to the original location or to another location requiring no more time than that required to return it to its original location. Loading and transportation costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power. No payment will be made for moving time or loading and transporting costs if the equipment is used at the location of the force account work on other than such force account work.

   b. For equipment listed in the RRBB the operational hourly rate shall be as follows:

      Up to eight (8) hours use in a day, the "Total Hourly Costs" shall be as listed in 1 above. Over eight (8) hours in a day, use 70% of the monthly rate divided by 176 plus the hourly operating costs Idle or stand by rates for equipment brought in solely for the use of the force account work will be paid at 50% of the monthly rate divided by 176 for not more than 8 hours per day.

   c. For equipment not listed in the RRBB the operational hourly rate shall be the rate determined by the Procurement Officer, which rates shall include all costs of ownership, repair and operation, as determined by the Procurement Officer in accordance with paragraph C.2 above.

   d. Under this provision payment will not be made for idle or stand by time of existing equipment at the construction site.

5. Equipment not at the Construction Site. For the use of Contractor owned equipment moved in from off the site and used exclusively for force account work, the Contractor will be paid in accordance with the following provisions:

   a. The Contractor will be paid for the cost of transporting the equipment to the location of the work and its return to its original location including the cost of loading and unloading as agreed upon by the Procurement Officer prior to the move. Should the Contractor desire the return of the equipment to a location other than its original location, the Administration will pay the cost of transportation provided such payment shall not exceed the cost of moving the equipment to the work.

   b. The equipment use period shall begin at the time the equipment is unloaded at the site of the force account work, shall include each day that the equipment is on the site exclusive of non-work days and will terminate at the end of the day on which the use of the equipment is no longer required for the force account work.

   c. For those hours that the equipment is in operation on force account work, the Contractor shall be paid in accordance with paragraph C.4 above.

   d. Idle or stand by time shall be the number of hours in a work day, up to a maximum of eight (8) hours, less the number operational hours paid for those days as provided in paragraph C.5c above.

   e. The stand by rate for equipment listed in RRBB shall be 50% of the monthly rate divided by 176.

   f. The standby rate equipment not listed in RRBB shall be 50% of the monthly rate divided by 176 as determined by the Procurement Officer in accordance with paragraph C.2 above.

6. When approved by the Procurement Officer, the use of rented equipment will be permitted in the performance of force account work. The Contractor shall be paid the actual costs incurred in the use of such equipment on the force account work. No transportation or idle time costs will be paid for the use of rental equipment not on the construction site <u>exclusively</u> for the force account work.

D. Subcontractors. The Contractor shall receive the actual cost of work performed by a subcontractor. Subcontractor's cost is to be determined as in A., B., and C., above, plus the fixed amount for overhead and profit allowance computed as in F.

E. Superintendence. No additional allowance shall be made for general superintendence, Quality Assurance, the use small tools, or other costs for which no specific allowance is herein provided.

F. Other Compensation.

1. The adjustment in compensation shall be based on the following as documented and justified by the Contractor.

   a. Fringes. Costs paid to or on behalf of workmen by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits, or other benefits required by collective bargaining agreement or other employment contract.

   b. Insurance. The incremental increase in premium costs resulting from the work for workman's compensation, liability or risk insurance, but only in the event that such coverage has not been provided by the Administration under the Contract.

2. Compensation for overhead and profit. The Procurement Officer and the Contractor shall negotiate a fixed amount for force account work performed pursuant to this SGP-9.02 by his forces and by his subcontractor(s), as compensation for overhead and profit for the work performed. Failure of the Contractor and the Procurement Officer to negotiate an amount consistent with applicable cost principles in COMAR 21.09.01, shall be treated as a dispute pursuant to GP-5.15 and the Contractor shall proceed diligently with the performance of the force account work to completion. The fixed amount shall not exceed the sum of thirty-five percent (35%) of items A, F.1.a. and F.1.b. and ten percent (10%) of items B. and C.6.

3. In addition, the Contractor's fixed amount may include an amount not to exceed five percent (5%) or five hundred dollars ($500) whichever is higher of item D. (excluding subcontractor's fixed amount. However there will not be any such markup for subcontractor's below the first tier.

4. The Contractor will be compensated for overhead and profits by a fixed amount that shall include but not be limited to compensation for all costs of unemployment insurance contributions, Social Security taxes and bond premiums on the force account work. The Overhead portion of Item A's markup includes Payroll taxes; included FICA, FUTA, SUTA, small tools and bond premiums.

G. Statements. No payment will be made for work performed on a force account basis until the Contractor furnished the Procurement Officer duplicated itemized statements of the cost of such force account work detailed as to the following:

1. Name, classification, date, daily hours, total hours, rate, and extension for such laborer, or foreman.

2. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

3. Quantities of materials, prices and extensions.

4. Transportation of materials.

5. Payments of items under I.1. shall be accomplished by copies of certified payrolls. Under I.2., original receipted invoices for rentals must be provided if requested by the Procurement Officer. I.3. and I.4. shall be accompanied by original receipted invoices for materials used and transportation charges. If, however, the materials used in the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the Contractor which shall certify that such materials were taken from his stock, that the quantity claimed was actually used and that price and transportation of the material as claimed represent actual cost. Any request for payment under this Section should be submitted in the order outlined by the above.

H. Special Items of Work – If the Procurement Officer and the Contractor, by agreement, determine that (a) an item of force account does not represent a significant portion of the total Contract price, and (b) such item of work cannot be performed by the forces of the Contractor of the forces of any of his subcontractors, and (c) it is not in accordance with the established practice of the industry involved to keep the records which the procedure outlined in this Article SGP-9.02 would require, charges for such special force account work items may be made on the basis of invoices for such work without complete itemization of labor, materials and equipment rental costs. To such invoiced price, less a credit to the Administration for any case or trade discount offered or available, will be added five percent (5%) of the discounted price, in lieu of the percentages provided in this Article SGP-9.02. In no event will the price paid exceed the current fair market value of such work plus five percent (5%).

I. As provided in SGP-7.05, the Contractor's records shall be made available to the Administration at all reasonable times.

SGP – 9.03 Progress Payments (GP-9.03, GP-7.01C)

A. Retainage. Monthly estimates provisions apply except that when the five percent (5%) retainage amounts to 2½% of the total Contract value plus authorized extras and additions, no further retainage will be deducted and the 2½% of total Contract value retained will not released until final payment, unless partially released in a semi-final payment.

B. Lump Sum Contract Items. When requested by the Procurement Officer, the Contractor shall submit a schedule of estimated costs breakdown, acceptable to the Procurement Officer, before partial payment will be made for such items. The estimated cost breakdown shall include items for the main classifications or work, and shall total the amount of the Bid Item. The values in the schedule will be used only for determining partial payments.

C. The provisions of GP-9.03A.3 shall not apply to this contract as it would conflict with and be in violation with the applicable federal grant and regulations.

D. 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 in accordance with below:

Payment to the contractor under this section for materials on hand shall not be construed in any way 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 conformance with GP 5.13 (Acceptance for Maintenance).

1. For superstructure members delivered on the project an allowance of 100 percent of the material costs 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.

2. 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 after being tested by the Administration and found to have conformed to the Specifications or to have been accepted under an approved certification program prior to the allowance.

3. 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.

4. 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 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 form the owner and/or tenant of such property agreeing to permit the removal of the materials from the property at no cost to the Administration.

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 Resident Engineer for storage elsewhere. Storage of materials outside the State of Maryland will b e 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.

5. 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.

6. The Contractor shall submit a written request for payment to the Resident Engineer at least two weeks prior to the estimate cutoff date established by the Resident Engineer. The following items shall accompany the written request for payment:

a. Consent of surety specifying the material type and the items in which the material is to be used.

b. Validate invoices with the signature of an officer of the company supplying the material showing actual cost.

c. 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.

d. 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 at no cost to the Administration.

e. 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 Resident Engineer and verification by the Inspector that the material is stored at the approved location, the Resident Engineer will authorize payment.

f. A statement explaining why the material cannot 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.

g. 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.

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

F. The Contractor shall pay the material provider the amount shown on the invoice within 10 days of receipt of payment form the And. 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.

G. 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.

SGP – 9.04 Scope of Payment GP-9.01)

Payment at Contract Prices. The contract price for an item of the work shall include full compensation for all costs of that item, including the costs of any work, materials and equipment incidental to the item but not specifically shown or described in

the drawings and specifications, subject only to such express limitations as may be stated in the specifications defining the item or prescribing payment therefor.

The contract prices shall include full compensation for all costs of any work, materials, equipment required by the drawings and specifications at the time of contract award, but not covered by a contract price or otherwise expressly made the subject of direct payment.

SGP – 9.05 Subcontractors – Prompt Payment

A. The Contractor is responsible for making timely payments to all subcontractors and suppliers as required in the State Finance and Procurement Article of the Annotated Code of Maryland, Section 15-226. The Contractor also shall comply with the provisions of State Finance and Procurement Article of the Annotated Code of Maryland, Section 17-106.

B. This contract and all subcontracts issued under this contract are subject to the provisions of State Finance and Procurement Article, §15-226, Annotated Code of Maryland, and COMAR 21.10.08. In paragraphs C—E below, the terms "undisputed amount", "prime contractor", "contractor", and "subcontractor" have the meanings stated in COMAR 21.10.08.01.

C. A contractor shall promptly pay its subcontractors an undisputed amount to which a subcontractor is entitled for work performed under this contract within 10 days after the contractor receives a progress payment or final payment for work under this contract.

D. If a contractor fails to make payment within the period prescribed in §B, a subcontractor may request a remedy in accordance with COMAR 21.10.08.

E. A contractor shall include in its subcontracts for work under this contract, wording that incorporates the provisions, duties, and obligations of §§A—D, State Finance and Procurement Article, §15-226, Annotated Code of Maryland, and COMAR 21.10.08.

* * * * * *

SGP – SECTION 10

FEDERAL AND STATE REQUIREMENTS

SGP – 10.01 General

A. The General Provisions are augmented by the following provisions of Section 10.

B. The Contractor shall comply with applicable requirements and provisions, in effect now or as hereafter amended, of (1) 49 U.S.C. chapter 53 and other procurement requirements of Federal laws; (2) 49 C.F.R. § 18.36; (3) 49 C.F.R. §§ 19.40 through 19.48; (4) all other applicable Federal regulations pertaining to federally-aided contracts; and Federal Transit Administration ("FTA") Circular 4220.1F, "Third Party Contracting Guidance," November 1, 2008, and any later revision thereto, except to the extent FTA determines otherwise in writing.

SGP – 10.02 Reserved

SGP – 10.03 Ethics

A. The Contractor shall comply with any Administration or State code of conduct or standards of conduct, in effect on or after the award of this Contract. Such code or standards shall govern the actions of the Contractor's officers, employees, board members, or agents engaged in the award or administration of subcontracts or other arrangements supported with Federal assistance.

B. The Contractor's officers, employees, board members, or agents may neither solicit nor accept gratuities, favors, or anything of monetary value from any present or potential subcontractor or other participant at any tier of the Project, or agent thereof; nor shall a Contractor employee, officer, board member, or agent, including any member of his or her immediate family, partner, or organization that employs, or intends to employ, any of the parties identified herein has a financial interest in the entity selected for award. Further, the Contractor shall also prohibit its officers, employees, board members, or agents from using their respective positions in a manner that presents a real or apparent personal or organizational conflict of interest or personal gain.

(1) Personal Conflicts of Interest. The Contractor shall prohibit its employees, officers, board members, or agents from participating in the selection, award, or administration of any subcontract, or other arrangement at any tier, supported by Federal assistance if a real or apparent conflict of interest would be involved. Such a conflict would arise when an employee, officer, board member, or agent, including any member of his or her immediate family, partner, or organization that employs, or intends to employ, any of the parties listed herein has a financial interest in the entity selected for award.

(2) Organizational Conflicts of Interest. The Contractor shall identify and prevent real and apparent organizational conflicts of interest. An organizational conflict of interest exists when the nature of the work to be performed under a proposed

subcontract, or other arrangement at any tier may, without some restrictions on future activities, results in an unfair competitive advantage to the subcontractor or other participant at any tier of the Project or impair its objectivity in performing the contract work.

C. Debarment and Suspension. The Contractor agrees to comply, and to assure the compliance of each subcontractor or other participant at any tier of the Project, with Executive Orders Nos. 12549 and 12689, "Debarment and Suspension," 31 U.S.C. § 6101 note, and U.S. DOT regulations, "Non-procurement Suspension and Debarment," 2 CFR Part 1200, which adopts and supplements the provisions of U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Government-wide Debarment and Suspension (Non-procurement)," 2 CFR Part 180. The Contractor agrees, and shall assure that its subcontractors other participant at any tier of the Project will, review the "Excluded Parties Listing System" at http://epls.gov/ before entering into any subcontract or other arrangement in connection with the Project.

D. Bonus or Commission. The Contractor affirms that it has not paid, and agrees not to pay, any bonus or commission to obtain this Contract..

E. Lobbying Restrictions. The Contractor agrees that:

(1) In compliance with 31 U.S.C. § 1352(a), it will not use the proceeds of this Contract to pay the costs of influencing any officer or employee of a Federal agency, Member of Congress, officer of Congress or employee of a member of Congress, in connection with making or extending the Contract;

(2) In addition, the Contractor will comply with other applicable Federal laws and regulations prohibiting the use of Federal assistance for activities designed to influence Congress or a State legislature with respect to legislation or appropriations, except through proper, official channels; and

(3) It will comply, and will assure the compliance of each subcontractor or other participant at any tier of the Project with U.S. DOT regulations, "New Restrictions on Lobbying," 49 C.F.R. Part 20, modified as necessary by 31 U.S.C. § 1352.

F. False or Fraudulent Statements or Claims. The Contractor acknowledges and agrees that:

(1) Civil Fraud. The Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. §§ 3801 *et seq.*, and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to the Contractor's activities in connection with the Project. By executing the Contract, the Contractor certifies or affirms the truthfulness and accuracy of each statement it has made, it makes, or it may make in connection with the Project. In addition to other penalties that may apply, the Contractor also acknowledges that if it makes a false, fictitious, or fraudulent claim, statement, submission, certification, assurance, or representation, directly or indirectly, to the Federal Government, the Federal Government reserves the right to impose on the Contractor the penalties of the Program Fraud Civil Remedies Act of 1986, as amended, to the extent the Federal Government deems appropriate.

(2) Criminal Fraud. If the Contractor makes a false, fictitious, or fraudulent claim, statement, submission, certification, assurance, or representation directly or indirectly to the Federal Government, the Federal Government reserves the right to impose on the Contractor the penalties of 49 U.S.C. § 5323(l), 18 U.S.C. § 1001, or other applicable Federal law to the extent the Federal Government deems appropriate.

G. Trafficking in Persons. To the extent applicable, the Contractor agrees to comply with, and assures the compliance of each subcontractor with, the requirements of subsection 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended, 22 U.S.C. § 7104(g), and the provisions of this subsection 3.g of this Contract consistent with U.S. OMB guidance, "Trafficking in Persons: Grants and Cooperative Agreements," 2 C.F.R. Part 175:

(1) Definitions. For purposes of this subsection G, the Contractor agrees that:

(a) Employee means an individual who is employed by the Contractor or a subcontractor under this Contract.

(b) Forced labor means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.

(c) Private entity:

1. Means any entity other than a State, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 C.F.R. § 175.25.

2. Includes a for-profit organization, and also a nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 C.F.R. § 175.25(b).

(d) Severe forms of trafficking in persons has the meaning given at section 103 of the TVPA, as amended, 22 U.S.C. § 7102(e). Commercial sex act has the meaning given at section 103 of the TVPA, as amended, 22 U.S.C. § 7102.

(e) Coercion has the meaning given at section 103 of the TVPA, as amended, 22 U.S.C. § 7102.

(2) The Contractor agrees:

(a) To inform the Administration immediately of any information it receives from any source alleging a violation of a prohibition in subsection G (2) (c) below.

(b) That the Administration may unilaterally terminate the Contract if the Contractor, a subcontractor, or other Participant at any tier, or an employee of any of them, violates subsection G(2)(c) or the provisions of 22 U.S.C. § 7104(g). The Administration's right to terminate implements FTA's right to terminate unilaterally:

1. Under subsection 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended, 22 U.S.C. § 7104(g), and

2. Is in addition to all other remedies for noncompliance that are available to the Administration under this Contract and to the Federal Government.

(c) That:

1. Neither it, its subcontractors, or other participants at any tier, or the employees of any of them, will engage in severe forms of trafficking in persons during the period of time that this Contract is in effect;

2. Neither it, its subcontractors, or other participants at any tier, or the employees of any of them, will procure a commercial sex act during the period of time that this Contract is in effect; or

3. Neither it, its subcontractors, or other participants at any tier, or the employees of any of them, will use forced labor in the performance of this Contract or any subcontract;

4. The provision of this subsection G(2)(c) will be included in all subcontracts and any other arrangement under this Contract at any tier.

H. No member of or delegate to the Congress of the United States shall be admitted to any share or part of this Contract or to any benefit arising therefrom.

I. The Bidder will be required to certify that he is or is not included on the United States Comptroller General's Consolidated List of Persons of Firms Currently Debarred for Violations of Various Public Contracts "Incorporating" Labor Standard Provisions and the State list of Businesses and Persons Suspended or Debarred from doing Business with a Public Body. If the bidder is on such lists, he will not be eligible for Award of Contract.

SGP – 10.04 Reserved

SGP - 10.05 Civil Rights (GP-7.20)

The Contractor agrees to comply with all applicable civil rights laws and regulations, in accordance with applicable Federal directives, except to the extent that the Federal Government determines otherwise in writing. These include, but are not limited to, the following:

a. Nondiscrimination in Federal Public Transportation Programs. The Contractor agrees to comply, and assures the compliance of each subcontractor or other

participant at any tier of the Project, with the provisions of 49 U.S.C. § 5332, which prohibit discrimination on the basis of race, color, creed, national origin, sex, or age, and prohibits discrimination in employment or business opportunity.

b. Nondiscrimination — Title VI of the Civil Rights Act. The Contractor agrees to comply, and assures the compliance of each subcontractor or other participant at any tier of the Project, with all provisions prohibiting discrimination on the basis of race, color, or national origin of Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. §§ 2000d *et seq.*, and with U.S. DOT regulations, "Nondiscrimination in Federally-Assisted Programs of the Department of Transportation — Effectuation of Title VI of the Civil Rights Act," 49 C.F.R. Part 21. Except to the extent FTA determines otherwise in writing, the Contractor agrees to follow all applicable provisions of FTA Circular 4702.1A, "Title VI and Title VI-Dependent Guidelines for Federal Transit Administration Recipients," May 13, 2007, and any other applicable Federal directives that may be issued.

c. Equal Employment Opportunity. The Contractor agrees to comply, and assures the compliance of each subcontractor or other participant at any tier of the Project, with all equal employment opportunity (EEO) provisions of 49 U.S.C. § 5332, with Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e, and implementing Federal regulations and any later amendments thereto. Except to the extent FTA determines otherwise in writing, the Contractor also agrees to follow all applicable Federal EEO directives that may be issued. Accordingly:

(1) General. The Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, sex, disability, age, or national origin. The Contractor agrees to take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, disability, age, or national origin. Such action shall include, but not be limited to, employment, upgrading, demotions or transfers, recruitment or recruitment advertising, layoffs or terminations; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

(2) Equal Employment Opportunity Requirements for Construction Activities. For activities determined by the U.S. Department of Labor (U.S. DOL) to qualify as "construction," the Contractor agrees to comply and assures the compliance of each subcontractor or other participant at any tier of the Project, with all applicable equal employment opportunity requirements of U.S. DOL regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 *et seq.*, which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order No. 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note, and also with any Federal laws and regulations in accordance with applicable Federal directives affecting construction undertaken as part of the Project.

d. Disadvantaged Business Enterprise. To the extent authorized by Federal law, the Contractor agrees to facilitate participation by Disadvantaged Business Enterprises (DBEs) in the Project and assures that each subcontractor or other participant at any tier of the Project will facilitate participation by DBEs in the Project to the extent applicable. Therefore:

(1) The Contractor agrees and assures that it shall comply with section 1101(b) of SAFETEA-LU, 23 U.S.C. § 101 note, and U.S. DOT regulations, "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs," 49 C.F.R. Part 26.

(2) The Contractor agrees and assures that it shall not discriminate on the basis of

race, color, sex, or national origin in the the performance of this Contract and the award and performance of any subcontract or other arrangement under this Contract in the administration of its DBE program and shall comply with the requirements of 49 C.F.R. Part 26. The Contractor agrees to take all necessary and reasonable steps as set forth in 49 C.F.R. Part 26 to ensure nondiscrimination in the award and administration of all subcontracts, and other arrangements under this Contract.

e. Nondiscrimination on the Basis of Sex. The Contractor agrees to comply with all applicable requirements of Title IX of the Education Amendments of 1972, as amended, 20 U.S.C. §§ 1681 *et seq.,* and with implementing U. S. Department of Transportation regulations at 49 C.F.R. Part 25 that prohibit discrimination on the basis of sex that may be applicable.

f. Nondiscrimination on the Basis of Age. The Contractor agrees to comply with all applicable requirements of:

(1) The Age Discrimination Act of 1975, as amended, 42 U.S.C. §§ 6101 *et seq.,* and with implementing U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. Part 90, which prohibit discrimination against individuals on the basis of age.

(2) The Age Discrimination in Employment Act (ADEA) 29 U.S.C. §§ 621 through 634 and with implementing U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. Part 1625.

g. Access for Individuals with Disabilities. To the extent applicable, the Contractor shall comply with 49 U.S.C. § 5301 (d), which states the federal policy that elderly individuals and individuals with disabilities have the same right as other individuals to use public transportation services and facilities, and that special efforts shall be made in planning and designing the services and facilities to implement transportation accessibility rights for elderly individuals and individuals with disabilities. The Contractor also shall comply with all applicable provisions of section 504 of the Rehabilitation Act of 1973, as amended, with 29 U.S.C. § 794, which prohibits discrimination on the basis of disability; with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 *et seq.,* which requires that accessible facilities and services be made available to individuals with disabilities; and with the Architectural Barriers Act of 1968, as amended, 42 U.S.C. §§ 4151 *et seq.,* which requires that buildings and public accommodations be accessible to individuals with disabilities; and with other laws and amendments thereto pertaining to access for individuals with disabilities that may be applicable. In addition, the Contractor agrees to comply with applicable implementing Federal regulations any later amendments thereto, and agrees to follow applicable Federal directives except to the extent FTA approves otherwise in writing. Among those regulations and directives are:

(1) U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 C.F.R. Part 37;

(2) U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 C.F.R. Part 27;

(3) Joint U.S. Architectural and Transportation Barriers Compliance Board (U.S. ATBCB)/U.S. DOT regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 C.F.R. Part 1192 and 49 C.F.R. Part 38;

(4) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R. Part 35;

(5) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. Part 36;

(6) U.S. General Services Administration (U.S. GSA) regulations, "Accommodations for the Physically Handicapped," 41 C.F.R. Subpart 101-19;

(7) U.S. EEOC, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630;

(8) U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 C.F.R. Part 64, Subpart F;

(9) U.S. ATBCB regulations, "Electronic and Information Technology Accessibility Standards," 36 C.F.R. Part 1194;

(10) FTA regulations, "Transportation for Elderly and Handicapped Persons," 49 C.F.R. Part 609; and

(11) Federal civil rights and nondiscrimination directives implementing the foregoing Federal laws and regulations, except to the extent the Federal Government determines otherwise in writing.

h. Drug or Alcohol Abuse-Confidentiality and Other Civil Rights Protections. To the extent applicable, the Contractor agrees to comply with the confidentiality and other civil rights protections of the Drug Abuse Office and Treatment Act of 1972, as amended, 21 U.S.C. §§ 1101 *et seq.*, with the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970, as amended, 42 U.S.C. §§ 4541 *et seq.*, and with the Public Health Service Act of 1912, as amended, 42 U.S.C. §§ 290dd through 290dd-2, and any amendments thereto.

i. Access to Services for Persons with Limited English Proficiency. The Contractor shall to facilitate compliance with the policies of Executive Order No. 13166, "Improving Access to Services for Persons with Limited English Proficiency," 42 U.S.C. § 2000d-1 note, and follow applicable provisions of U.S. DOT Notice, "DOT Policy Guidance Concerning Recipients' Responsibilities to Limited English Proficiency (LEP) Persons," 70 *Fed. Reg.* 74087, December 14, 2005, except to the extent that FTA determines otherwise in writing.

j. Environmental Justice. The shall facilitate compliance with the policies of

Executive Order No. 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," 42 U.S.C. § 4321 note; and DOT Order 5620.3, "Department of Transportation Actions To Address Environmental Justice in Minority Populations and Low-Income Populations," 62 *Fed. Reg.* 18377 *et seq.*, April 15, 1997, except to the extent that the federal government determines otherwise in writing.

k. Other Nondiscrimination Laws. The Contractor agrees to comply with all applicable provisions of other Federal laws and regulations, and follow applicable Federal directives pertaining to and prohibiting discrimination, except to the extent the Federal Government determines otherwise in writing.
The Contractor shall include this clause in each subcontract and purchase order issued under the Contract. It is further agreed that the clause shall not be modified, except to identify the parties who will be subject to its provisions.

SGP – 10.06 MTA Affirmative Action Requirements (GP-7.29)

A. Copies of the MTA Affirmative Action Requirements are available at the Mass Transit Administration, Office of Equal Opportunity, 6 St. Paul Street, 5th Floor, Baltimore, Maryland 21202-1614.

B. Bid conditions of the MTA Affirmative Action Requirements are included in the Contract Specifications Book. The Contractor shall submit signed copies of the required exhibits which are included in the Bid Documents.

SGP – 10.07 Prohibited Interest

No member, officer, or employee of the Administration or of any local public body during his tenure and for a period of one (1) year thereafter shall have any interest, direct or indirect, in this contract or the proceeds thereof.

SGP – 10.08 – Termination

If the Federal Government suspends or terminates all or any part of the Federal assistance for this Contract, the Administration may suspend work under or terminate the Contract, in whole or in part, under the suspension or termination provision of the Contract that the Administration deems to be applicable in the circumstances.

SGP – 10.09 Labor Provision (GP-7.30B, SGP-7.09)

A. To the extent that the Contract involves construction activities, the Contractor shall to comply and assure the compliance of each subcontractor and other participant at any tier of the Project, with the following federal laws and regulations providing protections for construction employees:

(1) Davis-Bacon Act, as amended, 40 U.S.C. §§ 3141 *et seq.*, pursuant to FTA enabling legislation requiring compliance with the Davis-Bacon Act at 49 U.S.C. § 5333(a), and implementing U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)," 29 C.F.R. Part 5;

(2) Contract Work Hours and Safety Standards Act, as amended, 40 U.S.C. §§ 3701 *et seq.*, specifically, the wage and hour requirements of section 102 of that Act at 40 U.S.C. § 3702, and implementing U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)," 29 C.F.R. Part 5; and the safety requirements of section 107 of that Act at 40 U.S.C. § 3704, and implementing U.S. DOL regulations, "Safety and Health Regulations for Construction," 29 C.F.R. Part 1926; and

(3) Copeland "Anti-Kickback" Act, as amended, 18 U.S.C. § 874 and 40 U.S.C. § 3145, and implementing U.S. DOL regulations, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States," 29 C.F.R. Part 3.

B. To the extent that the Contract concerns activities that do not involve construction, the Contractor shall comply and assure the compliance of each subcontractor and other participant at any tier of the Project with the employee protection requirements for non-construction employees of the Contract Work Hours and Safety Standards Act, as amended, 40 U.S.C. §§ 3701 *et seq.*, in particular with the wage and hour requirements of section 102 of that Act at 40 U.S.C. § 3702, and with implementing U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)," 29 C.F.R. Part 5.

C. During the performance of this Contract, the Contractor shall comply with the following provisions:

1. Minimum Wages

a. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1 (b) (2) of the Davis-Bacon Act on behalf of laborers or mechanics, are considered wages paid to such laborers or mechanics, subject to the provisions of Article SGP-10.09A.4. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage

determination for the classification of work actually performed, without regard to skill, except as provided in Article SGP-10.09D. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under Article SGP-10.09.A.2. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The Administration shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The Administration shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

i. The work to be performed by the classification requested is not performed by a classification in the wage determination; and

ii. The classification is utilized in the area by the construction industry; and

iii. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the Administration to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administration, or an authorized representative, will approve, modify, or disapprove every additional classification action within thirty (30) days of receipt and so advise the contracting officer or will notify the contracting officer within the thirty (30) day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Administration do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the Administration shall refer the shall refer the questions, including the views of all interested parties and the recommendation of the Administration to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within thirty (30) days of receipt

and so advise the Administration or will notify the Administration within the thirty (30) day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs 2. (b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the Contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The Administration shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the Administration may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and Basic Records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three (3) years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash

equivalents thereof of the types described in Section 1 (b) (2) (B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a) (1) (iv) (SGP-10.09A.4.) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1 (b) (2) (B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed two (2) copies of all payrolls to the Administration within seven (7) days after the regular payroll date. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5 (a) (3) (i). except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency), the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance", signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under Sec. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulation, 29 CFR Part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by Article SGP-10.09C.2. (b) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code. The Contractor or subcontractor shall make the records required under Article SGP-10.09C.1. of the section available for inspection, copying or transcription by authorized representatives of the U.S. DOT or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal Agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainee

a. Apprentices

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to

and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first ninety (90) days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees

Except as proved in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site

shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeymen wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal Employment Opportunity

The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive order 11246, as amended, and 20 CFR Part 30.

5. Compliance with Copeland Act Requirements

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the U.S. DOT may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract Termination: Debarment

A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1,3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the Administration, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility

a. By entering in this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12 (a) (1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3 (a) of the Davis-Bacon Act or 29 CFR 5.12 (a) (1).

c. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

d. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

11. Overtime Requirements

Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty (40) hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty (40) hours in such workweek.

12. Violations; Liability for Unpaid Wages; Liquidated Damages

In the event of any violation of the clause set forth in paragraph (K) of this section the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor or subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and and guards, employed in violation of the clause set forth in paragraph (K) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty (40) hours without payment of the overtime wages required by the clause set forth in paragraph (K) of this section.

13. Withholding for Unpaid Wages and Liquidated Damages

The Administration shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph L above.

14. Subcontracts

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs K through N of this article and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraph K through N of this Article.

(The text of Article SGP-10.09, paragraphs A through J, has been taken from 29 CFR Part 5 as amended through December 19, 2008. Numbering of paragraphs has been changed to agree with the format for these Supplementary General Provision. In the event of conflict, the provisions of the Code of Federal Regulations shall prevail.)

SGP – 10.10 Delinquent Certified Payrolls (SGP-10.09C.2.a)

If the Contractor is delinquent in submitting his or any of his subcontractors payroll records, processing of partial payments estimates may be held in abeyance pending receipt of the payroll records. In addition, if the Contractor is delinquent in submitting his or any of his subcontractor's payroll records, the Contractor shall be liable to the Administration for liquidated damages. The liquidated damages shall constitute the sum of $10 for each day that the payroll records are late

SGP – 10.11 Reserved

SGP – 10.12 Reserved

SGP – 10.13 Cargo Preference – Use of United States-Flag Vessels

A. To the extent applicable, the Contractor shall comply with 46 U.S.C. § 55305 and U.S. Maritime Administration regulations, "Cargo Preference-U.S.-Flag Vessels," 46 C.F.R. Part 381.

B. The Contractor agrees to utilize privately owned United States-flag commercial vessels to ship at least fifty percent (50%) of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessel.

C. The Contractor agrees to furnish within twenty (20) days following the date of loading for shipments originating within the United Sates or within thirty (30) working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-landing in English for each shipment of cargo described in Article SGP-10.14.A. to the FTA Administrator and the Administration (through the prime contractor in the case of subcontractor bills-of-landing) and to the Office of Cargo Preference and Domestic Trade, Maritime Administration, 1200 New Jersey Avenue, S.E., Washington, D.C. 20590, marked with appropriated identification of the project.

D. The Contractor agrees to insert the substance of the provisions of this clause in all subcontracts issued pursuant to this clause.

SGP – 10.14 Buy America Requirement (GP-7.01C, GP-7.28, SGP-7.08)

A. The Contractor shall comply with 49 U.S.C. § 5323(j) and FTA regulations, "Buy America Requirements," 49 C.F.R. Part 661, and any amendments thereto.

B. The more stringent requirements of either the above cited law or the State of Maryland law and regulations, as listed in Article GP-7.28, shall prevail.

SGP – 10.15 Compliance With Environmental Standards

The contractor agrees to comply with all the following statutes as well as applicable standards, orders, regulations, directives, or requirements issued by the Environmental Protection Agency (EPA) and other agencies: and National environmental Policy Act of 1969, as amended, 42 U.S.C. Section 4321 et seq; the Clean Air Act, as amended (42 U.S.C. Section 7401 et seq and scattered sections of 29 U.S.C.; the Clean Water Act, as amended, 33 U.S.C. Sections 1251 through 1377; the Resource Conservation and Recovery Act, as amended, 42 U.S.C. Sections 6901 through 6992k; the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. Sections 9601 through 9675, as well as environmental provisions within Title 23, United States Code, and 49 U.S.C. Chapter 53. Additionally, to the

extent applicable, the contractor, and its subcontractors, agree to comply with the requirements of Section 14 of the Federal Transit Act, as amended, 49 U.S.C. Section 1610; the Council on Environmental Quality Regulations, 40 CFR. Part 1500 et seq; and the joint FHWA/FTA Regulations, "Environmental Impact and Related Procedures," at 23 CFR. Part 771 and 49 CFR. Part 622. The contractor shall be responsible for reporting any violations of those laws, regulations, and orders to the FTA and the EPA Assistant Administrator for Enforcement (EN-329).

SGP – 10.16 Energy Conservation

The contract shall comply with mandatory standards and policies relation to energy efficiency which are contained in the applicable state energy conservation plan issued in compliance with the Energy Policy and Conservation Act, 42 U.S.C. Section 6321 et seq. To the extent applicable, the Contractor agrees to perform an energy assessment for any building constructed, reconstructed, or modified with FTA assistance, as provided in FTA regulations, "Requirements for Energy Assessments," 49 C.F.R. Part 622, Subpart C.

SGP – 10.17 Certification Regarding Debarment

Before entering into a subcontract having a value of $25,000.00 or more, each potential subcontractor at any tier shall provide a signed Certification of Lower-Tier Participants Regarding Debarment which shall be submitted to the Procurement Officer (Federal Aid).

SGP – 10.18 Fly America Requirements

The Contractor shall comply with 49 U.S.C. § 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR §§ 301-10.131 through 301-10.143, which provide that recipients and sub-recipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S. Government-financed international air travel and transportation of individuals and their personal effects or property acquired for the project, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

SGP – 10.19 Recycled Products/Recovered Materials

The Contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247. To the extent applicable, the Contractor shall:

1. Certify that the percentage of recovered materials to be used in the performance of the Contract will be at least the amount required by applicable specifications or other contractual requirements, and

2. Estimate the percentage of total material utilized for the performance of the Contract which is recovered materials.

SGP – 10.20 Seismic Safety Requirements

The Contractor shall comply with the Earthquake Hazards Reduction Act of 1977, as amended, 42 U.S.C. §§ 7701 *et seq.*, in accordance with Executive Order No. 12699, "Seismic Safety of Federal and Federally-Assisted or Regulated New Building Construction," 42 U.S.C. § 7704 note, and comply with U.S. DOT regulations, "Seismic Safety," 49 C.F.R. Part 41 (specifically, 49 C.F.R. § 41.117).

SGP – 10.21 Access To Records And Reports (GP – 7.36, Retention of Records)

The following access to records requirements apply to this Contract:

1. The Contractor shall provide, and shall cause its subcontractors at any tier to provide, to the U.S. Secretary of Transportation and the Comptroller General of the United States, or their duly authorized representatives, access to all third party contract records as required by 49 U.S.C. § 5325(g) and to all third party procurement records as needed for compliance with Federal laws and regulations or to assure proper Project management as determined by FTA.

2. The Contractor shall provide, and shall cause its subcontractors at any tier to provide the Administration and the FTA Administrator or their authorized representatives, including any PMO Contractor, access to the Contract's records and construction sites.

3. The Contractor shall permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

4. The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three (3) years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until the Purchaser, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i) (11).

5. The Contractor shall include, and cause its subcontractors at any tier, to include the provisions of this SGP 10.21 in each subcontract under this Contract.

SGP – 10.22 No Obligation by the Federal Government

(1) Notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the Contract, subcontract, or other arrangement at any tier, , absent its express written consent, the Federal Government has no obligations or liabilities to the Contractor or any other participant at any tier of the project.

(2) The Contractor shall include this clause in each subcontract and purchase order issued under the Contract. It is further agreed that the clause shall not be modified, except to identify the parties who will be subject to its provisions.

SGP – 10.27 Clean Water Requirements

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Water Act, as amended, 33 U.S.C. Sections 1251 through 1377 and the Safe Drinking Water Act of 1974, as amended, 42 U.S.C. §§ 300f through 300j-6. The Contractor agrees to report each violation to the Administration and understands and agrees that the Administration will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding $100,000.

SGP – 10.28 Federal Changes

The Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, as these regulations, policies, procedures, and directives may be amended from time to time, including without limitation those listed directly or by reference in the Master Agreement applicable to this Contract between the Administration and FTA. The Contractor's failure to so comply shall constitute a material breach of this contract.

SGP – 10.29 Clean Air

(1) The Contractor agrees to comply with the Clean Air Act, as amended, 42 U.S.C. §§ 7401 through 7671q and all applicable standards, orders or regulations issued pursuant thereto, as they may be amended from time to time, including, without limitation, 40 CFR Parts 85, 86, 93 Part A, and 600. The Contractor agrees to report each violation to the Administration and understands and agrees that the Administration will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding $100,000.

SGP – 10.30 Incorporation of Federal Transit Administration (FTA) Terms

The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1F, as revised on April 14, 2009, are hereby incorporated by reference. Anything to the

contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any Administration requests which would cause the Administration to be in violation of the FTA terms and conditions.

SGP – 10.31 Changes in Requirements

Federal requirements cited above may change and the changed requirements shall be applicable to this contract as required. It is understood by the contractor that all limits or standards set forth above to be observed in the performance of the contract services are minimum requirements.

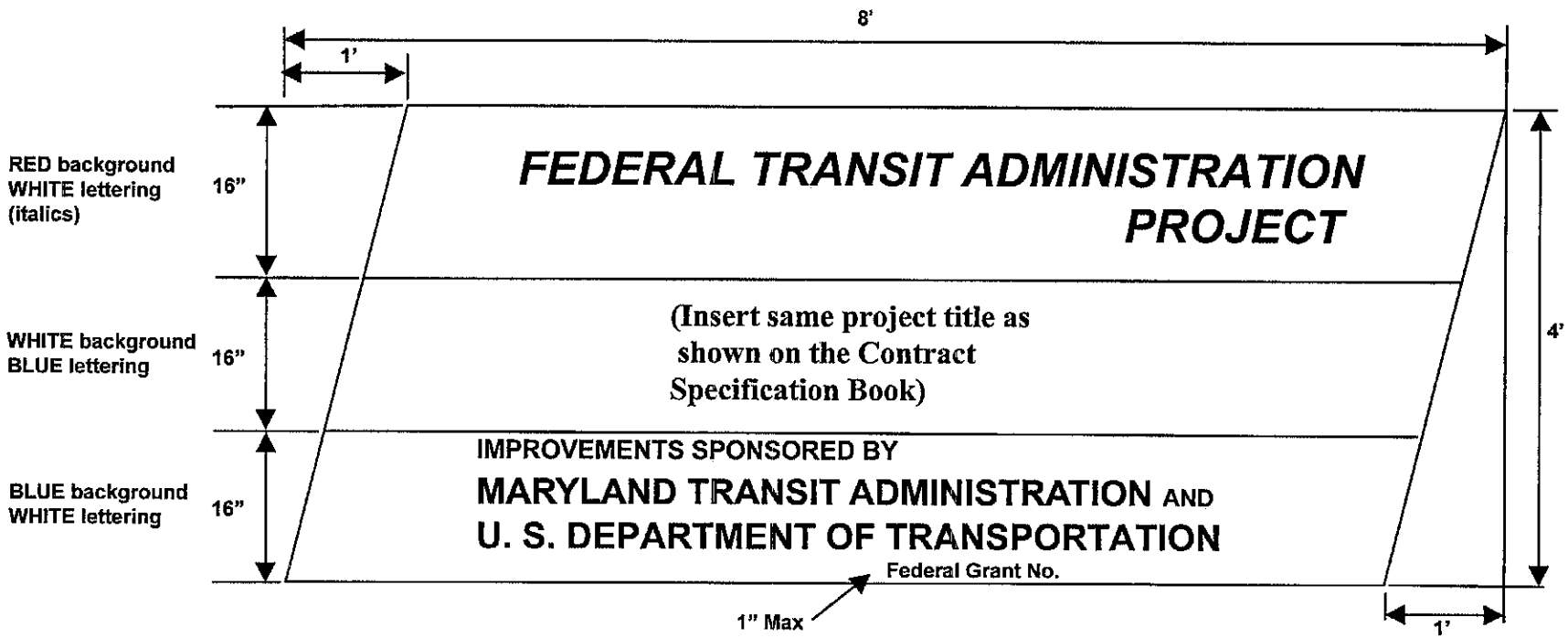
SGP – 10.32 FTA Project Sign

A. General: The Contractor shall provide, erect, maintain, and remove upon final acceptance of the work, one FTA project sign at each major entrance to the Project. The exact number of the FTA project signs shall be as indicated in the Special Provisions. The location of signs shall be as directed by the Procurement Officer.

B. Materials: The signs shall be ¾ inch thick, 5-ply exterior A-B grade plywood. Posts shall by 4 by 6 inch construction-grade lumber, pressure-preservative treated, 10 feet long.

C. Construction: The overall size of the sign shall be 4 feet by 8 feet in the shape of a parallelogram, primed with one coat of primer sealer and painted red, white and blue with two (2) coats of semi-gloss enamel. The exact size, dimensions, colors, and wording shall be in accordance with Figure 1.

D. Installation: The signs shall be bolted to the posts, using at least two ½ inch bolts per post. Washers shall be used between the bolts and the sign faces and the posts and the nuts. The posts shall be set into the ground to a depth of 3 feet, 6 inches, with the bottom of the sign 2 feet 6 inches above the ground.



Lettering: Futura Bold (top), FEDERAL TRANSIT ADMINISTRATION in italics
Futura Bold (center)
Futura Bold (bottom)

FIGURE 1 - FTA Project Sign

SECTION 01110

SUMMARY OF WORK

PART 1 - GENERAL

1.01 GENERAL:

A. The Contractor's operations shall conform to all applicable State and Local regulations.

B. Wherever these Special Provisions refer to the Administration, they shall be understood to mean the Maryland Transit Administration (MTA). Whenever reference is made to Engineer, it shall mean the Administration representative for the contract.

C. Submittals shall be made in accordance with Section 01300 SUBMITTALS.

1.02 CONTRACT DOCUMENTS: The work shall be performed in accordance with the following documents:

A. The General Provisions for Construction Contracts dated October 2001, issued by the Maryland Department of Transportation; and the Supplemental General Provisions issued by the Maryland Transit Administration; both contained in the Contract Specifications Book.

B. The Special Provisions, Divisions 1 through 18; the Notice to Contractors; the List of Contract Drawings; and the various forms and exhibits; all contained in the Contract Specifications Book.

C. The Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, dated July 2008, and latest addenda, as referenced by the Special Provisions. Pertinent sections (except Section 900) and supplemental specifications for the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials are located in Appendix J. Refer to the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials for the requirements of Section 900.

D. The Liability Insurance Requirements; and the MTA Project Safety Plan; all issued by the Maryland Transit Administration of the State of Maryland Department of Transportation and contained in the Contract Specifications Book.

E. The Contract Drawings, Standard Plates and Reference Drawings, contained in the Contract Specifications Book or bound separately in the Contract Drawings Books.

1.03 CONTRACT DESCRIPTION:

A. This Contract is for the construction of a park and ride in Waldorf, Maryland.

B. The work involves construction of: a new 551 space park and ride; widening and resurfacing of MD 925 (Old Washington Road); pervious concrete pavement; concrete pavement; hot mix asphalt pavement; concrete curb and sidewalk; lighting; signing; a new traffic signal at the intersection of MD 925 and Smallwood Drive.

1.04 COMPLETION TIME AND LIQUIDATED DAMAGES:

A. Pursuant to General Provisions Articles GP-8.02 and GP-8.03, commence work on or before the date specified in the Notice to Proceed (NTP) and complete the specified portions of the work within 400 calendar days.

B. In the event that the Contractor fails to complete the specified work within the specified number of days after Notice to Proceed, with the exception of extensions granted by change order, liquidated damages in the amount of $1880 will be assessed pursuant to General Provisions Article GP-8.09 for each calendar day the completion of the specified work is delayed. The Contractor shall pay to the Administration the applicable amount specified and pursuant to General Provisions Article GP-8.09 as liquidated damages for every additional calendar day in excess of the number of days prescribed. The Administration may deduct the sum of liquidated damages from any monies due or that may become due the Contractor under the Contract, or if such monies are insufficient, the Contractor or sureties thereof shall pay to the Administration any deficiency within 30 calendar days.

WORK ITEM	NUMBER OF CALENDAR DAYS	LIQUIDATED DAMAGES PER CALENDAR DAY
Completion of All Contract work	400	$1880

1.05 COMPLETION TIME AND OTHER SCHEDULE REQUIREMENTS:

A. Pursuant to Article GP-8.03 of the General Provisions, commence work on or before the date stipulated in the Notice to Proceed (NTP) and complete the entire work within the number of calendar days specified in 1.04 above.

B. Other schedule requirements are given in Section 01300 SUBMITTALS.

1.06 CONTRACTOR REPRESENTATIVES:

A. Designate in Writing within five (5) days after receiving the Notice to Proceed (NTP), the name, official mailing address and telephone number of the Contractor's representative having complete authority to represent and to act for the Contractor.

1.07 LIABILITY INSURANCE REQUIREMENTS:

A. MTA has chosen to provide Workers' Compensation, General Liability, Excess Liability, Builders Risk, Pollution Liability and Railroad Protective coverage on behalf of contractors and subcontractors working on this project. This approach to project insurance is commonly called a wrap-up or owner controlled insurance program (OCIP). Specific information regarding Liability Insurance Requirements are contained in the Contract Specification Book. (See Table of Contents for location of this information.)

B. Contractors and subcontractors are to **bid work for this project net of insurance (i.e. , The Cost of Workers' Compensation, General Liability, Excess Liability, Builders Risk, Pollution Liability and Railroad Protective applicable to the work site is not be to included in the bid price)**. All bidders must complete the Insurance Premium Worksheet and forward to MTA with the rest of your bid package. The Premium Worksheet is included in the bid package as form I, Exhibit A. This form should include the Contractor's work as well as the work of all subcontractors included in the initial bid. The insurance premium shown on this form, or the pro rata portion thereof, will be added to the base bid in the event you are excluded from the wrap-up program or the program is terminated mid-term.

1.08 PAYMENTS TO CONTRACTORS

By submitting a response to this solicitation, the Bidder agrees to accept payments by electronic funds transfer unless the State Comptroller's Office grants an exemption. Specific information regarding electronic funds transfer requirements and how to register for it are contained in the Contract Specification Book (See Table of Contents for location of this information.)

1.09 CONTINGENT ITEMS:

A. Construction items for which quantities are listed in the Unit Price Schedule as "Contingent" are established for the purpose of obtaining bids on one or more pay items that may be incorporated into the project.

B. The Engineer will have sole discretion in determining whether and to what extent these items will be incorporated into the project. The Engineer may order these items to be used at any location within the project and anytime during the work. In most cases contingent items will not be shown on the Plans. The estimated quantities specified in the Unit Price Schedule for these items are presented solely for the purpose of obtaining a representative bid price. The total of actual quantities required for the construction may be only a fraction of, or many times the estimated quantity. The requirements of GP-4.04 (Variations in Estimated Quantities) shall apply.

1.10 ELIMINATED ITEMS:

A. Should any Contract items contained in the Unit Price Schedule be found unnecessary for the proper completion of the work contracted, the Engineer may, upon written order to the Contractor, eliminate such Contract items from the Contract.

B. No allowance will be made for items so eliminated in making final payment to the Contractor except for material costs incurred prior to notification of the eliminated of the items.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

PART 4 - MEASUREMENT AND PAYMENT

4.01 SUMMARY OF WORK:

A. Summary of Work will not be measured for payment.

B. Summary of Work will not be paid for directly, but will be considered incidental to the individual work items.

END OF SECTION

SECTION 01130

CONSTRUCTION PROCEDURES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes preparations to performing the work including:

1. Mobilization
2. Pre-construction Meeting
3. Construction Layout
4. Construction Safety Requirements
5. Protection of Utilities
6. Protection of Property
7. Fire Protection
8. Disposal of Material Outside the Work Site
9. Measurement of Quantities
10. Final Inspection

B. Related Sections. Other sections of the Specifications, not referenced below, shall also apply to the extent required for the proper performance of this work.

1. Section 01300 – Submittals
2. Section 01450 – Quality Assurance and Quality Control

1.02 MOBILIZATION:

A. Mobilization includes the preparation of all construction equipment, materials, supplies, appurtenances and other items for commencing and prosecuting the Work; and the subsequent demobilization and removal from the site of the same construction equipment, appurtenances and other items upon completion of the Work.

B. Mobilization also includes assembly and delivery to the site of plant, equipment, materials and supplies necessary for the prosecution of the Work that are not intended to be incorporated into the Work; clearing of and preparation of the

Contractor's work area; the complete assembly in working order of all equipment necessary to perform the required Work; personnel services and work preparatory to commencing actual work; and all other items for which payment is provided under this Contract.

C. Mobilization shall be considered as complete only after the submission of the Contractor's Quality Control Plans (CQC Plans) in accordance with the Contract Specification Section 01450 QUALITY ASSURANCE AND QUALITY CONTROL and after the subsequent approval of these plans by the Engineer.

1.03 PRE-CONSTRUCTION MEETING:

A. Requirements for the pre-construction meeting are contained in Supplementary General Provisions Sections SGP-10.02.

B. After Award of the Contract, the Engineer will request the participation of the Contractor in a pre-construction meeting. The date, time and agenda of the meeting will be determined by the Engineer. Minutes of the meeting will be prepared by the Engineer.

1.04 CONSTRUCTION LAYOUT:

A. The Contractor shall use a Registered Land Surveyor licensed in the State of Maryland and state of the art equipment for all engineering work required to set and maintain all lines, elevations and dimensions as specified in the Contract Documents. Include as the Work progresses:

1. Verify that the field locations of the established base lines and bench marks correspond with figures shown on the Drawings. Include verification to the nearest established reference points beyond the limits of this Contract.

2. Establish bench marks and base lines showing exact elevations and other lines and dimensional reference points as required for the execution of the Work.

3. Field check the structure and surveys as required by the technical sections of the Specifications.

B. Verify all existing dimensions and grades shown on the Contract Drawings. Notify the Engineer in writing of any discrepancies found. Check the Drawings against established lines and grades and notify the Engineer in writing of all discrepancies found before proceeding with the work.

C. Furnish a certificate signed by the Registered Land Surveyor warranting that all principal lines, levels and dimensions are accurately established in accordance with the Contract Drawings.

D. Submit all drawings and survey notes in accordance with Section 01300 SUBMITTALS.

E. The Contractor shall exercise care in the preservation of monuments, stakes, and bench marks set by the Engineer and shall reestablish them at no additional cost to the Administration when any are damaged or destroyed.

1.05 CONSTRUCTION SAFETY REQUIREMENTS:

A. In accordance with and in addition to the General Provision's Articles GP-7.05 and GP-7.06 and Supplementary General Provision SGP-7.10:

1. The Contractor shall ensure observance of the most stringent provisions of the applicable statues and regulations of the State of Maryland or political subdivisions in which the Work is being performed, as well as the Amtrak and OSHA provisions pertaining to the safe performance of the Work.

2. The Contractor shall ensure that the methods of performing the Work do not involve undue danger to the personnel employed thereon, the public, and public and private property as specified in the General Provision Article PUBLIC CONVENIENCE AND SAFETY.

3. Should charges of violation of any of the above be issued to the Contractor in the course of the Work, submit a copy of each charge immediately to the Engineer.

1.06 PROTECTION OF UTILITIES:

A. Utilities known to the Administration are shown on the Contract Drawings. The location of these utilities is not guaranteed, nor is there any guarantee that other utilities are not present. Unless otherwise specifically provided, the Contractor shall cause no interruption of service and protect utilities from damage.

B. Prior to performing excavation or grading at any location, contact the Utility Services Protection Center, “Miss Utility”, 1-800-257-7777. This contact shall be made between the hours of 7:00 am and 5:00 p.m., Monday through Friday, excluding holidays and at least forty-eight (48) hours in advance of the proposed work. This will allow Utility companies time to properly mark the location of their facilities. In making the notification, the Contractor shall 1) state the nature of the work to be done; 2) give the location of the job, and 3) advise the utilities of the time and date that the Contractor's work will start. No work shall be commenced until the Utility companies affected have properly located their facilities to prevent damage thereto.

C. The Contractor shall exercise care when digging adjacent to and crossing any existing utilities. For overhead facilities, the Contractor shall adhere to the Maryland High Voltage Line Act.

D. The Contractor shall establish and maintain direct contact with the owner or operator of each utility which may be affected by the Work, and proceed with work which may affect a utility only with the cooperation and approval of the utility owner and the Engineer.

E. The Contractor before commencing work shall verify the location of all utilities in the vicinity of the Work and submit to the Engineer, for approval, a plan for performing the Work.

1.07 PROTECTION OF PROPERTY:

A. Requirements hereinafter specified are in addition to General Provision's Article GP-7.11.

B. Existing Facilities:

1. The Contractor shall take positive action to protect all existing facilities from any damage resulting from construction operations unless modifications to the facilities are required as part of the Contract. Where modifications to existing facilities are required, provide such modifications as shown on the Contract Drawings.

2. The Contractor shall protect all paving, landscaping, and utilities from damage.

3. The Contractor shall protect all finished surfaces, against any possible damage.

4. The Contractor shall provide and maintain adequate protection for all adjacent structures. When required by law, or for the safety of the Work, shore, brace, underpin or otherwise protect those portions of adjacent structures which may be affected by the work. Prior to commencement of any part of the Work, give any notice required to be given to adjoining landowners or other parties.

5. Items removed for the convenience of the Contractor or to expedite his operations shall be restored, repaired, reinstalled or replaced with new work and refinished, as appropriate, to a condition equal to or better than existed prior to the commencing of the Work. Materials and workmanship used in repair or restoration work shall conform in type and quality to original existing construction.

6. The Contractor shall inspect existing items to be altered, extended, salvaged or relocated and reused. If an existing item is found to be defective in any way, the Contractor shall report the condition to the Engineer before the item is disturbed.

C. New Work:

1. The Contractor shall ensure finished surfaces of items are clean and not marred upon acceptance of the Work. Refinish all surfaces that have been damaged.

2. The Contractor shall provide and maintain protection at all times against weather so as to preserve all work, materials and fixtures free from injury or damage.

3. The Contractor shall not load or permit any part of a structure to be so loaded as to either create an unsafe condition or affect its structural integrity.

4. The Contractor shall not use items of equipment that are intended to form a part of the completed work as construction equipment without specific approval from the Engineer in each instance.

D. Repair of Damage:

1. The Contractor shall repair all damage to surfaces or facilities, which are to remain in place, as directed by the Engineer.

2. The Contractor shall ensure that repairs result in conditions equal in strength to the previous conditions.

3. The Contractor shall ensure repaired surfaces are identical in color and texture to the adjacent existing materials, except where materials can not be matched. When the area cannot be matched, the Contractor shall refinish the affected area and surrounding area to give a uniform appearance acceptable to the Engineer and the owner of the damaged facility.

1.08 FIRE PROTECTION:

A. The Contractor shall provide temporary fire protection for use during the term of the Contract, subject to approval of the Engineer.

B. The Contractor shall comply with provisions for fire protection systems and equipment as required by OSHA, Safety and Health Regulations for construction, Part 1926, Subpart F - Fire Protection and Prevention.

1.09 DISPOSAL OF MATERIAL OUTSIDE THE WORK SITE:

A. Unless otherwise specified elsewhere in the Specifications, the Contractor shall make arrangements for disposing of waste outside the work site and pay all associated costs.

B. Prior to disposing of material outside the work site, obtain written permission from the owner on whose property the disposal is to be made. File with the Engineer the permit, or a certified copy thereof, together with a written release from the property owner absolving the Administration from any and all responsibility in connection with the disposal of material on said property.

1.10 MEASUREMENT OF QUANTITIES:

A. All work to be paid for at the Contact price per unit of measurement will be measured by the Engineer in accordance with U.S. Standard Measures. A ton shall consist of 2,000 pounds avoirdupois.

B. Material paid for by weight shall be weighed on accurate, approved scales, furnished by and at the expense of the Contractor. Use platform scales of sufficient size and capacity to permit the entire vehicle or combination of vehicles to rest on the scale platform while being weighed. Combinations of vehicles may be weighed as separate units provided that they are disconnected while being weighed. Have all scales inspected and certified as often as the Engineer may deem necessary to ascertain accuracy. Cost incurred as a result of regulating, testing, inspecting, and certifying scales shall be borne by the Contractor.

C. The Engineer may be present to witness the weighing and to check and compile the daily record of such scale weights; however, in any case, the Engineer will require the Contractor furnish weigh slips and daily summary weigh sheets. In such cases, furnish a duplicate weigh slip or a load slip in each vehicle weighed and deliver the slip to the Engineer at the point of material delivery.

D. Trucks used to haul material being paid by weight shall be weighed empty on a daily basis and as such times as the Engineer may require. Each truck shall bear a plainly legible identification mark. The Engineer may require the weight of the material to be verified by weighing empty and loaded trucks on such other scales as the Engineer may designate.

E. When material is to be measured and paid for on a volume basis it shall be accomplished using the average end method and when impractical to determine the volume by specific method of measurement, or then requested by the Contractor in writing and approved by the Engineer in writing, the material will be weighed in accordance with the requirements specified for weight measurement. Such weights will be converted to volume for payment purposes. Factor for conversion from weight agreed to by the Contractor before such method of measurement of pay quantities will be adopted.

F. When metering devices are required in the Specifications or are used to measure the quantity of liquids used in the work, the metering devices shall be inspected and tested for accuracy at the Contractor's expense as often as the Engineer may deem necessary.

G. Full compensation for all expenses involved in conforming to the requirements for measuring and weighing materials shall be considered as included in the unit

prices for the materials being measured or weighed and no additional compensation will be allowed therefor.

H. Quantities of material wasted or disposed of in a manner not called for under the Contract; rejected loads of materials, including material rejected after it has been placed by reasons of failure of the Contractor to conform to the provision of the Contract's material not unloaded from the transporting vehicle; material placed outside the lines indicated on the Contract Drawings or established by the Engineer; or material remaining on hand after completion of the work will not be paid for, and such quantities will not be included in the final total quantities. No compensation will be allowed for loading, hauling and disposing of unused rejected material.

1.11 FINAL INSPECTION:

A. Notify the Engineer at least 10 calendar days in advance of the date the work at each bid item will be fully complete and ready for final inspection.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

PART 4 - MEASUREMENT AND PAYMENT

4.01 MOBILIZATION:

A. The work required under this Section will not be measured for payment.

B. Fifty percent of the Fixed Price shown in the Unit Price Schedule for the item MOBILIZATION will be payable on the first monthly invoice subsequent to the Contractor's moving in all necessary facilities and performing all work, as described above, that will enable work to begin satisfactorily on the preliminary contract items. Further, twenty-five percent of the first monthly invoice amount due to the Contractor for the item MOBILIZATION shall be withheld and released only after the Engineer’s approval of the CQC plans. The remaining fifty percent of the Fixed Price shown in the Unit Price Schedule for the item MOBILIZATION will be payable in equal installments on each of the subsequent monthly invoices, for a maximum of five months, provided that, in the opinion of the Engineer, mobilization continues to proceed satisfactorily. Payment as specified above shall be full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work necessary to complete the work described in this Section. Payment for the Fixed Price shown in the Unit Price Schedule for the item MOBILIZATION will not be made more than once, regardless of the fact that the Contractor may, for any reason, shut down work on the project or move equipment away from the project and then back again.

4.02 PRE-CONSTRUCTION MEETING:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.03 CONSTRUCTION LAYOUT:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.04 CONSTRUCTION SAFETY REQUIREMENTS:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.05 PROTECTION OF UTILITIES:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.06 PROTECTION OF PROPERTY:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.07 FIRE PROTECTION:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.08 DISPOSAL OF MATERIAL OUTSIDE THE WORK SITE:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.09 MEASUREMENT OF QUANTITIES:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.10 FINAL INSPECTION:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

END OF SECTION

SECTION 01150

INTERFACE REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section describes the Contractor's obligations and other pertinent information relative to the various interfaces between the Contractor and the Administration and other third parties.

B. Related work specified elsewhere. Other sections of the Specifications, not referenced below, shall also apply to the extent required for the proper performance of this work.

1. Section 01110 - Summary of Work
2. Section 01130 - Construction Procedures
3. Section 01300 - Submittals
4. Section 01310 - Coordination and Meetings
5. Section 01550 - Maintenance of Traffic
6. Section 02370 - Erosion and Sediment Control

1.02 BASIC INTERFACES:

A. The Contractor shall be responsible for the design, development and implementation of the interface procedures between its work and work performed by others, and for Contractor work at all interface locations with existing Administration and other third party facilities.

B. NON-RAILROAD Interfaces (Utilities and other Third Parties):

1. The Contractor shall be responsible for coordinating all utility and other third party interfaces and notifications directly with the appropriate utility company or third party. A copy of all written correspondence and a transcription of all verbal communication between the Contractor and the utility or third party shall be forwarded to the Engineer. The coordination shall provide ample time for the utility company or third party to complete their work so as to not impact the Contractor’s schedule. Delays in the completion of the utility company or third party work will not be grounds for extension of the contract duration.

2. For all work under this Contract, any lighting and electric power, where not specifically provided by others, including on a temporary basis, when permanent facilities are out of service or not available, shall be provided by the Contractor at no additional cost to the Administration.

3. Refer to the article SPECIFIC INTERFACES elsewhere in this Section for any additional specific information pertinent to utilities or other third parties.

1.03 SPECIFIC INTERFACES:

A. State Highway Administration Interface will be required whenever the Contractor's work will require lane closures along MD 925. The Contractor shall provide the SHA contact listed below with a minimum of seven (10) days and a maximum of twenty-one (21) days notice when a lane closure is required.

1.04 OTHER POINTS OF CONTACT (for interfacing work within this Contract):

A. State Highway Administration
   1. District 5
      Ms. Kimberly Tran
      (410) 841-1019
   2. Office of Traffic and Safety
      Traffic Operations Division – Traffic Control Device Inspection Section
      Dan Mantyk
      (410) 787-4061

B. Charles County Planning and Growth Management
   1. Jason Groth
      (301) 396-5814

C. SMECO
   1. Charles Herbert
      (240) 528-9705

   2. J. Michael Barringer
      (301) 274-4483

D. Verizon Maryland Inc.
   1. David J. Metcalfe
      (301) 932-2288

E. University of Maryland, Baltimore County
   1. Stuart S. Schwartz
      (410) 455-2748

F. Maryland Department of Environment (MDE)
   1. TBD
      (410) 537-3000

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

PART 4 - MEASUREMENT AND PAYMENT

4.01 INTERFACE REQUIREMENTS:

A. Interface Requirements (with the exception of Temporary Orange Construction Fence which is measured as specified in SECTION 01550 MAINTENANCE OF TRAFFIC) will not be measured for payment.

B. Interface Requirements (with the exception of Temporary Orange Construction Fence which is measured as specified in SECTION 01550 MAINTENANCE OF TRAFFIC) will not be paid for directly but will be considered incidental to the appropriate work item.

END OF SECTION

SECTION 01210

MISCELLANEOUS WORK ALLOWANCE

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes the furnishing of all material, equipment and the performing of all labor to complete additional work as directed by the Engineer.

B. This work shall include, but is not limited to: additional work not included in the scope of any other item in the Bid Form. This shall include hidden or unforeseen site conditions and approved extra work required by the Engineer after award of the contract, which was not included in the advertised Contract Documents and within the general scope of the Contract.

C. This allowance is for the exclusive use of the Maryland Transit Administration and is to be distributed at its sole discretion. All unused monies remaining in the allowance at Contract Closeout shall be deleted from the Contract.

D. This allowance is for the cost associated with changes related to direct cost only. Changes/Change Orders including time related delay costs such as indirect field, home office overhead, etc. shall not be issued and/or paid under this section.

E. The work covered under this section shall not include any time extension to the Contract or to any intermediate milestones.

F. Any work to be performed under this Section shall be approved in writing and shall be authorized at the discretion of the Engineer.

PART 2 - PRODUCTS

2.01 PRODUCTS AND MATERIALS:

A. Any material to be used under this Section shall be approved by the Engineer before purchase.

PART 3 - EXECUTION

3.01 EXECUTION:

A. The Contractor’s methods and techniques which he proposes to utilize in performing the work shall be subject to the review of the Engineer.

B. When this allowance is utilized for work with items specified elsewhere in these specifications, the work shall be performed in accordance with materials and methods of construction of those items.

C. When the Contractor is entitled to a cost entitlement as a result of additions or changes to the contract for which there are no applicable unit prices, the Engineer shall request a price proposal from the Contractor prior to the start of the work in accordance with Contract Provision G.P. 4.06 - "Changes."

D. The Contractor shall not begin work under this section unless directed by the Engineer in writing. If necessary, plans and details may be generated and provided to the Contractor for each specific condition and area.

3.02 WORK AT CONSTRUCTION SITE:

A. The direct cost adjustment requirements of Supplementary General Provision Article 4.03 (S.G.P. 4.03 except Paragraphs G and J) shall apply only to work performed at the construction site and only when a contract direct cost adjustment is negotiated.

3.03 PROFESSIONAL AND TECHNICAL SERVICES:

A. The requirement of Supplementary General Provisions Article 4.06 (S.G.P. 4.06) shall apply when a contractor is entitled to an equitable cost adjustment for additional work or changes requiring the services of factory or office base professional and/or technical personnel to perform the work directly attributable to additional work or changes.

3.04 FORCE ACCOUNT WORK:

A. Pursuant to the Contractor's proposal, if the Contractor and the Administration cannot reach an agreement, the Administration may require the Contractor to do such work on force account basis. The Contractor's cost entitlement shall be determined for such force account work in accordance with Supplementary General Provisions Article 9.02 (S.G.P. 9.02) – Force Account Work

PART 4 - MEASUREMENT AND PAYMENT

4.01 MISCELLANEOUS WORK ALLOWANCE:

A. When the work is performed, complete in place and accepted, and agreed upon in writing pursuant to the direct cost adjustment requirements of Article S.G.P. 4.03 (Except Paragraphs G and J), requirements of Article S.G.P. 4.06 or requirements of Article S.G.P. 9.02 such work shall be paid from the allowance under "Miscellaneous Work Allowance."

B. This payment for additional work will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as directed by the Engineer.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1: GENERAL

1.02 CONSTRUCTION PROGRESS SCHEDULE (in lieu of GP-8.04A):

A. General:

1. Full compliance with the following schedule submission requirement is essential for timely processing of progress payments.

2. The Contractor shall prepare and maintain a progress schedule that shall be the Contractor's working schedule and shall be used to plan, organize and execute the work; record and report actual performance and progress; and forecast remaining work.

3. The Project Schedule shall employ CPM using retained logic for the planning, scheduling and reporting of the work to be performed under the Contract. The schedule will be produced utilizing the Primavera Project Planner (P3) software system. The type of schedule shall be Precedence Diagramming Method (PDM). The software shall be suitable for use on IBM compatible computers using the Microsoft Windows operating system.

4. Schedule work such that any specified intermediate milestones and completion dates are met as specified in these Special Provisions.

5. The initial baseline schedule submittal shall reflect zero status, addressing the contract work as viewed from Notice to Proceed looking forward in time.

B. Contractor's Scheduling Representative:

1. The Contractor shall designate in writing, and submit qualifications of, a Scheduling Representative, who shall be responsible for preparation and maintenance of the Project Schedule. The Scheduling Representative may be from within the Contractor’s organization or an outside consultant. The Engineer shall have the right to disapprove the designated Scheduling Representative, in which case the Contractor must resubmit a

replacement for approval. After acceptance, the Contractor may not replace the Scheduling Representative without prior written consent of the Engineer.

2. The Scheduling Representative shall have complete authority to act on behalf of the Contractor in fulfilling the Project Schedule requirements of the Contract and such authority shall not be interrupted throughout the duration of the Contract unless approved in writing by the Engineer.

3. The Scheduling Representative shall attend all schedule-related meetings and all monthly update meetings throughout the duration of the Contract in addition to the General Superintendent.

4. The Contractor agrees that whenever the Engineer advises the Contractor in writing that the Scheduling Representative is not performing his/her duties to the satisfaction of the Administration, the Contractor shall replace the Scheduling Representative at no additional cost to the Administration and designate in writing, within seven (7) calendar days, a new authorized representative satisfactory to the Engineer.

C. Progress schedule:

1. Submit to the Engineer within twenty-one (21) days after Notice to Proceed for approval the Schedule and a Narrative explaining the schedule assumptions, restrictions and information as listed in item 2 below.

2. Provide sufficient detail and clarity of form and technique so that the Contractor can properly control the Contract work and the Engineer can readily monitor and follow progress of the Contract work. The schedule shall reflect on time completion of all contractually specified intermediate milestones and completion dates. The degree of detail shall be to the satisfaction of the Engineer. As a minimum the following factors shall have a bearing on the required depth of detail:

a. The types of work to be performed.

b. Procurement, fabrication, delivery, installation and test activities for major systems and equipment.

c. Submittal and approval of shop drawing and material samples.

d. Access and availability to work areas.

e. Delivery of any Administration furnished equipment.

f. Interfaces and dependencies with preceding, concurrent and follow-on contractors.

g. Plans for subcontract work.

h. Manpower, material and equipment requirements and any restrictions thereto.

i. Planned normal workweek and planned restrictions.

j. Clearly depict the order and interdependencies of planned activities, including activities of others which affect planning.

k. Show the intended time for starting and completing each activity.

l. Show the intended duration for each activity.

m. Clearly and prominently identify specified intermediate milestones and completion dates.

n. All bar chart schedules shall have horizontal and vertical grid lines.

o. Anticipated lost time due to weather shall be included in the Schedule to ensure completion of all work within the Contract time. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependant activities.

Monthly Anticipated Adverse Weather Delays
Work Days Based on 5 Day Work Week

Jan	Feb	Mar	Apr	May	Jun
8	8	7	4	1	1

Jul	Aug	Sep	Oct	Nov	Dec
2	2	2	2	4	5

These days will be eliminated from the Schedule's work calendar and spread over each month. Individual activity durations are not to be increased to include expected lost weather days.

Any temperature sensitive activities, such as asphalt paving, shall be indicated in the schedule and accepted by the Engineer as reasonable. The work calendar associated with these activities shall also be accepted by the Engineer.

3. Required Submittals:

a. Five (5) hard copies and one electronic copy, in the scheduling software of the Progress Schedule, reflecting contract milestone(s) and completion dates. If the submitted Progress Schedule is larger than 11 x 17 inches in size, a reproducible copy of the schedule shall be included in the submittal.

b. Five (5) copies of a narrative containing supplementary information describing the construction methods and any resources as well as restraints to enable the Engineer to evaluate the schedule for its usefulness as a valid and workable project control tool. Include an explanation of any schedule restraints that were incorporated. The narrative should contain information requested in the monthly update narrative as appropriate.

C. Administration's Review and Approval:

1. After submission of the complete schedule submittal, the Contractor shall participate in a conference with the Engineer to appraise and evaluate the proposed schedule and make any revisions necessary as a result of this review. The complete revised schedule shall be resubmitted within 10 calendar days after the conference.

2. When the Progress Schedule and Narrative documentation satisfy the Specification requirements and completion dates the Engineer will approve the Contractor's submittal.

D. Monthly Progress Schedule Updates:

1. At the request of the Engineer, participate in a pre-update conference to verify progress prior to the formal monthly submittal.

2. By the seventh of each month submit to the Engineer, for approval, five (5) copies and one electronic copy, in the scheduling software, each of:

a. Updated Progress Schedule. If the submitted update of the Progress Schedule is larger than 11 x 17 inches in size, a reproducible copy of the schedule shall be included in the submittal.

b. Narrative, covering as a minimum:

i. A description of physical progress during the report period.

ii. Problem areas, current and anticipated.

iii. Delays incurred during the report period and an explanation of the same.

iv. Delaying factors, their impact and an explanation of corrective actions taken or proposed to mitigate those delays.

v. Changes in activity duration including an explanation.

vi. Listing with explanation of added activities.

vii. Listing with explanation of deleted activities.

viii. Listing with explanation of changes in interdependencies.

ix. Plans for forthcoming report period.

3. Submit, for approval, a revised Progress Schedule and Narrative documentation data when one or more of the following conditions occur:

a. When a change or delay significantly affects any specified intermediate milestone date, the completion date or the sequence of activities.

b. When the Contractor elects to change a sequence of activities affecting any critical path or to significantly change the previously approved schedule submitted.

c. When, in the opinion of the Engineer, the status of work is such that the Progress Schedule and Narrative documentation are no longer representative for planning, executing and evaluating the work.

4. The monthly payment estimate may not be processed prior to the engineer's approval of the monthly Progress Schedule update at the discretion of the Asministration.

E. Change Orders, Delays and Time Extensions: Articles GP-4.06, GP-5.14 and GP-8.08 of the General Provisions are augmented by the following requirements.

1. When proposed changes are initiated or delays are experienced submit to the Engineer in writing:

a. A Time Impact Analysis illustrating the influence of each change or delay on any specified intermediate milestone date or completion date. The Time Impact Analysis is to include, as a minimum, what critical path activities are affected on what specific workdays and why for each activity for each workday. Also, if the claim is for more than one contract milestone, the time impact Analysis is to address each contract milestone individually.

b. A proposal demonstrating how the Contractor plans to incorporate the change or delay into the current Progress Schedule with minimal impact to milestone completion dates. Justification of the plan shall be based on revised activity logic and/or durations in addition to such other supporting evidence, as the Engineer deems necessary.

c. Submit five (5) copies and one electronic copy, in the scheduling software of each Time Impact Analysis and schedule Revision Proposal within 30 days after the delay occurs or notice of direction is given to the Contractor.

2. The Engineer will, within a reasonable time after receipt of the Contractor's Time Impact Analysis and Schedule Revision Proposal, review the submittal and advise the contractor in writing thereof. Upon agreement by both parties the appropriate revisions shall be incorporated into the Progress Schedule at the next monthly update.

3. It is understood and agreed that the schedule float time is not for the exclusive use of either the Administration or the Contractor. Extensions of time for performance under any and all of the provisions of this Contract will be granted only to the extent the equitable time adjustment for activities affected exceed the total float along the paths involved.

F. Where the Engineer has not yet made a final determination, or the parties are unable to agree on the schedule revisions or time extensions, if any, the Contractor shall incorporate such revisions as the Engineer may determine to be appropriate for such interim purposes. It is understood and agreed that any such interim determination for the purpose of this paragraph shall not be binding on either party for any other purpose and that, after the Engineer has made a final determination the Contractor shall revise the Progress Schedule in accordance with the final decision.

SECTION 01310

COORDINATION AND MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section describes the various administrative interfaces between the Contractor, the Administration and others.

B. Related Work Specified Elsewhere:

1. SECTION 01130 Construction Procedures

1.02 UTILITY NOTIFICATIONS:

A. Prior to performing excavation or grading at any location, contact the Utility Services Protection Center, "Miss Utility", 1-800-257-7777. This contact shall be made between the hours of 7:00 am and 5:00 pm, Monday through Friday, excluding holidays and at least forty-eight (48) hours in advance of the proposed work (7 days notice for known SMECO facilities). No work shall be commenced until the utility companies affected have properly located their facilities to prevent damage thereto.

1.03 COOPERATION WITH OTHER CONTRACTORS:

A. Pursuant to General Provisions Article GP-5.06, the Contractor shall confer with and coordinate through the Engineer, this Contract's work with that of all other contractors working in the project area. Subject to the Engineer's approval, the Contractor shall plan and execute construction operations in a manner that will afford these contractors maximum freedom of movement. The Contractor will be held responsible for extra costs incurred by other contractors as the result of any activity that delay or hinders their work.

B. The Contractor shall cooperate with others while on adjoining or overlapping work as necessary. Such cooperation shall include:

1. Arrangement and conduct of work.
2. Storage and disposal of materials, etc., by each in such manner as to not interfere with or hinder the progress of the work being performed by other Contractors. Contiguous work shall be joined in an acceptable manner.

1.04 PROGRESS MEETINGS:

A. Schedule and administer meetings throughout progress of the Work at weekly intervals, maximum.

B. The Engineer will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes and distribute copies within two days to the Contractor, participants, and those affected by the decisions made.

C. Attendance Required: Engineer, Job Superintendent, and major Subcontractors and suppliers, as appropriate to agenda topics for each meeting.

D. Agenda: (to be modified by engineer as appropriate)

1. Review of minutes of previous meetings.

2. Review of Work progress.
3. Field observations, problems and decisions.
4. Identification of problems that may impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

PART 4 - MEASUREMENT AND PAYMENT

4.01 COORDINATION AND MEETINGS:

A. Coordination and Meetings will not be measured for payment.

B. Coordination and Meetings will not be paid for directly, but will be considered incidental to the appropriate work item.

END OF SECTION

SECTION 01450
QUALITY ASSURANCE AND QUALITY CONTROL

PART 1 – GENERAL

1.01 DESCRIPTION:

A. This Section specifies the Quality Assurance/Quality Control (QA/QC) requirements for the work performed under this Contract. These requirements encompass all actions involving selection of material sources and suppliers, inspection and testing of materials and samples, work placement procedures, workmanship, equipment calibration, use of Certificates of Compliance, implementation of procedures for audit, surveillance and corrective action, inspection, testing and commissioning. Additional QA/QC requirements are specified in individual sections of Special Provisions and Technical Provisions of the Contract Specifications.

B. Related work specified elsewhere. Other sections of the Specifications, not referenced below, shall also apply to the extent required for the proper performance of this work.

1. G. P. – Section 6 – Control Of Material
2. Section 01110 – Summary Of Work
3. Section 01130 – Construction Procedures
4. Section 01300 – Submittals
5. Section 01600 – Material and Equipment
6. Section 01780 - Contract Close Out

1.02 QUALITY ASSURANCE/QUALITY CONTROL PLAN:

A. It shall be the responsibility of the Contractor to provide and maintain a Contract Quality Control Plan (CQC Plan) for all work performed under the Contract. This requirement is independent of any acceptance inspection and testing performed by the Engineer and /or his testing agencies.

The CQC Plan shall conform to the requirements of this Special Provision Section and shall be designed and administered to assure that the Contractor's work, including work performed by the Contractor's suppliers and subcontractors, will be in full compliance with the latest version of applicable codes, special provisions, technical specifications and plans under the Contract with respect to materials, workmanship, construction, installation, finish, functional performance, testing, commissioning and identification. Further the CQC Plan shall encompass all actions involving selection of construction/installation material sources and suppliers, on-site and off-site fabrication of Contractor-furnished items to be included in the work, on-site and off-site production of construction materials, inspection and acceptance of owner furnished materials, work placement procedures, workmanship, inspection, testing and commissioning.

B. **Within seven (7) calendar days after issuance of Notice to Proceed** (NTP) for the Contract, the Contractor shall submit an "**Interim**" CQC Plan to the Engineer for approval. The interim plan shall cover all work to be performed under the Contract during the first sixty (60) calendar days of work.

Further, within thirty (30) calendar days after the issuance of the NTP, the Contractor shall submit a "**Detailed**" CQC Plan to the Engineer for approval. The detailed plan shall cover all work to be performed under the Contract.

The submission of the CQC Plan shall be considered incidental to the bid item-Mobilization. The progress payments due to the Contractor may be withheld if the Contractor fails to submit conforming CQC Plans as scheduled herein.

C. With its Interim CQC Plan submission, the Contractor shall identify and designate a qualified individual (CQC Plan Manager) who shall be responsible for overall development and administration of the CQC Plan and submit the CQC Plan Manager's qualifications to the Engineer for approval. The CQC Plan Manager shall report directly to an executive officer of the Contractor's company and shall have the necessary authority to discharge his/her responsibilities. The CQC Plan Manager shall visit the project site on a regular basis to assure proper administration of the CQC Plan.

For contracts in the amount of five million dollars ($5,000,000) and above, the CQC Plan Manager shall be at the project site on a full-time basis throughout the duration of the Contract and shall have no responsibilities other than those required by this Special Provision. However depending on the nature and complexity of the work to be performed under the Contract and/or instances of non-conforming work, the Engineer may require the CQC Plan Manager to be at the project site on a full time basis for contracts in the amount less than five million ($5,000,000) dollars.

D. With the interim CQC Plan submission, the Contractor shall identify qualified individuals and firms responsible for inspection and testing of on-site work (CQC Plan staff) and submit their qualifications to the Engineer for approval. The CQC Plan staff shall be sufficient to inspect and test all items of work under the Contract and report directly to the CQC Plan Manager.

For contracts in the amount of five million dollars ($5,000,000) and above, the CQC Plan staff shall be at the project site on a full-time basis throughout the duration of the Contract and shall have no responsibilities other than those required by this Special Provision. Additionally for contracts in the amount of five million dollars ($5,000,000) and above CQC Plan staff shall include and identify appropriate testing personnel for each major discipline of work performed under the Contract. These major disciplines include, but are not limited to, civil, structural, mechanical, electrical, systems engineering, and specialty work.

E. The Contractors **Interim CQC Plan** must include as a minimum the following:

1. An organization chart showing the Contractors corporate organization that is involved with the on-site operations.
2. The Contractors on-site organization chart including a quality control organization showing the proposed CQC Plan Manager and CQC Staff.
3. Authority, duties and responsibilities of quality control personnel. A copy of the letter of direction to the Contractor's representative and CQC staff, which defines their duties, responsibilities, and delegated authorities, shall be provided to the Engineer.
4. Operational procedures for accomplishing and reviewing work, supervision, inspection, tests, certifications, documentation of QA/QC activities, including those of subcontractors for all on-site and off-site work under the contract.
5. Procedures for indoctrination and instruction of quality control personnel, construction supervisors, foremen, subcontractors and suppliers.
6. The coordinating procedures and authorities concerning the work activities performed off-site and not under the direct supervision of CQC Plan Manager.
7. A detailed test matrix and inspection schedule keyed to the individual Special Provisions and Technical Provisions of the Contract and covering the work to be performed during the first Sixty (60) calendar days from NTP.

F. The Contractor's **Detailed CQC Plan** submission shall include the following:

1. A detailed schedule/matrix of control testing and inspection keyed to the individual Special Provisions and Technical Provisions of the Contract and covering each item of the work. The Engineer shall approve the format of the test matrix. The test and inspection schedule shall cover all work to be performed under the Contract, including both on-site and off-site fabrication.

   Inspection and test records shall include, but not be limited to, the factual evidence that tests have been made, the applicable type and number of tests, the dates and results of the tests, nature and number of observations made, the number and type of deficiencies found and proposed corrective actions to be taken. All records shall provide identification and signature of the individual in charge of the inspection, test, or other QA/QC activity. These records shall be certified by the CQC Manager and include, as a minimum, the results of:

   a. Inspection results, observations, conclusions and recommendations.
   b. Testing with reference to set-up conditions, observations and concerns.
   c. Fabrication procedures and controls.

d. Identity of the Personnel present and their certification.

e. Discrepant material details (including disposition records).

The legible copies of these records must be furnished to the Engineer daily. The records shall cover all work performed subsequent to the previously furnished records and shall be verified by the CQC Plan Manager.

2. A minimum of three phases of inspection to be performed by the CQC Staff for all definable items of work. The phases are:

a. Preparatory inspections shall be performed prior to beginning of each item of work and shall include a review of Contract requirements and CQC Plan test and inspection schedule mentioned above. Preparatory inspections shall include a physical examination of materials and equipment to assure that they conform to approved shop drawings or submittal data and are in required quantities to proceed with the work.

b. Initial inspections shall be performed as soon as a representative portion of the work has been accomplished. Initial inspections shall verify compliance with Contract requirements, establish acceptable levels of quality and workmanship, review quality control testing and confirm that defective, damaged or unapproved materials are not incorporated into the work.

c. Follow-up inspections shall be performed regularly by CQC Staff to assure continued compliance with the Contract requirements and established levels of quality and workmanship.

The Engineer shall be notified at least forty-eight (48) hours in advance of each preparatory and initial phase inspection. Additionally, the CQC Plan Manager shall insure that all phases of inspection are made a matter of record in the CQC Plan documentation.

3. The CQC Plan shall provide well-defined procedures and forms to include, but not be limited to the following:

a. Identifying and evaluating quality-related problems.

b. Recommending solutions to quality-related problems and verifying that those problems are resolved.

c. Controlling further fabrication, delivery, or installation of nonconforming or deficient item(s) until disposition instructions have been obtained.

d. Conducting quality inspections, surveillance and compliance audits of subcontractors, suppliers/manufacturers on a scheduled and unscheduled basis.

e. Maintaining quality control reports, approved shop drawings and submittals, as-built drawings, changes to the drawings and specifications.

4. The CQC Plan shall also provide written procedures to include, but not be limited to:

a. Control of subcontractors, manufacturers /suppliers.

b. Production and process quality control.

c. Discrepant and nonconforming material control.

d. Functional testing.

e. Calibration and/or certification of Measuring and Test equipment

f. Shipping and receiving inspection of materials.

g. Procedures necessary to meet the requirements described under Contract Special Provision Section 01780 - CONTRACT CLOSEOUT.

5. Approval of the Contractor's CQC Plan shall not relieve the Contractor of its responsibility to comply with the Contract requirements. The CQC Plan shall be revised or updated as directed by the Engineer. No additional cost or time extensions will be allowed for the Contractor's re-submission of rejected Interim or Detailed CQC Plans or for revising or updating of the detailed CQC Plan during the course of the Contract, as directed by the Engineer.

1.03 SOURCE OF MATERIALS:

A. In accordance with General Provision Section GP-6 – Control of Material; the Contractor shall notify the Engineer in writing of sources from which he proposes to obtain material requiring approval, certification, or testing indicating details and characteristics.

B. Notification shall be made as soon as possible after the NTP for the Contract and at-least thirty (30) days prior to the intended usage date of that material.

1.04 CALIBRATION AND CERTIFICATION:

A. The CQC Plan shall include the procedures to provide and maintain gauges; measuring devices and test equipment necessary to assure that the article conforms to Contract requirements. These devices shall be calibrated in accordance with national standards and certifications. Calibration certificates shall be maintained current and submitted to the Engineer. Any equipment exceeding its required re-calibration date or that becomes damaged or otherwise unreliable, shall be isolated, tagged or marked to prevent its use without written permission of the Engineer.

1.05 MANUFACTURING CONTROL:

A. The CQC Plan shall include methods for ensuring that all machining, wiring, shaping, and all other basic processing, fabrication and production operations of any type are accomplished under controlled conditions, including documented work instructions, certified personnel, adequate production equipment, and any special working environment.

1.06 INSPECTION AND TEST STATUS:

A. The CQC Plan shall include methods for ensuring that all required inspections and tests are performed and that the status of each work product, material item's inspections/tests is known. Identify nonconforming work product and material items by physical segregation and status indicators such as tags, markings, serialization, stamps, and/or inspection records. The identification system used shall ensure that only those work items that have passed inspection shall be used, shipped, or installed. The nonconforming work product and material items shall be removed from the project site and storage areas as soon as possible.

B. Work products, materials and/or equipment manufactured or assembled under this Contract shall be accepted for use or released for shipment, as appropriate, when the following conditions(s) have been met.

1. After inspection and/or release by the Engineer and/or certification by the Contractor that the work product or material item is complete and in compliance with the Contract Specifications.

2. Upon request for acceptance or a release for shipment submitted by the Contractor and supported by a satisfactory inspection report or certification of compliance accompanied by certified copies of test data. The certificate of compliance shall clearly identify the work product or material item covered by the certificate and shall also contain the test date and the name and address of the organization performing the require tests, as applicable.

C. Supplies, services, materials, and products procured from suppliers and subcontractors shall conform to the Contract requirements and the approved CQC Plan. Inspect all supplies, materials, services, and products upon receipt.

1.07 NONCONFORMING ITEMS:

A. The CQC Plan Manager shall take prompt action to correct conditions that have resulted or may result in nonconforming materials, parts, components, installations or functions/operations. The CQC Plan Manager shall document the nonconforming work and efforts to correct the deficiencies and prevent its occurrence in future. The CQC Plan shall provide for:

1. Maintaining an effective and positive system for controlling nonconforming work product and material item(s) including procedures for identification, segregation, removal and disposition. Document the corrective actions and submit to the Engineer for approval.

2. Ensuring that all nonconforming items(s) shall be positively identified to prevent unauthorized use, shipment, or intermingling with conforming items. Disposition for the use or repair of nonconforming items shall require the Engineer's approval.

B. If the Contractor's work does not conform to the requirements of the Contract documents, the Engineer may issue a "Corrective Action" or " Nonconformance Report" to the Contractor. The Contractor must correct all deficiencies or otherwise respond to the report within seven (7) calendar days of issuance of report by the Engineer. The Contractor shall not build or conceal any feature of the work containing uncorrected defects. The Engineer may withhold monies due to the Contractor until the deficiencies are corrected or nonconformance issues resolved to the satisfaction of the Engineer.

C. If the Engineer determines that the CQC Plan and/or its administration are deficient in identification and correction of nonconforming work, the Engineer shall issue a "CQC Plan deficiency notice" identifying the specific deficiencies and required corrective actions. The Engineers corrective actions may include modification of the CQC Plan, replacement of the existing CQC Staff or supplementing of the CQC Staff, all at no additional time and cost to the Administration. The Contractor shall correct all the deficiencies as directed in writing by the Engineer. The Engineer may withhold monies due to the Contractor until the deficiencies are corrected.

1.08 HANDLING AND STORAGE:

A. The CQC Plan shall ensure that proper instructions are provided and followed for handling, storage, preservation, packaging, and shipping to protect the quality of products and to prevent damage, loss, deterioration, degradation, or substitution of products. Means shall be provided for any necessary protection against deterioration or damage to products in storage and handling.

1.09 UNACCEPTABLE WORK PRODUCTS AND MATERIAL ITEMS:

A. Work products or materials represented by installations or samples taken and tested in accordance with the specified test and failing to meet required values shall be considered to be defective regardless of prior tests or approvals.

B. Unless otherwise allowed by the Engineer, as set forth below, defective work products or material items shall be removed from the site as specified in the General Provisions for condemned material and with any tags, stamps or other markings implying conformance with specifications removed or obliterated.

C. Where defects can be corrected, the Contractor may propose corrective action in accordance with the manufacturer's recommendation or by other means as is deemed appropriate by the Engineer. The Engineer may approve the corrective action but does not assume responsibility for the success thereof. Re-inspection and/or re-test may be made to determine acceptability of the material after corrective measures have been taken.

D. The cost of replacing, correcting and/or removal of defective work products or material items and of re-installation and re-testing replaced or replacement work products or materials shall be the responsibility of the Contractor.

E. The cost of repairing or replacing other work products or materials damaged by the installation, correction, and/or removal of defective materials is the responsibility of the Contractor.

1.10 ACCEPTANCE TESTING:

A. Acceptance testing is the testing of materials prior to their use in the work and also any testing deemed necessary by the Engineer for acceptance of the complete work. The Contractor will perform acceptance testing of materials and workmanship at the direction of the Engineer, in accordance with the Contract Documents. The Engineer reserves the right to request additional testing at any time to determine conformance with the Contract requirements.

B. Acceptance testing is not to be considered as a replacement for control testing conducted by the Contractor or manufacturer producing materials for the Contractor. Acceptance testing will be at the expense of the Contractor.

1.11 QUALITY CONTROL TESTING:

A. The quality control testing is the testing of specific work product or materials during placement, as specified in the various sections of the specifications to ensure compliance with the Contract Documents. The Contractor shall assume full responsibility for control testing and give sufficient notice to the Engineer to permit him to witness the tests. The quality control testing shall be at the expense of the Contractor and shall be performed by a certified independent testing laboratory that has been approved by the Engineer.

B. The Contractor shall submit the name, address, and qualifications together with the scope of proposed services of the proposed testing firm or individual to the Engineer for approval at least thirty (30) days prior to the scheduled commencement of any work involving such testing. Should the Contractor desire to use more than one firm for control testing, the required information shall be submitted for each proposed firm as specified herein.

C. The Contractor shall be responsible for furnishing all accessories and tools necessary to prepare and preserve the test samples as prescribed and delivering them to the approved testing laboratory.

D. The Contractor shall perform all quality control testing and furnish all equipment, instruments, qualified personnel and facilities necessary to perform all tests required by the Contract. All tests performed, and test results for each day shall be recorded in a daily report. These records shall remain complete and available to the Engineer at all times during the performance of the Contract and for a three-year period thereafter. Test records shall indicate the reference test, nature and number of observations made, and the number and type of deficiencies found.

E. All Field Tests and frequencies for civil construction work shall be in accordance with Maryland Department of Transportation (MDOT), Method of Tests, Volume 1 (Field Procedure) unless otherwise directed by this Specification.

F. During the installation and testing phases of the work, a representative of the CQC Staff shall be present on site to oversee and monitor the CQC Plan activities and verify installation and test activities are compliant with the requirements of this Specification.

1.12 TEST REPORTS:

A. Within five days after completion of testing performed by or for the Contractor, submit five (5) copies of certified test results to the Engineer. Indicate test reports required to be submitted pursuant to Network analysis, if applicable and specified under Section 01300 SUBMITTALS, Article 1.02, PROGRESS SCHEDULE. Identify test reports with the information specified for SAMPLES in Section 01300 Article 1.06 and additionally, the name and address of the organization performing the test, and the date of the tests.

B. The CQC Plan Manager shall submit on monthly basis, a record of all Control testing, Quality Assurance and Quality Control reports along with test results approved in the format described earlier under Article 1.02 F.1. This report shall be used to confirm and verify that the quantities in place for the completed work, for which the Contractor requests payment, have been adequately tested.

1. 13 CONTRACT MONITORING:

A. The CQC Plan shall provide a schedule of planned and periodic Contractor internal audits to monitor and verify compliance with all aspects of CQC Plan. Qualified personnel not having direct responsibilities in the areas audited shall perform the audits. The CQC Plan shall also provide schedule of audits to be conducted by the CQC Plan manager for the work performed by the subcontractors, manufacturers/suppliers. The Engineer shall review the audit findings and determine the follow up action, including re-audit of deficient areas, if necessary. Five copies of the audit reports and follow up action reports shall be submitted to the Engineer no later than fifteen (15) days after the audit for review and approval.

B. The Engineer has the right to monitor the methods and procedures used for production and/or QA/QC testing and shall be provided with access to all areas in which work for this Contract is being performed and at no additional cost to MTA. Furnish all reasonable means, including Shop Drawings, Working Drawings, test data, etc., to enable the Engineer to ascertain that materials and workmanship comply with the Contract specifications. The Engineer may perform periodic quality audits during the performance of the Contract. The Contractor shall take prompt corrective actions for items identified as not conforming to procedures approved under Contract terms.

1.14 CERTIFICATES OF COMPLIANCE:

A. The Contractor may use certificates of compliance for certain materials and products in lieu of the specified sampling and testing procedures. Submit any certificate required for demonstrating proof of compliance of materials with specification requirements in duplicate with each lot of material delivered to the work at least sixty days prior to the usage of the product/materials. The lot so certified shall be clearly identified by the certificate. Certificates shall be signed by an authorized representative of the producer or manufacturer and state that the material complies in all respects with the Contract requirements. The Network Analysis specified in Section 01300 SUBMITTALS, Article 1.02, Progress Schedule, shall indicate the date scheduled for the submittal of certificates. In the case of multiple shipments, each of which is to be accompanied by a certificate of compliance, the scheduled date on the Network Analysis shall indicate the initial submittal only.

B. A certified copy of test results shall accompany the certificate of compliance. The certificate shall give the information specified for SAMPLES in Section 01300 SUBMITTALS, Article 1.06 and in addition the name and address of the organization performing the tests, the date of the tests, and the quantity of the material shipped.

C. Materials used on the basis of a certificate of compliance may be sampled and tested at any time. The fact that material is used on the basis of a certificate of compliance shall not relieve the Contractor of responsibility for incorporating material in the work which conforms to the requirements of the Contract and any such material not conforming to such requirements will be subject to rejection, whether in place or not.

D. The Engineer reserves the right to refuse to permit the use of certain materials / supplies on the basis of a certificate of compliance.

1.15 SUBMITTALS:

A. The Contractor shall submit a Contract Quality Control Plan (CQC Plan) fully compliant with the requirements detailed under this Special Provision Section 01450 – QUALITY ASSURANCE AND QUALITY CONTROL. Pursuant to the approval of the CQC Plan by the Engineer, the Contractor is responsible for fully implementing and maintaining the CQC Plan throughout the duration of the Contract.

B. Test Procedures for all tests identified in the CQC Plan.

C. Reports of factory and field inspections demonstrating compliance with the requirements specified in individual Special Provisions and Technical Provisions of the Contract Specifications.

D. Test schedules keyed to work activities planned under Contractors look ahead schedule.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

PART 4 - MEASUREMENT AND PAYMENT

4.01 QUALITY ASSURANCE AND QUALITY CONTROL

A. Quality Assurance and Quality Control shall be measured by the Engineer. The allowance for Quality Assurance and Quality Control shall be divided by the total number of calendar days of Contract duration, as specified in Contract Special Provision Section 01110 – Summary of Work under "Completion Time and Liquidated Damages", to determine a daily rate for payment for successful performance. The Engineer, at his sole discretion, shall determine the Contractor's successful or unsuccessful performance with the requirements of the approved CQC Plan. The basis of unsuccessful performance shall be the issuance of a "CQC Plan Deficiency Notice" or a "Nonconformance Report" by the Engineer.

B. Quality Assurance and Quality Control will be paid as an allowance on an earned daily basis for each day the Contractor successfully performs all requirements of the approved CQC Plan. The Contractor will earn payment, on a daily basis, based for successful performance of all requirements of the approved CQC Plans. Payments will not be earned or made for any day that the Contractor fails to successfully perform the requirements of the approved CQC Plans.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1: GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes furnishing, installing, and operating temporary facilities and controls. This Section includes:

1. Temporary Utility Service
2. Temporary Sanitary Facilities
3. Project Identification
4. Protection of Existing Facilities
5. Work and Storage Areas
6. Community Relations
7. Construction Operations Under Traffic
8. Safety Requirements
9. Pollution Abatement
10. Historical and Scientific Specimens
11. Salvage Material and Equipment

B. Related work specified elsewhere:

1. Section 01550: Maintenance of Traffic
2. Section 01570: Environmental Controls

1.02 SUBMITTALS:

A. Samples of employee noise protection equipment

B. Certifications for employee noise protection equipment

1.03 TEMPORARY UTILITY SERVICE:

A. The Contractor shall determine the need for such temporary utility service as may be required to prosecute the work and make arrangements with utility companies

for such service. The Contractor shall also remove all materials and equipment involved with temporary utility service as part of final cleanup. All costs incurred in obtaining permits; utility service, including connection and disconnection; and furnishing, installing, maintaining, and removing such materials as may be required shall be borne by the Contractor.

1.04 TEMPORARY SANITARY FACILITIES:

A. The Contractor shall furnish for use of his work force the necessary toilet conveniences, secluded from public observation. Keep in a clean, sanitary condition. Comply with the requirements and regulations of the State of Maryland, Department of Health, and other agencies having jurisdiction.

1.05 PROJECT IDENTIFICATION:

A. FTA Project Signs: The requirements for the FTA project signs are specified in Section SGP-10 of the Supplementary General Provisions.

B. Field Office Signs: provide one sign each for the Engineer's Field Office and the Contractors Field Office to indicate the location of the offices. Use 1/2 or 3/4 inch thick exterior, A-B grade plywood, cut two (2) feet by four (4) feet long. Paint the sign with on coat of primer sealer and two coats of white semi-gloss enamel. Letter each sign with black enamel paint, using block letters at least four (4) inches high, with the Contract Name, Contract Number and the words ENGINEER's (or CONTRACTOR'S) FIELD OFFICE painted each on a separate line. Where the field office to be so identified is not readily visible from the project entrance, paint a directional arrow on the sign and locate the sign near the project entrance. The exact location of the field office signs and the proposed method of mounting shall be subject to the approval of the Engineer.

C. Contractor's Identification Signs: The Contractor may erect his own signs to identify himself and, if he wishes, his subcontractors. The overall size of the Contractor's identification signs shall not exceed four (4) feet by eight (8) feet wide. The exact location, method of mounting and mounting height of the Contractor's identification signs will be subject to the approval of the Engineer.

D. Sign Maintenance: Maintain all signs throughout the course of construction until final acceptance, keeping them clean, in good repair, and free of obstructions. Upon final acceptance of the work, remove and dispose of all signs.

1.06 PROTECTION OF EXISTING FACILITIES:

A. The Contractor shall be responsible for protecting all existing roadways, fences, and structures against damage caused by the Contractor's operations. If at any time, in the MTA's opinion, proper precautions are not being taken to secure this *protection, the Contractor shall, at no additional cost to the MTA, install and* maintain such additional protection as may be directed by the MTA.

B. Promptly repair all damage to any MTA, public, and private property resulting from negligence at no cost to the MTA. Restore such sites to their condition existing at time of Notice to Proceed.

1.07 COMMUNITY RELATIONS:

A. The Administration will establish a program of public contact for conducting effective relationships with communities and businesses in proximity to construction areas. As part of these programs the Contractor shall establish and maintain continuing liaison with persons occupying property or doing business in the immediate area of the Worksite for the purpose of minimizing inconveniences resulting from construction.

B. The Contractor shall contact those residents or businessmen who might reasonably be expected to be affected by the construction and make known to them the name of the Contractor representative on the Worksite with responsibility for community relations and explain to them the means by which the representative can be contacted expeditiously.

C. The Contractor shall, as part of the monthly progress status report specified in Section 01300, note and explain all community relations activities undertaken during the report period.

1.08 WORK AND STORAGE AREAS:

A. Work and storage space shall be provided by the Contractor at his own expense. Parking facilities for Contractor's personnel shall be the Contractor's responsibility.

1.09 SAFETY REQUIREMENTS:

A. Refer to the General Provisions Sections GP-7 for safety and health requirements.

B. Employ and assign to the work a full-time Safety Superintendent who has the specialized training and experience in construction safety supervision, is thoroughly familiar with OSHA requirements, and is acceptable to the Engineer. Employ the Safety Superintendent exclusively for purpose of supervising the safety of persons on or about the work and property affected thereby.

C. First Aid Stations: At site of the work, establish and fully equip a first aid station. Maintain a qualified first aid attendant on duty in the station at all times when the work is in progress, except when on emergency calls.

1.10 POLLUTION ABATEMENT:

A. General: Refer to General Provisions Section GP-7. Conduct operations in a manner to minimize pollution of the environment surrounding the area of work by every means possible. Apply specific controls as follows:

1. Material Transport: Truck leaving the site and entering paved public streets shall be cleaned of mud and dirt clinging to body and wheels of the vehicle. Trucks arriving at and leaving the site with materials shall be loaded in a manner which will prevent dropping of materials or debris on the streets. Contractor shall maintain a suitable vehicle cleaning and inspection installation with permanent crew for this purpose. Spills of materials in public areas shall be removed immediately at no additional cost to the Administration.

2. Waste Materials: No waste or erosion materials shall be allowed to enter natural or man-made water or sewage removal systems. Erosion materials from excavations, borrow areas or stockpiled fill shall be contained within the work area. Contractor shall develop methods for control of waste and erosion which shall include such means as filtration, settlement and manual removal.

3. Burning: No burning of waste will be allowed.

4. Dust Control: the Contractor shall at all times control the generation of dust by his operations. Control of dust is mandatory and shall be accomplished by water sprinkling or by other methods approved by the Engineer.

5. Noise Control:

a. General: Minimize noise caused by work operations, and provide working machinery and equipment fitted with efficient noise suppression devices. Employ other noise abatement measures necessary for protection of both employees and the public. In addition, restrict working hours and schedule operations in a manner that will minimize to the greatest extent feasible, disturbance to residents in the vicinity of the work. Provide protection against noise exposure for employees in accordance with GP 7.05.

b. Definitions:

i. Daytime, refers to the period from 7:00 a.m. to 9:00 p.m. local time daily except Sundays and legal holidays. Nighttime, refers to all other times including all day Sunday and legal holidays.

ii. Construction Limits are defined for the purpose of these noise control requirements as the Amtrak and

Administration rights-of-way lines or property lines as indicated on the drawings.

iii. Zones, Special Zones and special Construction sites outside of Construction Limits shall be designated by the local agency having jurisdiction.

c. Monitoring: Monitor noise levels of work operations to assure compliance with the noise limitations contained herein. Retain record of noise measurements for inspection by the Engineer. Promptly inform the Engineer of any complaints received from the public regarding noise. Describe the action proposed and the schedule for implementation and subsequently inform the Engineer of the results of the action.

d. Measurement Procedure:

i. Except where otherwise indicated, perform all noise measurements using the A-weight network and (slow) response of an instrument complying with the criteria for Type 2 General Purpose sound level meter as described in ANSI S1.4. Measure impulsive or impact noises with an impulse sound level meter complying with the criteria of IEC 179 for impulse sound level meters. As an alternative procedure, a type 2 General Purpose sound level meter on C-weighting and (fast) response may be used to estimate peak values of impulsive or impact noises. Transient meter indications of 125 dbC (fast) or higher will be considered as indications of impulsive noise levels of 140 db or greater.

ii. Measure noise level at buildings affected acoustically by the Contractor's operations at points between three feet and six feet from the building face to minimize the effect of reflections.

iii. Measure noise levels at points on the outer boundaries of Construction Limits or Special Construction Sites for noise emanating from within.

iv. Where more than one criteria of noise limits are applicable, use the more restrictive requirement for determining compliance.

e. Noise Restrictions:

i. Noise restrictions shall be in accordance with local ordinances.

B. Maintaining Flow of Sewers and Drains: The Contractor shall, at his own expense, provide for and maintain the flow of all sewers, drains, house or inlet connections, and all water courses which may be met during progress of the work. The Contractor shall not allow the contents of any sewer, drain, or house or inlet connection to flow into trenches. The Contractor shall, at his own expense, immediately remove from proximity of the work all offensive matter, using such precautions as are required by the Engineer.

1.11 HISTORICAL AND SCIENTIFIC SPECIMENS:

A. All articles of historical or scientific value, including coins, fossils, and articles of antiquity, which may be uncovered by Contractor during progress of the work, shall become the property of the Administration. Such findings shall be reported immediately to the Engineer who will determine method of removal, where necessary, and final disposition thereof.

1.12 SALVAGE MATERIALS AND EQUIPMENT:

A. The Contractor shall maintain adequate property control records for materials and equipment specified to be salvaged. Contractor shall be responsible for the adequate storage and protection of salvaged materials and equipment. The Contractor shall replace, at no cost to the Administration, salvage materials and equipment which are broken or damaged during the salvage operations as the result of the Contractor's negligence.

B. Salvage material not specified for reuse shall be the property of the Contractor and shall be removed from the site.

PART 2: PRODUCTS
NOT USED

PART 3: EXECUTION
NOT USED

PART 4: MEASUREMENT AND PAYMENT

4.01 TEMPORARY FACILITIES AND CONTROLS:

A. The Temporary Facilities and Controls work required under this Section will not be measured for payment, except as noted below.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.02 PROJECT IDENTIFICATION SIGNS:

A. Project Identification Signs required under this Section will not be measured for payment.

B. Project Identification Signs will not be paid for directly, but will be considered incidental to the Engineer's Field Office bid item.

END OF SECTION

SECTION 01522

ENGINEER'S OFFICE TYPE 2

PART 1 – GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes furnishing, cleaning and maintaining in good condition a suitable office at a location approved by the Engineer. The office shall be separated from any building used by the Contractor and shall be for the exclusive use of the Administration's personnel.

B. The office shall be served by municipal water and sewer facilities where available. If the facilities are not available, a neat sanitary toilet shall be provided services and maintained. Hand washing accommodations with a pressurized water system having a minimum pressure of 20 psi shall be provided. These facilities as described shall be for the exclusive use of State employees and shall meet the requirements of the State Department of Health and Mental Hygiene or other authorities having jurisdiction.

PART 2 – PRODUCTS
(NOT USED)

PART 3 – EXECUTION

3.01 ENGINEER'S FIELD OFFICE:

A. Provide a mobile unit or a building of 700 square feet, or more, of usable floor space. The Facility shall be located near the construction site. The unit or building hereinafter called the Engineer's field office shall be complete in place as specified and ready for occupancy by the Administration 30 days after Notice To Proceed and shall remain in place and functioning until 90 days after the completion of the Contract. Provide six parking spaces for the exclusive use of the Administration and their representatives in administering the Contract.

B. Provide the Engineer's field office with all the features specified herein conforming to the local building codes and having the specified basic features with any substitute materials subject to approval by the Administration.

C. Maintain and service the Engineer's field office until all records pertinent to each segment of the Contract have been completed. After which time, the facility becomes the property of the Contractor and is to be removed.

D. Obtain and apply all costs for hauling, building and connection permits to the field office. Provide the field office with new commercial quality materials. Provide other features as follows:

1. The field office may be a temporary or permanent type facility with adequate insulation, flooring, lighting, potable water, utility service, heating and air conditioning.

2. Provide one restroom in Facility complete with water closet and hot and cold water supply. Provide a lockable door on restroom.

3. Provide in the interior of the Facility at least two completely partitioned office rooms. These rooms shall be approximately 100 square feet with an interior doors. Provide a meeting room of approximately 250 square feet. Furnish the Administration at least three keys for each of the interior door locks.

E. Provide and maintain as a minimum the following furniture and equipment for the Facility:

1. Two offices type desk having at least two drawers on each side and minimum top dimensions of 30 inches by 72 inches.

2. Four desk chairs.

3. Ten comfortable, stackable chairs

4. One four-drawer fire resistant filing cabinet (D Label) equipped with lock.

5. One four-drawer cabinet with lock

6. One plan rack having a capacity of twelve holders for full size engineering drawing

7. Four utility tables, 30 inches high and having a top dimension not less than 30 inches by 72 inches.

8. One slant top drafting table approximately 40 inches high at the front edge and having a top dimension not less than 37 inches by 72 inches

9. One stool of proper height for drafting table

10. One closet, extending the full height from the floor to ceiling, measuring not less than 24 inches by 60 inches in plan, equipped with locks and at least two shelves

11. Utility cabinet with three adjustable shelves.

12. Two electric printing calculators with a minimum of eleven digits supplemented with an instruction manual

13. One Fire Extinguisher – dry chemical, multi-purpose ABC minimum size 10 pounds (4.54-kg), equipped with a visual air pressure gauge. The fire extinguisher shall be checked monthly for stored pressure, etc.; also checked and tagged by a licensed company annually and after each use.

14. First Aid Kit – one equivalent to 24 unit first aid kit meeting Title 29 Code of Federal Regulations 1926.50(d)2. The first aid kit shall be checked monthly and replenished to full complement

15. Office Telephones: Three office telephone lines, and four handsets with multi-line and intercom buttons, one separate fax line; one separate modem line (total of five lines), installation and monthly telephone charges shall be the responsibility of the Contractor

16. One telephone answering machine

    a. The answering machine shall be equipped with tapes having the capability to record for a period of at least 30 minutes. These machines shall be voice-activated beeper less and shall play back recorded messages without dial tones or pauses. The answering machines shall be capable of pre-recording an answering message up to 15 seconds in length.

    b. If the telephone answering machine becomes defective, or is stolen, or for any reason does not function as intended, it shall be replaced with equal or better replacement unit at the Contractor's expense. Any defective equipment shall be replaced within 8 hours after the Engineer notifies the Contractor

17. One telephone plain paper facsimile machine

    a. Shall meet and be compatible with CCITT Group Transmission standards (see specific line items for compatibility requirements)

b. Shall utilize public switched telephone networks and standard two- (2) wire leased through RJ11C jacks or similar devices

c. Shall transmit at 14,400 BPS or higher with automatic step down to compensate for phone line conditions

d. Shall transmit standard page 8½ x 11 inch at a speed of 20 seconds or less through a clean phone line, based on CCITT # 1 test chart

e. Shall have a minimum of two levels of resolution with contrast control:

i. Standard-200/96 lines

ii. Fine-200/96 lines

f. Self-test capability, provide activity reports and provide page headers, time and date

g. Shall use plain paper

h. Shall automatic document feeder tray (se specific requirements for each transceiver class)

i. Shall be supplied with handsets

j. Shall provide for automatic answer, receive and disconnect features

k. FCC registration number, ringer equivalence and connection circuitry shall be provided for each transceiver

l. Shall be equipped with speed dial feature for 20 numbers

m. Shall have a dedicated line separate from others

18. Cellular Telephone: Two portable cellular telephones for the exclusive use by the Administration. Provide installation and pay monthly charges for the duration of the Contract (Final Acceptance)

19. One free-standing type copier with:

a. Automatic feed

b. Twenty-five (25) copies per minute or better

c. Separated sorting capability

d. Minimum of two separate paper drawers one of which is for 11" x 17"

e. Printer paper of 20 pound weight with 84 brightness or better through life of contract in sizes 8½" x 11", 8½" x 14" and 11" x 17"

f. Toner cartridges recommended by the original equipment manufacturer through life of contract

20. One secretary type desk with stenotype chair

21. Microcomputer System and Accessories

a. Laptop Computer (Notebook):

i. 15 inch TFT Color Display or better

ii. Intel Core 2 Duo – 1.66GHz or faster Processor

iii. 1.0 GB RAM

iv. Integrated video Intel DVMT

v. 24X CD-RW or better

vi. 3.5 inch Disk Drive

vii. 80 GB Hard Drive or better

viii. Lithium-ion Battery and AC Pack

ix. USB Ports

x. 56 K Modem

xi. Carrying Case

xii. EZ Pad Pointing Device

b. Two Desktop microcomputer systems

i. Intel Core 2 Duo – 2.0 MB L2 Cache, 1.86 GHz, 1066 FSB or better

ii. 1 GB Dual Channel DDR2 SDRAM or better

iii. Integrated video Intel DVMT

iv. RAID level 1 array consisting of two 80 GB 7200 RPM Hard Drives (or better) and controller

v. Internal calendar/clock with battery backup

vi. A minimum of 1 parallel, 2 serial ports and 6 UBS 2.0 ports, 2 PS/2 ports

vii. Internal 40X CD-RW or better

viii. 3.5 inch Disk Drive

ix. Microsoft ps/2 intellimouse or equivalent

x. Integrated 10/100/1000 Ethernet adapter

xi. One internal 56K fax modem including all cables and terminations

xii. Flat panel active-matrix LCD monitor with a minimum screen size of 17 inches and a resolution of 768 x 1024 or better

xiii. PS/2 keyboard or equivalent

xiv. Uninterruptible Power Supply (UPS) with automatic voltage regulation, surge protection up to 1000 volt amps, modem/fax surge protection, 6 outlet minimum, and software

xv. Digital Subscriber Line (DSL) high speed internet access

c. Two HP (Hewlett Packard) or compatible laser printers, one with a sheet size to 8.5 x 14 inch with minimum resolution of 1200 x 1200 dpi (dots per inch) and one with a sheet size to 11 x 17 inch with a minimum resolution of 600 x 600 dpi, 25 ppm (pages per minute) and a minimum of 64 MB of RAM

d. One HP (Hewlett Packard) or compatible color ink jet printer with minimum resolution of 600 x 600 dpi (dots per inch), 15 ppm (pages per minute) color and a minimum of 8 MB of RAM

e. One Scanner with a minimum resolution of 800 dpi and a minimum page size of 11 x 17 inch. Scanner shall include all cables and software necessary for the production of portable document format (PDF) files

f. Included Software:

i. Windows Vista Business and NTFS installed

ii. Microsoft Office 2007 Professional installed

iii. McAfee Anti-Virus installed

iv. Symantec PC Anywhere installed

v. Adobe Acrobat Professional Version 8 installed

vi. Microsoft MSN premium internet software installed

Original disks containing the software and manuals shall be provided

g. Digital camera with 6 megapixels or greater resolution, minimum 3X optical zoom, minimum of two 512 MB digital film (flashcards) for camera and all necessary software/hardware to interface with the supplied PC's

h. Contractor, as needed, shall supply all diskettes and CD's

22. Maintenance for computers, printers, facsimile machine and copiers during the life of the contract

23. One "Army litter" type stretcher

24. Bottled water cooler with bottled water service

25. One refrigerator with a capacity of 5 cubic feet

F. Provide maintenance, supplies and services as follows:

1. Clean field office, parking area and access road daily, including complete janitorial services and supplies. Make any required repairs to the field office when requested by the Administration

2. Furnish all utilities including telephone service

3. A parking area, with sufficient space for six (6) MTA vehicles, shall be stabilized as directed by the Engineer in the area of the field office

4. During other than normal working hours, provide security measures and area protection equivalent to that used for the Contractor’s work site, shop and office

5. Daily cleaning service

6. Payment of all monthly service charges

G. Remove the field office and all furniture and equipment from the site at the time specified in Subsection 3.01 A. All materials, furniture and equipment shall become the property of the Contractor at the conclusion of the Contract.

H. Restore the field office site to the original condition or better.

PART 4 – MEASUREMENT AND PAYMENT

4.01 ENGINEER'S FIELD OFFICE, TYPE 2:

A. The work required under this Section will not be measured for payment

B. All costs in connection Engineer's Field Office, Type 2 will be paid for at the rate of 50 percent of the lump sum bid price for the first month and the remainder paid in equal monthly installments for the duration of the Contract.

END OF SECTION

SECTION 01550

MAINTENANCE OF TRAFFIC

PART 1 - GENERAL

1.01 DESCRIPTION:

The work specified in this Section includes furnishing, installing, maintaining and removing all temporary traffic control and protective devices required for maintaining pedestrian and/or vehicular traffic.

1.02 SUBMITTALS:

A. Contractor shall furnish its own traffic control plan to the Engineer for approval if its plan is different from that contained in the Contract Documents. The Staging Plans contained in the Contract Documents contain a minimum level of detail of protection required. The Contractor is responsible for maintaining pedestrian and/or vehicular traffic in accordance with Maryland Supplement to MUTCD, all applicable Local, State, and Federal laws, and as directed by the Engineer.

B. The Contractor shall submit the proposed location, sign material, and sign message for the temporary pedestrian/vehicular guide signs based on the criteria set forth in these specifications for review and approval. Temporary signs related to SHA Standard Temporary Traffic Control Typical Applications need not be included with this submittal.

C. Temporary Lighting System plan as described herein.

PART 2 - PRODUCTS

2.01 REFLECTORIZATION OF SIGNS AND CHANNELIZING DEVICES: Reflectorization of signs and channelizing devices shall conform to Section 950.03 Reflectorization of Signs and Channelizing Devices of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.02 SHEET ALUMINUM SIGN PANELS:

D. Sheet aluminum signs shall conform to SECTION 02890, SIGNS, PART 2.02.

E. Sign supports shall conform to Appendix J – Section 104.08 Temporary Traffic Signs (TTS) of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.03 DRUMS FOR MAINTENANCE OF TRAFFIC (MOT): Drums for MOT shall conform to Appendix J – Section 104.12 Drums for Maintenance of Traffic of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.04 BARRICADES FOR MOT: Barricades for MOT shall conform to Appendix J – Section 104.13 Barricades for Maintenance of Traffic of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.05 FLAGGER: Flaggers shall conform to Appendix J – Section 104.15 Flagger of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.06 TEMPORARY CONCRETE TRAFFIC CONTROL BARRIER FOR MOT: Temporary Concrete Traffic Control Barrier for MOT shall conform to Appendix J – Section 104.04 Temporary Concrete Traffic Barrier (TCB) for Maintenance of Traffic of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.07 TEMPORARY PAVEMENT MARKING PAINT LINES: Temporary Pavement Marking Paint Lines shall conform to Appendix J – Section 104.11 Temporary Pavement Markings Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.08 TEMPORARY ORANGE CONSTRUCTION FENCE: Temporary Orange Construction Fence shall conform to Section 104.20 of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

PART 3 - EXECUTION

3.01 MAINTENANCE OF TRAFFIC:

A. The Contractor shall furnish, install, maintain, and remove when no longer required, all traffic control and protective devices required to complete all work as shown on the Plans. Traffic control and protective devices shall include temporary directional, temporary warning signs, detour signs, temporary barricades, and guardrails; temporary lighting, overhead warning lights, and flashing lights; installation of temporary pavement markings, removal of permanent and temporary pavement markings; and the services of qualified flagmen. The Contractor shall maintain constant communications with Charles County, Maryland State Highway Administration – District 5, and other local agencies regarding his operations in maintaining and controlling traffic.

B. Traffic Plan: The Contract Drawings include a plan for maintaining traffic along MD 925 during construction. The Contractor may develop its own traffic plan for approval; however, the Contractor's traffic plan shall be submitted in writing to the Engineer at least 21 days prior to commencing any work. Any changes to the existing traffic control plan shall be submitted to the Engineer in writing at least five (5) working days prior to implementing the change. Work shall not proceed until written Engineer's approval is issued.

C. Temporary Traffic Signs:

1. Contractor shall maintain sign faces free of tape, tape reside, or any other foreign matter, and shall remove any advertisements from signs and supports. Supplemental signs shall not cover any part of the face of the primary sign. Signs shall not be obscured by weeds, shrubs, trees, construction equipment, materials, personal vehicles, or any other obstruction.

2. All temporary signing shall conform to Part 6F of the Manual on Uniform Traffic Control Devices (MUTCD). All temporary signing shall be 48” x 48” unless otherwise specified and shall be reflectorized. Sign shall be mounted on two 4” x 4” wood posts at a minimum height of 7 feet from existing ground line to the bottom of the sign. The tops of the wood posts shall not protrude more than 3” beyond the nearest edge of the sign. Wood posts shall be placed a minimum of 4’ into the ground for 4” x 4” wood posts. Additional bracing of signs is prohibited.

3. Signs mounted on portable supports for temporary conditions shall be mounted so the bottom of the signs shall not be less than 1-foot above the roadway pavement elevation. Higher mountings are desirable. Portable sign supports shall be self-erecting, and approved by Maryland State Highway Administration’s Office of Traffic and Safety.

4. Temporary traffic signs shall not be installed or displayed until inspected and approved by the Engineer. Signs shall be properly maintained, remain in place only as needed, and be immediately removed thereafter. When a sign is not indicative of actual conditions such as during periods of partial shutdown or extended periods of no work being performed, the Contractor shall remove the sign, turn it away from traffic, or completely cover it with an opaque material that is approved by the Engineer.

5. 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 the property of the Contractor.

6. For the purposes of bidding only, the maximum square footage of temporary pedestrian/vehicular guide signs to be used shall be 125.

7. Portable Variable Message Signs (PVMS) shall be installed for a minimum of two weeks in each approaching direction or as directed by the Engineer.

D. Traffic Drums:

1. The Contractor shall furnish and place drums as warning or channelizing devices to control or maintain traffic. The drums shall be located as specified in the Contract Documents or as directed by the Engineer.

2. Drums shall be adequately weighted with bags of sand to keep them from moving. These bags, with no other attachments, shall rest on the base of the drum. The drums shall be maintained in like-new condition.

E. Temporary Concrete Traffic Barrier: The Contractor shall furnish, place, reset, and remove temporary traffic barrier for use at location specified in the Contract Documents or as directed by the Engineer. Temporary traffic barrier shall conform to details in the Contract Documents.

F. Barricades for Maintenance of Traffic:

1. The Contractor shall furnish, place, and remove type III barricade for use at locations specified in the Contractor Documents or as directed by the Engineer. The barricade reflective sheeting and its installation must be approved by the Engineer.

2. Barricade shall conform to the minimum requirements as specified in Section 6F of the MUTCD, unless otherwise specified in the Contract Documents.

G. Temporary Pavement Marking Paint lines for temporary parking striping shall be 5 inch solid white, as indicated on the plans, unless otherwise directed by the engineer.

3.02 CONSTRUCTION OPERATIONS UNDER TRAFFIC:

A. General: Construction equipment is defined for the purpose of this article as all types of equipment, vehicles, and tools used in connection with construction work. The term workmen includes every person or firm performing work in or adjacent to public streets.

B. Construction Equipment: When in traffic lanes, all vehicles and equipment shall be operated at normal traffic speeds. If this is not practicable, slow-moving vehicles shall conform to Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD). Construction equipment shall not be parked in any lane intended for use by normal traffic. Equipment parked or stored at the work site shall be behind a guardrail, barrier, curb, or other protective device.

C. One-Way Traffic: No construction equipment shall be operated on traffic lanes, except in the designated direction of travel for respective lanes.

D. Construction Operations:

1. No construction work involving occupancy of traffic lanes shall be performed during adverse weather conditions or adverse road conditions except when so authorized by the Engineer and traffic shall be properly safeguarded by the use of flashers and lights in addition to the signs and other markings prescribed herein. During these periods, no construction

deliveries shall take place over a travel lane or immediately adjacent thereto.

2. When traffic conditions dictate, the Engineer may require the Contractor to modify his work operation for such length of time as required to alleviate the hazardous traffic conditions.

E. Equipment Travel:

1. No construction equipment other than that designed and used for general highway transportation shall be moved on streets during hours of darkness, periods of adverse weather conditions which reduce normal visibility, or when the roadway is covered with snow or ice.

2. Any construction equipment or material required in construction which exceeds the maximum vehicle dimensions enumerated in Title 24 (Motor Vehicle Code), Annotated Code of the State of Maryland, shall be moved only in accordance with the established State and local regulations. No such oversized load shall be moved over streets of the local jurisdictional agency without first obtaining the approval of the appropriate agency.

F. Crossing Traffic Lanes: When crossing open traffic lanes by construction equipment is necessary, such crossing shall be safeguarded with flagmen.

G. Flaggers: Provide qualified flaggers thoroughly instructed in flagging procedures as required to safeguard and maintain vehicle and pedestrian traffic. All flaggers shall perform their duties courteously and in such manner as will ensure the safety and convenience of the traffic within the limits of the guarded area. Traffic shall not be flagged to a stop unless such is necessary for safety. Flaggers shall be supplied with flares for adverse weather conditions and with red flag not less than 24 inches square for slowing or directing traffic to another lane. Flaggers shall wear fluorescent orange safety vests and yellow hard hats.

H. Removal of Traffic Control Devices: All temporary signs, barricades, barrier curbs, drums, and cones used for safeguarding traffic in connection with construction work shall be removed at the close of the day, unless the state of work is such that warning devices are still needed and are adapted for night closing. In such cases, notify the Engineer in advance of the normal quitting time that he may review the status of the work and request additional safety measures as he deems necessary.

I. Storage: No material shall be stored on any lane intended for traffic use.

J. Maintenance of Accessible Features: Throughout construction, the Contractor will maintain the existing level of ADAAG compliant accessibility of walkways and platforms. During any activities that may block an accessible pedestrian access route or reduce it to less than 36 inches, an alternative compliant path is to be provided in the interim.

3.03 TEMPORARY LIGHTING:

A. The Contractor shall maintain all existing lighting. In addition, where noted on the Plans, the Contractor shall design and install a temporary lighting system for maintenance of pedestrian traffic. The Contractor shall submit plans of the temporary lighting system for review and approval by the Engineer. The temporary lighting system shall be in place for the duration of time that the pedestrian traffic is detoured. Upon completion of the work requiring the pedestrian detour, the Contractor shall remove all temporary lighting supports, wires, and related appurtenances.

3.04 WORK HOUR RESTRICTIONS:

A. The work hour restrictions for this Contract are Monday through Friday, 7:00 PM to 7:00 AM and all day Saturday and Sunday. No work shall be permitted during this time period.

1. If the Contractor desires work items to be performed during the restricted work hours, the request shall be submitted to the Engineer for approval in writing at least 72 hours in advance of the commencement of the work.

B. SHA Lane Closures on MD 925

1. Lane closure under flagging operation along MD 925 shall be permitted Sunday through Saturday between the hours of 8:00 AM and 4:00 PM.

2. When the lane closure is in effect, work shall begin within one (1) hour after the lane is closed. Any delay greater than one (1) hour with no work in progress shall require the Contractor to remove the lane closure at no additional cost to the Administration.

3. Any request from the Contractor to modify the work restrictions along MD 925 shall require written approval from the Engineer at least 72 hours prior to implementing the change. The Contractor shall submit a copy of the original work restrictions with the written request.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MAINTENANCE OF TRAFFIC:

A. Maintenance of Traffic will not be measured for payment.

B. Maintenance of Traffic will be paid for at the lump sum bid price, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified. The Bid Price for this item shall include all items of work for Maintenance of Traffic, including, but not limited to, Drums for Maintenance of Traffic, Flagging, Type III Barricades for Maintenance of Traffic, Temporary Traffic Signs, Temporary

Lighting (designing, installation, operation, removal), Precast Temporary 32 Inch F Shape Concrete Traffic Barrier, and Portable Variable Message Signs (PVMS).

C. No additional compensation will be made for the work activities performed during hours included under Work Hour Restrictions.

4.02 TEMPORARY ORANGE CONSTRUCTION FENCE:

A. Temporary Orange Construction Fence will be measured per linear foot complete in place and accepted.

B. Temporary Orange Construction Fence will be paid for at the contract unit price bid per linear foot, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

END OF SECTION

SECTION 01570

ENVIRONMENTAL PROTECTION

PART 1: GENERAL

1.01 DESCRIPTION:

A. Refer to General Provisions Section GP-7. This section specifies the requirements for environmental protection and stewardship that pertain to, but are not limited to the following environmental topics:

1. Waste Handling
2. Stormwater Management
3. Sanitary Sewer Discharge
4. Air Quality Management, See SECTION 01500
5. Construction Materials and Storage
6. Spill Prevention and Management
7. Special Hazardous Materials
8. Equipment Decommissioning
9. Contaminated Soils and Groundwater
10. Underground Storage Tanks (UST)
11. Natural Resources
12. Wetland Rectification
13. Historical, Archeological, and Cultural Resources

C. The Maryland Transit Administration (MTA) operates in accordance with guidance set forth in their Environmental Policy and an Environmental Management System (EMS) that meets the International Organization for Standardization's (ISO) standard for Environmental Management Systems (ISO 14001). The MTA's EMS prevents adverse environmental impacts by instituting a structured approach to environmental protection and stewardship in daily operations, including those of MTA's contractors and suppliers.

D. The following information is supplied to contractors and suppliers who perform work for the MTA and is intended to make them aware of the EMS and to ensure conformance to the MTA's Environmental Policy and applicable EMS procedures and instructions. Conformance with the Environmental Policy and all requirements noted in this document is expected of all those persons working for or on behalf of the MTA which includes contractors, subcontractors, suppliers and their employees at a job site.

E. Failure to follow these requirements can result in penalties or work stoppage which will be determined and controlled by the MTA Construction Resident Engineer.

F. Contact the MTA Environmental Manager through the Resident Engineer with any questions regarding the Environmental Policy and/or any other environmental related documents.

A. GENERAL REQUIREMENTS

A. General Requirement - MTA contractors, subcontractors, suppliers and their employees will minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work must be protected during the entire duration of this contract. Any delays resulting from failure to comply with environmental laws and regulations will be the Contractor's responsibility.

B. Pollution Prevention - Contractors/suppliers are responsible for preventing pollution of the air, water and land, and for the proper disposition of waste generated by their activities. The following guidelines provide specific information to assist contractors/suppliers with this requirement, but these guidelines do not take the place of federal, state and local regulations. The contractor / supplier must comply with all federal, state, and local regulations.

C. Environmental Regulation Compliance - In addition to preventing pollution, contractors/suppliers are responsible for their own compliance with all applicable federal, state and local environmental regulations pertaining to environmental protection.

D. Excavation Control - Contractors / Suppliers will need to complete the Contractor Environmental Checklist (See section 1.03) to ensure no environmental risk is posed by excavation activities. Excavation may require permits from the Maryland Department of the Environment (MDE).

E. Community Awareness - Contractors / Suppliers will be sensitive to the effects of noise, odor, light, and traffic movement to the local community.

F. Good Housekeeping - Contractors / Suppliers are responsible for keeping the site clean and orderly. Site cleanliness should be evaluated daily and all trash and debris should be properly disposed of by the close-of-business each day.

G. Training – Contractors / Suppliers employees shall be trained on applicable federal, state, and local environmental regulations and standards. Contractors / Suppliers will provide copies of employee training certificates per the contract requirements or upon request from the MTA Environmental Manager or Site Resident Engineer. All documents will be submitted to the Resident Engineer for processing.

H. Compliance by subcontractors with the provisions of this and various other sections of these specifications is the responsibility of the Contractor.

I. Use of equipment from which factory-installed antipollution and noise control devices are removed or rendered ineffective, either intentionally or through lack of proper maintenance is prohibited.

B. **SUBMITTALS**

A. Submit the following for approval with additional requirements as specified by each.

1. Contractor Environmental Checklist – The contractor will submit the "Environmental Checklist" no more than 15 days after the issuance of the NTP. No field work will commence before the checklist has been completed and approved. The purpose of this form is to establish whether or not a particular activity poses a substantial environmental risk that needs specific additional controls. The MTA Environmental Manager will review this checklist and determine whether or not the proposed project activities pose a substantial environmental risk. If the expected environmental risk needs no further controls, the MTA Environmental Manager will approve the checklist noting that "no further action" is needed and the checklist will be returned to the MTA Resident Engineer no later than 14 days after receipt. If the MTA Environmental Manager determines that additional controls are needed, the "Contractor Environmental Activity Statement" will be required. This form will be provided to the Contractor and will be returned to the Environmental Manager. The Environmental Manager will coordinate subsequent activity with the MTA Resident Engineer.

2. Contractor Environmental Activity Statement - This form is used when the MTA Environmental Manager determines that a contractor/supplier's activities pose a substantial risk of an adverse environmental impact such that additional controls are needed. Upon request, contractors are to submit a written statement outlining their activities and procedures for minimizing and managing the actual or potential environmental impacts of their operations using the Contractor Environmental Activity Statement form provided. The Activity Statement must address potential risks to the environment, contractors, employees and other personnel associated with MTA project activities and proposed measures for minimizing these risks. This form will only be required of the successful bidder and will be completed no more than 10 days after the "Environmental Checklist" has been submitted. Upon approval by the MTA Environmental Manager in coordination with the Resident Engineer, the contractor/supplier may commence work on the site.

C. WASTE HANDLING

A. Proper Waste Handling is Contractor Responsibility - All waste disposal (i.e., construction debris, scrap metal, municipal solid waste, non-hazardous waste, hazardous waste, etc.) will be the responsibility of the contractor. Labeling, storage and disposal of all waste material must follow all applicable Federal and State regulations. Do not dump debris or rubbish of any kind into or allow to deposit into a waterway, onto adjacent banks, or onto roadways. All waste disposal routes will be approved by the EM through the Resident Engineer. Hazardous waste manifests will only be approved and signed by members of the MTA Environmental group.

B. Pick up trash and place in containers. Trash containers will be emptied on a regular schedule. Conduct handling and disposal to prevent contamination of the site and other areas. Do not dispose of in wetlands or burn waste materials on the site. Upon project completion, site should be restored to a clean and neat appearance.

C. Transport all waste off the site to an approved disposal site and dispose of it in a manner that complies with Federal, State, and local requirements. Approval of the disposal site is required by the Resident Engineer along with the MTA Environmental Manager depending on the waste type.

D. Waste haulers must obtain a permit or license prior to transporting any material off the site. The Contractor shall provide and maintain containers and dumpsters or haul away material to be disposed of. The Contractor shall not use adjacent business's dumpsters.

E. Hazardous Waste Notification - The contractor must notify the MTA Environmental Manager through the MTA Resident Engineer of all hazardous waste streams to be generated before a waste is generated and collected on site. The MTA Environmental Manager will approve the storage location of all generated hazardous waste, maximum quantities and the container type(s) used. The hazardous waste manifest will be approved by the MTA Environmental Manager. Site Hazardous Waste ID numbers will be coordinated with the MTA Environmental Manager. Hazardous waste manifests will be signed by the Environmental group of the OSQARM. Copies of hazardous waste manifests will be provided through the Resident Engineer to the Environmental Manager.

F. Waste Container Labeling - Containers (such as drums) must be labeled with the contents of the drum (or other container) and the responsible contractor's name and contact information. NO UNLABELED CONTAINERS ARE PERMITTED ON SITE.

G. Waste Documentation - Shipping information and paperwork (MSDS, Waste Profiles, Bills of Lading, Manifests and inventory) must be provided upon request to MTA.

H. Waste from demolition or other work at MTA that is deemed recyclable must be properly managed and conveyed to an approved facility. Recycled material totals and manifest/weigh bills must be provided to the Environmental Manager through the Resident Engineer.

D. STORMWATER MANAGEMENT

A. Erosion and Sedimentation Permit – Contractor must obtain a permit for any land disturbance activities that disturbs 5,000 square feet or more of land or results in 100 cubic yards or more of earth movement, if not included in the bid package.

B. An Erosion and Sedimentation Control Plan and Storm Water Management Plan may also be required in the contract documents. Stormwater management on MTA sites must adhere to all pertinent Federal, State, and local regulations. The most stringent local requirement should be followed.

C. Storm Water Control Measures Required – If not already included in the bid package, it is the contractor's responsibility to install storm water control measures such as silt fences, straw bales, etc. to control the solids entering storm drains from erosion or other processes, if necessary. This requirement will also appear in the contract document as required and is not intended to be a duplication of effort.

D. No Solids into Storm Drains - Solids must be prevented from entering storm drains. Roadways and outside areas must be kept clean. Compliance with the CLEAN WATER ACT is mandatory.

E. No Co-Mingling of Process Materials - No process materials or any other sources of water pollutant shall be co-mingled with storm water.

F. Cover Dirt Piles - All dirt piles must be covered to prevent solids from entering storm drains unless otherwise directed. Covering must conform to MDE requirements.

G. Prevent Vehicle Fluids from Entering Storm Water - Vehicle maintenance shall not be performed near storm drains unless provisions have been made to contain any spills of vehicle fluids, including oil, gasoline and antifreeze.

H. Inspections required by the stormwater permit must be completed and a copy forwarded through the Resident Engineer to the Environmental Manager.

1.05 SANITARY SEWER DISCHARGE

A. No Discharge to Sanitary Sewers without Approval - Discharge of material other than sanitary sewage to ANY sanitary sewer system is prohibited without the prior consent of the MTA Environmental Manager. Handling of material discharge will be discussed and agreed in the Contractor Activity Statement prior to the NTP.

1.06 AIR QUALITY MANAGEMENT

A. Dust Control - Contractors will provide adequate control of fugitive dust emissions during all operations and activities. Refer to Section 01500.

B. Other Emissions - Contractors/Suppliers must comply with all Clean Air Act requirements for emissions from their activities. Other emissions such as purposeful venting of CFC-containing refrigerants are strictly prohibited.

C. Noise – Contractor will provide adequate noise control and monitoring devices. Refer to Section 01500 of the contract document.

1.07 CONSTRUCTION MATERIALS AND STORAGE

A. MSDS Knowledge Requirement - Contractors will not transport hazardous chemicals onto the project site without having prior approval of the associated Material Safety Data Sheets (MSDS), from the MTA Office of Safety, Quality Assurance and Risk Management. These materials may include, but are not limited to, sealers, adhesives, paints, coatings, fuels, oils, acids and caustics. All sizes of containers require review and approval before their use on site prior to NTP.

B. MSDS Availability Requirement - The contractor will have available the Material Safety Data Sheets (MSDS) for all chemical products in use at all times that their employees are working with on site. MSDS's will be made available upon request.

C. MTA Consent Required for Material Storage - There will be no storage of any materials and supplies on MTA property without the consent of the MTA Resident Engineer. Areas for material storage will be selected and safeguards put in place to prevent stormwater runoff contamination.

D. Secondary Containment Requirement - Approved outside storage areas for chemical materials must be equipped with non-earthen secondary containment equal to 110% of the capacity of the largest container by the contractor.

E. Container Type and Labeling Requirement - The contractor will ensure that all material containers owned or managed by the contractor are compatible with the material stored in the container and will be properly labeled in accordance with the OSHA HAZARD COMMUNICATION STANDARD and DOT standards (i.e., contents, primary hazard).

F. Keep Chemical Containers Closed - The contractor will ensure that chemical containers are closed except when in use.

G. Spill Kit Requirement - Contractors will maintain spill kits to contain and clean up small spills generated by their employees or from their materials. Spill kits

will be kept on site and will be easily accessible during an emergency. Spill kits will be approved by the Resident Engineer.

1.08 SPILL PREVENTION AND MANAGEMENT

A. Prevention - Contractors will provide adequate spill/release prevention (such as secondary containment) for all bulk materials. Conduct fueling and lubricating of equipment and motor vehicles onsite in a manner that prevents spills and evaporation. Dispose of lubricants in accordance with approved procedures meeting state, and local regulations. For oil and hazardous material spills that violate state, and local regulations, notify immediately the Resident Engineer.

B. Spill Response - THE CONTRACTOR WILL IMMEDIATELY REPORT ALL SPILLS OR RELEASES OF MATERIALS to the MTA Resident Engineer who will in turn notify the ENVIRONMENTAL MANAGER. Contractors will complete spill mitigation and document the clean up with field notes and photos, until the spill incident is deemed closed by the MTA Environmental Manager.

1.09 SPECIAL HAZARD MATERIALS

A. Polychlorinated Biphenyls (PCB): (Immediately report any PCB chemical substance, mixture, equipment, container, sealant, coating or dust control agent, found stored within the project area to the Resident Engineer in writing and stop work in the area.)

1. Suspected PCB Notification - If a material is suspected to have PCB contamination, the MTA Environmental Manager is to be notified via the Resident Engineer. Contractors/suppliers must manage materials and waste that contains PCB in accordance with the Toxic Substances Control Act (TSCA). Do not use PCB chemical substance, mixture, equipment, container, sealant, coating, or dust control agent except in accordance with all provisions of the Maryland Department of Health and Mental Hygiene as interpreted by the rules and regulations of 40 CFR 761.

2. MTA Environmental Manager Coordinates PCB Removal - All PCB removal conducted by the contractor/supplier shall be coordinated with the MTA Environmental Manager through the MTA Resident Engineer.

3. Lighting Ballast Disposal - Any lighting ballast that does not state that it is a non-PCB containing ballast must be disposed of as recycled PCB containing ballast.

B. Asbestos Containing Material (ACM)

1. Notification Requirement – Prior to initiating any field work, the contractor will evaluate all demolition and renovation work for the presence of ACM and ensure that this assessment is conducted by a Qualified Person (QP). A QP as defined in 29 CFR 1926.32(f), is a person

capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure and has the authority to take prompt corrective measures to eliminate them. If the contractor identifies ACM during preliminary evaluation of work, they must inform the Resident Engineer who will contact the MTA Environmental Manager.

2. MTA Asbestos Management Procedure - All asbestos removal and disposal activities will be conducted in accordance with procedures approved by the MTA Environmental Manager. Approval for asbestos work will be prior to NTP for Ancillary Contract work and prior to initiating field work on Bid Contracts. In the event the Contractor, during the course of the work on the project, encounters the presence of asbestos or any ACM, PCBs or any other hazardous materials as recognized by the Maryland State Department of Health and Mental Hygiene, promptly notify the Resident Engineer, and BGE/CPSGI if located on their property. Do not perform any work pertinent to the asbestos or hazardous material prior to receipt of special instructions from the Administration through the Engineer. Any delay in the progress of the work as a result of encountering either asbestos or hazardous materials on the project will be mitigated by the Administration. Within 24 hours of this notification to the Administration through the Resident Engineer of the encountering asbestos or hazardous materials, the Contractor will meet with the Resident Engineer to re-plan and work around the affected area. The Administration will provide the special instructions without delay and with the approval of the MTA Environmental Manager, authorizing work to progress.

3. Compliance with Regulations - Contractors/suppliers engaged in activities that involve ACM shall comply with 29 CFR 1926.1101, 29 CFR 1910.1001 (and related Maryland regulations) as regulated by the Maryland Department of the Environment (MDE).

C. Lead

1. Lead Testing Requirement - Contractors are responsible for testing for the presence of lead based paints when working or welding on building or building structural steel. Testing will be done by an approved lab as directed by the MTA Environmental Manager. This testing will be conducted prior to work and coordinated through the MTA Resident Engineer. Test results and chain of custodies will be supplied to MTA.

2. MTA Lead Management Procedure - All lead removal and disposal activities will be conducted in accordance with procedures approved by the MTA Environmental Manager and the applicable OSHA Lead Standard for the specific project activities.

3. Compliance with Regulations - Contractors/suppliers engaged in activities that involve lead shall comply with 29 CFR 1910.25 (the general industry

lead standard) and, for construction activities 29 CFR 1926.62 (in conformance with the requirements of the Maryland Occupation Safety and Health).

D. Refrigerants (CFCs)

1. Training Requirement - Contractors will provide copies of employee training certificates to the Resident Engineer for transmittal to the MTA Environmental Manager upon request.

2. No CFC Venting - Intentional venting of CFCs to the atmosphere is strictly prohibited. Records of recycling shall be maintained for removed CFC's and provided to MTA Environmental group through the Resident Engineer.

1.10 EQUIPMENT DECOMMISSIONING

A. Inspection Requirement - All equipment will be thoroughly inspected by the contractor for fluids and other hazardous materials prior to removal.

B. Fluids and Hazardous Material Management Requirement - All fluids and other hazardous materials in the equipment will be removed prior to decommissioning and disposal of any waste generated will be handled in accordance with local, State and Federal regulations.

1.11 CONTAMINATED SOILS AND GROUNDWATER

A. If the contractor encounters contaminated soils or groundwater during site excavations, the contractor must stop excavation and notify the Resident Engineer. The Resident Engineer will notify the Environmental Manager. The MTA will notify all pertinent regulatory agencies.

B. No contaminated soil or groundwater will be removed from the site until the contractor has had the material sampled, analyzed, and characterized by an approved testing laboratory. The Environmental Manager, through the Resident Engineer, will provide the contractor with a list of approved laboratories. Following characterization, the contractor will submit the results to the Environmental Manager through the Resident Engineer. Based upon the test results, the Environmental Manager will determine a suitable and approved disposal facility for the material. It is the contractor's responsibility to arrange for transport of the contaminated soil to the facility and submission of waste manifests to the Environmental Manager through the Resident Engineer.

C. The contractor will coordinate with the Resident Engineer and Environmental Manager to stockpile the material on site prior to disposal. The stockpile will be prepared to mitigate contamination to groundwater, loss off-site, or to any storm drains.

D. Contaminated material contains one or more contaminants from an unintentional or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of a hazardous substance, hazardous waste, pollutant, or naturally occurring contaminant at a concentration which fails to satisfy any applicable remediation standard.

E. Soils are considered hazardous and thus contaminated when the following criteria are met and must be managed according to applicable regulations:

1. Soils test positive for characteristics of a hazardous waste defined at Title 40 CFR Part 261 Subpart C 261.21-261.24.

2. Soil contains a listed waste as per 40 CFR 261 Subpart D 261.31-261.33.

3. Soil is a mixture of a solid waste (non-hazardous) and one or more hazardous wastes listed in 40 CFR 261 Subpart D 261.31-261.33.

4. Soil and Groundwater that have constituents that exceed the Maryland Residential and /or Non-residential reuse standards are considered contaminated. These standards are provided in the latest edition of the Maryland Department of Environment's Cleanup Standards for Soil and Groundwater. These contaminated soils and groundwater will be disposed of with the coordination and approval of the MTA's Environmental Manager in cooperation with the Resident Engineer.

1.12 UNDERGROUND STORAGE TANKS

A. If the contractor encounters an underground storage tank (UST) during site excavations, the contractor must stop excavation and notify the Resident Engineer. The Resident Engineer will notify the Environmental Manager. The MTA will notify all pertinent regulatory agencies.

1.13 NATURAL RESOURCES (AIR, WATER, AND LAND)

A. General: It is intended that the natural resources within the project boundaries and outside the limits of permanent work performed be preserved in their existing condition or be restored to an equivalent of the existing condition, as approved by the Engineer upon completion of the work.

B. Land Resources:

1. Except in areas indicated to be cleared, do not remove, cut, deface, injure, or destroy trees, shrubs, and vegetation without special permission from the Engineer. Do not fasten or attach ropes, cables, or guys to any existing nearby trees for anchorage.

2. The use of herbicides is not permitted unless otherwise specified.

3. If not already included in the bid documents, submit a plan for protecting existing trees and vegetation to remain and that could be injured, bruised, defaced, and otherwise damaged by construction operations.

4. The contractor needs to adhere to State and Local tree/forest protection and mitigation measures, whichever is more stringent. At a minimum, the contractor must abide by the MD Reforestation Law and the Roadside Tree Law.

5. Repair and restoration: All trees and other landscape features scarred or damaged by the Contractors equipment and operations shall be repaired and restored to their original condition. Submit for the Engineer approval the repair and restoration plan prior to its execution. The repair and restoration plan shall be prepared in accordance with all applicable policies and procedures of the MDE and ACOE.

6. Construction facilities: The location of the Contractor's staging area, storage area and other construction buildings on public or privately owned property required temporarily in the performance of the Work, if not shown on the Contract Documents require approval of the Resident Engineer.

B. Water Resources:

1. At all times, take measures to prevent oil or other hazardous substances from entering the ground, drainage areas, and local bodies of water.

2. Protection of Existing Wetlands and Watercourses:

a. Plan, schedule, and undertake work in a manner that will ensure the protection and preservation of existing wetlands and watercourses.

b. No construction activities should occur on the banks or within the channels of these waterways or within wetlands or their buffers without specific permit coverage provided by the USACE and MDE. This includes activities such as clearing vegetation from stream banks, placing culverts or temporary creek crossings, channelizing or straightening streams, filling wetlands with soil, or placing dams or sediment barriers across streams.

c. Install Orange Plastic Fence as specified in SECTION 01500 TEMPORARY FACILITIES AND CONTROLS to outside the perimeter of all wetlands in the work area.

3. Remove temporary "permitted" culverts, fords or bridge structures, if used; upon completion of the project and repair the area in conformance with its original condition and as specified herein.

4. Flood Plain- Management: Design and undertake work that may involve floodplains in full compliance with the National Flood Insurance Act of 1968, as amended (42 U.S.C. 4001 et seq.) and the Flood Disaster Protection Act of 1973 (P.L. 93-234, 87 Stat. 975). Executive Order 11988 (Floodplain Management) to be accommodated in all pertinent work through compliance with the DOT implementation plan as defined in FR 27148 (June 22, 1978).

5. Maryland's Chesapeake Bay Critical Area Act: regulates activities conducted within 1,000 feet of tidal waters. The contractor is responsible for adhering to applicable State and Local regulations, whichever is more stringent, pertaining to development within the Chesapeake Bay Critical Area.

C. Fish and Wildlife Resources

1. The contractor shall not alter water flows or otherwise disturb native habitat near or adjacent to the project construction area.

2. The contractor shall follow all applicable Federal, State, and local regulations and requirements pertaining to fish and wildlife resource protection and any restrictions or provisions that are provided in the bid documents.

3. The contractor shall adhere to all "time-of-year" restrictions for in-stream work as defined in the project bid documents or per the pertinent Maryland regulations.

1.14 WETLAND RECTIFICATION

A. The contractor shall not disturb wetlands unless specifically required by the contract documents.

B. If wetlands are disturbed during development, the contractor shall develop a rectification plan for submittal to the Maryland Department of the Environment (MDE) and Chesapeake Bay Critical Areas Commission (CBCA).

C. The plan shall provide for wetland functions to be rectified by planting locally indigenous species, as specified in the MDE rectification standards.

D. Maintenance

1. Rectified areas shall be managed to allow for the reversion of wetland acreage and function.

2. Rectified areas shall not be mowed, chemically treated, or otherwise manipulated so as to prevent re-generation of previous site conditions.

1.15 HISTORICAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

A. Do not use in connection with this Contract, for storage, as a staging area, or as a preparation site, any cultural resource facility, building, site, or cleared area that is, as of the date of this Contract, on or eligible for listing on the National Register of Historic Places (16 U.S.C., paragraph 470a) or listed by the Maryland Historic Trust, without the prior approval of the Engineer.

B. If the contractor identifies potential "Cultural Resources" during the project activities, they are to stop work and contact the Resident Engineer. Cultural resources may include districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, or culture

PART 2: PRODUCTS

NOT USED

PART 3: EXECUTION

3.01 CONTRACTOR ENVIRONMENTAL CHECKLIST

MARYLAND TRANSIT ADMINISTRATION

ENVIRONMENTAL MANAGEMENT SYSTEM
CONTRACTOR ENVIRONMENTAL CHECKLIST

PROJECT TITLE:			
MTA PROJECT MAN./RE			
BID / RFP #:		P.O. #:	

To be completed by the Contractor Project Manager for the contracted work or service to be performed.

Will the contracted work or service include any of the following activities?

GENERAL CONTRACTOR ACTIVITIES			
Land Disturbance (Excavation, Grading, etc.)(Wetlands,Streams)	☐ Yes	☐ No	
Construction (Building / Road / Parking Lot, etc.)	☐ Yes	☐ No	
Demolition (Building / Facility, etc.)/Asbestos	☐ Yes	☐ No	
Paving (Impervious - e.g., asphalt, concrete, etc.)	☐ Yes	☐ No	
Heavy Equip Use (Excavator, Dozer, Fork Lift, etc.)	☐ Yes	☐ No	
Blasting, Rock Crushing	☐ Yes	☐ No	
Surface Preparation / Treatments (floors, roofs, walls)	☐ Yes	☐ No	
Painting / Paint Removal (Lead)	☐ Yes	☐ No	
Sandblasting / Hydroblasting	☐ Yes	☐ No	
Welding, Cutting, Soldering	☐ Yes	☐ No	
HVAC or CFC/PCB	☐ Yes	☐ No	
Bulk Fuel / Chemical Storage or Transfer	☐ Yes	☐ No	
Use of Chemicals (solvents, caustics, acids, oils, etc.)	☐ Yes	☐ No	
Purging/Repair of Distribution Lines (fuel, oil, solvents etc.)	☐ Yes	☐ No	
Use of Herbicides, Pesticides, or Insecticides	☐ Yes	☐ No	
Well Drilling	☐ Yes	☐ No	
Discharge to Storm Drains	☐ Yes	☐ No	
Discharge to Sanitary Sewer	☐ Yes	☐ No	
Solid Waste Generation / Disposal (soil, concrete, materials, etc.)	☐ Yes	☐ No	
Medical Waste	☐ Yes	☐ No	
Hazardous Waste Generation / Disposal	☐ Yes	☐ No	☐ Unsure

To be completed by the MTA Environmental Manager after a review of activities above.

This project has activities that will significantly impact the environment ☐ Yes ☐ No

☐ This Contractor Environmental Checklist is approved, no further action is needed.

☐ The Contractor Environmental Activity Statement (ED 9-4.4.6-9) needs to be completed by the contractor .
The activity statement will be provided based on the checklist by the Environmental Manager to the contractor.

Environmental Manager Signature_____ Date: _____

Sumit Form To: Environmental Manager, 1515 Washington Boulevard, Baltimore, Md 21230

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3.02 CONTRACTOR ENVIRONMENTAL ACTIVITY STATEMENT

MTA Maryland

ENVIRONMENTAL MANAGEMENT SYSTEM
CONTRACTOR / SUPPLIER
ENVIRONMENTAL ACTIVITY STATEMENT

The following information is to be filled out by the Contractor/Supplier (Please Print). Use additional pages if needed. The form shall be returned prior to the initiation of field activities to the MTA Environmental Manager at 1515 Washington Boulevard, Baltimore, Md 21230.

Contact Person: _____ Date: _____

Company Name: _____

Activities / Work Description:

Maryland Transit Administration (MTA) Site: _____

Briefly describe the activities or work to be undertaken by your company at the MTA site.

_____

_____

_____

Training:

Your employees shall be trained per applicable federal, state, and local environmental regulations and standards. Training records shall be made available upon request. Describe the training that your employees receive.

_____

_____

Land Disturbance:

Will the activities or work you perform require the disturbance of land in an area greater than 5000 square feet? **YES or NO**

If YES, how will you comply with Erosion and Sedimentation Control requirements?

_____

_____

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Air Emissions:

Will the activities or work you perform produce or cause the release of any air emissions? **YES or NO**

If YES, list the air emissions and the method for preventing impact to the environment.

_____

_____

Water Discharges:

Will the activities or work you perform produce or cause the release of any wastewater to storm drains, streams, ditches, the land surface or sanitary sewers? **YES or NO**

If YES, how will the wastewater be handled?

_____

_____

Materials and Supplies Usage / Storage:

What materials / supplies (fuel, oil, bulk chemicals, etc.) will you be handling or bringing on site to perform the contracted work? Describe how you will prevent spills and comply with proper management requirements (such as secondary containment). Has MTA approved the products for use? Describe your ability to react to spills if they occur.

_____

_____

_____

Solid Waste Generation:

Will the activities or work you perform result in the generation of solid waste, medical waste and / or universal waste? Has laboratory analysis been performed? **YES or NO**

If YES, list the amounts and the types of wastes expected and the proposed disposal method.

_____

_____

_____

Hazardous Waste Generation:

Will the activities or work you perform result in the generation of hazardous waste? **YES or NO**
Has laboratory analysis been performed?

If YES, list the amounts and the types of wastes expected and the proposed disposal method.

_____

_____

_____

Waste Recycling:
Are any wastes generated to be recycled? **YES or NO**

If YES, list the recyclables, where and how they will be recycled.

_____

_____

_____

Energy:

Will the activities or work consume energy? **YES or NO**
(Electricity, compressed air, natural gas, steam, etc.)

If YES, explain what type of energy will be consumed, and how you will minimize consumption.

_____

_____

_____

LEED Construction:
Is this project subject to scoring under the Leadership in Energy and Environmental Design (LEED) criteria? **YES or NO**

If YES, what is the target level sought? _____

Other:

Are there any other ways in which your activities will affect or protect the environment? **YES or NO**

If YES, please describe below.

_____

_____

_____

Information:

Company Name: _____

Contact: First Name: _____ Last Name: _____ Title: _____

Address: _____ City: _____ State: _____

Phone: _____ Fax: _____ Email: _____

Secondary Contact: _____ Sec. Phone: _____

Environmental Agreement

My company and subcontractors that I may bring to the site will abide by all environmental regulations and policies whenever on the property.

The MTA Environmental Manager will communicate applicable changes to the Environmental Management System to my company. Retraining of affected individuals will be conducted, as appropriate.

For questions or additional information contact the Environmental Management at (410) 454-7317.

Print Name: _____ Title: _____

Signature: _____ Date: _____

MTA Environmental Review

A review of the above-submitted document has been found to be:

☐ COMPLETE - approved, no further action is needed.

☐ INCOMPLETE - a response must be received by: _____

Environmental Manager Signature: _____ Date: _____

PROJECT TITLE:		BID/RFP#:		P.O.#:	

PART 4: MEASUREMENT AND PAYMENT

4.01 WASTE HANDLING

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.02 STORMWATER MANAGEMENT

A. The work required under this Section will not be measured for payment, except as noted below.

B. Any permitting required as a result of additional work will be measured for payment as well as any stormwater control measures needed to institute this work.

4.03 CONSTRUCTION MATERIALS AND STORAGE

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.04 SPILL PREVENTION AND MANAGEMENT

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.05 SPECIAL HAZARDOUS MATERIALS

A. The work required under this Section will be requested and approved by the Resident Engineer and measured for payment.

B. Services and Equipment provided will be measured and paid for, as agreed upon in writing prior to acceptance, from the “Special Hazard Materials” allowance.

C. The payment for additional equipment or service shall include any and all costs associated with the additional equipment.

4.06 EQUIPMENT DECOMMISSIONING

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

4.07 CONTAMINATED SOILS AND GROUNDWATER

A. Disposal of Contaminated Soil shall be measured by the ton and as documented by the authorized receiving facility.

B. Disposal of Contaminated Soil shall be paid at the unit bid price for "*Contaminated Soil Disposal*" indicated on the Unit Price Schedule.

C. Disposal of Contaminated Groundwater by any approved means shall be measured by the gallon.

D. Disposal of Contaminated Groundwater shall be paid at the unit bid price for "*Contaminated Groundwater Disposal*" indicated on the Unit Price Schedule.

4.08 WETLAND RECTIFICATION

A. The work required under this Section will be requested and approved by the Resident Engineer and measured for payment.

B. Services and Equipment provided will be measured and paid for, as agreed upon in writing prior to acceptance, from the "Wetland Rectification" allowance.

C. The payment for additional equipment or service shall include any and all costs associated with the additional equipment.

END OF SECTION

SECTION 01600

PRODUCTS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This section specifies general requirements for products, including the handling, transportation, and storage thereof, and the use of trade names and alternatives.

B. Additional requirements are contained in the General Provisions.

1.02 QUALITY OF MATERIALS:

A. Materials provided shall be new, except as may be indicated in the Specifications or the Contract Drawings. The materials shall be manufactured, handled, and used so as to ensure completed work in accordance with the Contract.

1.03 HANDLING AND TRANSPORTATION:

A. Handling:

1. Avoid bending, scraping, or overstressing product. Protect projecting parts by blocking with wood, by providing bracing, or by other approved methods.
2. Products shall be protected from soiling and moisture by wrapping or by other means.
3. Small parts shall be packaged in containers such as boxes, crates or barrels to avoid dispersal and loss. Firmly secure an itemized list and description of contents to each container.

B. Transportation:

1. Loading, transporting, unloading and storage of all products shall be conducted such that they are kept clean and free from damage.

1.04 STORAGE AND PROTECTION:

A. Provide sheltered, weather-tight or heated weather-tight storage as required for products subject to weather damage.

B. Provide blocking, platforms or skids for products subject to damage by contact with ground.

C. Store packaged materials in their original unbroken package or container.

D. Protect products from damage during warehousing operations.

1.05 TRADE NAMES AND ALTERNATIVES:

A. For convenience in designation on the Contract Drawings or in the Specifications, certain articles or materials to be incorporated in the work may be designated under trade names or the names of manufacturers and their catalog information.

B. Except in those instances where the product is designated to match others in use in a particular improvement either completed or in the course of completion, the use of an alternative article or material which the Contractor represents to be of at least equal quality and of the required characteristics for the purpose intended will be permitted, subject to each of the following requirements:

1. The burden of proof as to the quality and suitability of alternates shall be upon the Contractor and he shall furnish all information necessary as required by the Engineer at no additional cost to the Administration. The Engineer shall be the sole judge as to the quality and suitability of the alternate material.

2. Where the use of an alternative material involves modification to the design or to existing installation, the Contractor shall submit for approval to the Engineer. The Contractor shall be solely responsible for the changes and modifications resulting from such use of alternative materials.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

(NOT USED)

PART 4 - MEASUREMENT AND PAYMENT

4.01 PRODUCTS:

A. Products will not be measured separately.

B. Products will be considered incidental to the appropriate work item.

END OF SECTION

SECTION 01780

CONTRACT CLOSE OUT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified by this Section includes the requirements for contract close out as follows:

1. Closeout Procedures
2. Punch List
3. Final Cleaning
4. Adjusting
5. Project Record Documents
6. Operation and Maintenance Data
7. Warranties

B. Related Work Specified Elsewhere

1. GP-9.04 Acceptance and Final Payment
2. SECTION 01300 - Submittals
3. SECTION 01500 - Temporary Facilities and Controls
4. SECTION 01570 – Environmental Protection

1.02 SUBMITTALS:

A. Written certification of Work and Contract Documents

B. Project Record Documents

C. O & M manuals

D. Warranties

1.03 CLOSEOUT PROCEDURES:

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for the Engineer's inspection.

B. Provide submittals to Engineer that are required by governing or other authorities.

C. Submit final Application for Payment in accordance with GP-9.04.

1.04 PUNCH LIST:

A. Notify the Engineer at least ten (10) days in advance of the desired date for the walk through to determine the final items for completion. This walk through must be done when the job is 95 percent complete or better.

B. The following attendees are required:

1. Contractor

2. Engineer

3. Project Designer

4. Inspectors

5. Administration Safety Representative

6. Major Subcontractors

C. The list compiled by the Engineer and circulated to the attendees does not represent the final list and therefore can be added to until final acceptance by the Administration of any item or items discovered after the walk through has been completed.

D. The Contractor must complete all items on the list to the satisfaction of the Engineer before final acceptance will be made.

1.05 FINAL CLEANING:

A. Execute the final cleaning prior to final inspection.

B. Mechanically clean debris from the drainage system.

C. Clean and remove waste, surplus materials, rubbish, and construction facilities from all areas occupied by the Contractor for any purpose.

1.06 ADJUSTING:

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.07 PROJECT RECORD DOCUMENTS:

A. Maintain on site, one set of the following record documents; recording actual revisions to the work:

1. Contract Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other modifications to the Contract.

5. Reviewed shop drawings, product data, and samples.

6. Submit proof of updated As-Built Drawings as part of the monthly pay request.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record at each Specification section a description of actual products installed, including the following:

1. Manufacturer's name and product number.

2. Product substitutions or alternates utilized.

3. Changes made by Addenda and Modifications.

E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

2. Field changes of dimension and detail.

3. Details not on original Contract Drawings.

F. Submit approved documents to the Engineer prior to final application for Payment.

1.08 OPERATION AND MAINTENANCE DATA:

A. Submit twelve (12) sets prior to final inspection, bound in 8 $^{1}/_{2}$ x 11 inch three ring vinyl binders with durable covers.

B. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of the project, and subject matter of the binder when multiple binders are required.

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with the tab titling clearly printed under reinforced laminated plastic tabs.

D. Contents: Prepare a Table of Contents for each volume, with each project or system description identified, typed on 24 or 30 pound white bond paper.

E. Part 1: Directory, listing names, addresses, and telephone numbers of major equipment suppliers.

F. Part 2: Operation and maintenance instructions, covering the following:

1. Significant design criteria.

2. List of equipment.

3. Parts list for each component.

4. Operating instructions.

5. Maintenance instructions for equipment and systems.

6. Maintenance instructions for finishes including recommended cleaning methods and materials and special precautions identifying detrimental agents.

G. Part 3: Project documents and certificates, including the following:

1. Shop drawing and product data.

2. Certificates.

3. Photocopies of warranties.

1.09 WARRANTIES:

A. Provide duplicate notarized copies.

B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three-ring vinyl binder with durable cover.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) calendar days after acceptance, listing date of acceptance as start of the warrantee period.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

PART 4 - MEASUREMENT AND PAYMENT

4.01 FINAL DOCUMENTATION:

A. The work required under this Section will not be measured for payment.

B. All costs in connection herewith will not be paid for directly, but will be considered incidental to the item of work to which they pertain.

END OF SECTION

SECTION 02220

SITE DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes saw cutting and the removal, abandonment, salvage, demolition in place and disposal of bituminous paving, concrete curb and concrete curb and gutter, concrete sidewalk, existing concrete pads, asphalt channel, chain link fence, timber ramp, shelters, mobilift shelters, railing, and the electric and phone service as shown on the Contract Drawings or as directed by the Engineer. The work shall also include the installation and removal of a temporary guardrail as described herein.

B. The Contractor shall contact "Miss Utility" (1-800-257-7777) at least 48 hours before excavation or grading in any location can proceed. Refer to Section 01130 CONSTRUCTION PROCEDURES for hours of operation and information required. The Contractor shall also coordinate with all utilities before proceeding with the work.

1.02 REFERENCES:

A The following codes, regulations, reference standards and specifications apply to work included in this Section:

1. Maryland State Highway Administration (SHA) Standard Specifications for Construction and Materials, latest revisions

B Related Sections:

1. Site clearing: SECTION 02230

2. Excavation: SECTION 02315

3. Embankment and Subgrade: SECTION 02330

1.03 SUBMITTALS:

A. Submit demolition and removal procedures and schedule under provisions of Section 01300 SUBMITTALS.

B. Submit record drawings under provisions of Section 01780 CONTRACT CLOSEOUT.

C. Certifications

1. Disconnection of electrical services

2. Disposal site permits

1.04 QUALITY ASSURANCE:

A. The following codes, regulations, reference standards and specifications apply to work included in this Section:

1. Maryland State Highway Administration (SHA) Standard Specifications for Construction and Materials, latest revisions and Book of Standards
2. Charles County Standard Specifications and Standard Details

1.05 HOUSEKEEPING:

A. Remove and promptly dispose of all contaminated, vermin infested or dangerous materials encountered.

B. Do not burn or bury materials on site.

C. Remove demolished materials from site on a daily basis. Upon completion of Work, leave the area in clean condition.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION

3.01 EXISTING FACILITIES:

A. Protect all existing trees (where noted), plants, monuments, existing improvements, adjacent property and facilities from damage.

B. Maintain all existing and protected vegetation in a healthy growing condition during construction.

3.02 SAW CUTTING:

A. The Contractor shall saw cut the existing pavement, sidewalk, and curb or combination curb and gutter along the lines specified in the Contract Documents or as directed by the Engineer.

1. The Contractor shall not damage sections that are not to be removed. Damage done by the Contractor to those areas to remain in place shall be repaired at no additional cost to the Administration.

B. Equipment:

1. The equipments used shall consist of a concrete cutting machine comprising of a suitable motor-driven diamond blade circular cutter with control devices and mounted on a sturdy frame.

2. The equipment shall be capable of cutting a groove in a straight line to a sufficient depth so that an even neat joint will be cut to allow removal of material without damage to adjacent paving.

3. A continuous water supply shall be supplied to the cutting element either by a water tank on the equipment or other means.

3.03 EXISTING CONCRETE CURB AND CURB AND GUTTER REMOVAL:

A. Concrete curb and concrete curb and gutter shall be removed to the limits shown on the Contract Drawings.

B. The Contractor shall full depth saw cut the existing curb or curb and gutter along the lines specified in the Contract Documents or as directed by the Engineer.

C. The Contractor shall not damage sections that are not to be removed. Damage done by the Contractor to those areas to remain in place shall be repaired at no additional cost to the Administration.

D. Broken material not approved by the Engineer for use in the Work shall be disposed of off-site by the Contractor at a permitted facility.

3.04 EXISTING CONCRETE SIDEWALK REMOVAL:

A. Existing concrete sidewalk shall be removed to the limits shown on the Contract Drawings.

B. The Contractor shall full depth saw cut the existing sidewalk along the lines specified in the Contract Documents or as directed by the Engineer.

C. The Contractor shall not damage sections that are not to be removed. Damage done by the Contractor to those areas to remain in place shall be repaired at no additional cost to the Administration.

E. Broken material not approved by the Engineer for use in the Work shall be disposed of off-site by the Contractor at a permitted facility.

3.05 EXISTING GRAVEL REMOVAL:

A. Existing Gravel removal shall consist of the full depth removal and disposal of the material. Existing Gravel shall be removed to the limits shown on the Contract Drawings or as directed by the Engineer.

B. Removed material not approved by the Engineer for use in the Work shall be disposed of off-site by the Contractor at a permitted facility.

PART 4 - MEASUREMENT AND PAYMENT

4.01 EXISTING FACILITIES:

A. Existing Facilities will not be measured for Payment.

B. Existing Facilities will be paid for as part of SECTION 02230 SITE CLEARING.

4.02 SAW CUTTING:

A. Saw Cutting will be measured per linear foot complete in place and accepted.

B. Saw Cutting will be paid for at the Contract unit price per linear foot, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as specified.

4.03 EXISTING CONCRETE CURB AND COMBINATION CURB AND GUTTER REMOVAL:

A. Existing Concrete Curb and Combination Curb and Gutter Removal will be measured per linear foot completely removed and accepted.

B. Existing Concrete Curb and Combination Curb and Gutter Removal will be paid for at the Contract unit price per linear foot, completely removed and accepted, which price will be full compensation for all demolition, hauling, disposal, equipment, tools, labor, and all work incidental to complete the work as specified.

4.04 EXISTING CONCRETE SIDEWALK REMOVAL:

A. Existing Concrete Sidewalk Removal will be measured per cubic yard completely removed and accepted.

B. Existing Concrete Sidewalk Removal will be paid for at the Contract unit price per cubic yard, completely removed and accepted, which price will be full compensation for all demolition, hauling, disposal, equipment, tools, labor, and all work incidental to complete the work as specified.

4.05 EXISTING GRAVEL REMOVAL:

A. Existing Gravel Removal will be measured per cubic yard complete removed and accepted.

B. Existing Gravel Removal will be paid for at the Contract unit price per cubic yard, completely removed and accepted, which price will be full compensation for all demolition, hauling, disposal, equipment, tools, labor, and all work incidental to complete the work as specified.

END OF SECTION

SECTION 02230

SITE CLEARING

PART 1 – GENERAL

1.01 DESCRIPTION:

A. This work specified in this Section includes clearing and grubbing within the limits specified in the Contract Documents.

A. Related Work Specified Elsewhere:

1. SECTION 02315 - Excavation
2. SECTION 02370 - Erosion And Sediment Control

B. Definitions

1. Clearing - Clearing within the construction area includes removing and disposing of trees, brush, shrubs, vegetation, rotten wood, rubbish, fences, bollards, signs and posts, trash cans, wheel stops, and structures not specified in the Contract Documents for removal and disposal. Clearing outside the construction area is the removing and disposing of rubbish.

2. Grubbing - Grubbing is removing from the ground and disposing of all stumps, roots and stubs, brush and debris.

3. Limits - Limits of clearing and grubbing include the construction area and all ditch areas and stream or channel change areas. Limits of clearing may include the area between the construction area and the right-of-way or easement lines, as directed by the Engineer.

4. Clearing and Grubbing Unit - A clearing and grubbing unit is the erodible earth material exposed at one time, not to exceed 20 acres.

5. Disturbed Area - Any erodible material exposed by construction activities.

6. Stabilization - Providing vegetation or structural measures (seed, temporary or permanent mulch, soil stabilization matting, riprap, stone aggregate, and paving by asphalt or concrete) that will prevent erosion. The placement of one or more of these temporary or permanent stabilization measures as directed by the Engineer shall satisfy the requirements to proceed with the next grading unit or operation.

7. Stabilized - An area covered with erosion resistant material such as grass cover, seed and mulch, soil stabilization matting, riprap, stone aggregate, or paving by asphalt or concrete.

1.02 SUBMITTALS:

A. Disposal site permit certification

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION

3.01 EROSION AND SEDIMENT CONTROL:

A. Erosion and sediment control shall conform to the Contract Documents and Section 02370 EROSION AND SEDIMENT CONTROL.

3.02 VEGETATION:

A. The Engineer will designate and mark any trees, shrubbery and plants that are to remain in place, and the Contractor shall protect them from damage as specified in GP-7.11.

3.03 GRUBBING:

A. Excavation Areas - within areas to be excavated, all embedded stumps and roots shall be removed to a depth of not less than 3 foot below the subgrade or slope surfaces. All depressions made below the subgrade or slope surfaces by the removal of stomps shall be refilled with material suitable for embankment and shall be compacted as specified in Section 02315 EXCAVATION.

B. Low Embankments - Areas where the total depth of the embankment is less than 3 foot shall be grubbed.

C. High Embankments - Areas where the embankment is 3 foot or more in depth, trees and stumps shall be cut off as close to the ground as is practical but shall not exceed 1 foot above the ground surface. Near the toe of the embankment slopes, stumps or trees are prohibited within 1 foot of the slope surfaces.

3.04 STREAM AND CHANNEL CHANGES:

A. Stream or channel changes shall be cleared and grubbed three (3) feet beyond the top of cut slopes.

3.05 DISPOSAL:

A. Burning - When perishable material is burned, it shall be burned under constant care of a watchperson. Burning shall conform to the applicable laws and ordinances of respective jurisdictions.

B. Disposal Locations - Materials and debris that cannot be burned and perishable materials 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 the resulting agreements.

C. Wood Disposal - Disposal of wood to the general public shall be accomplished off the job site. Any plan for disposal in this manner shall be submitted to and approved by the Engineer prior to beginning the clearing and grubbing operation.

3.06 DESTROYING TREES OR WETLANDS, BEYOND CLEARING LIMITS:

A. The Contractor shall not damage nor destroy any trees or wetland areas that exist beyond the clearing limits specified in Contract Documents.

B. The Contractor shall be responsible for all damage to trees and wetlands located beyond the clearing limits due to the Contractor' operations. The Contractor shall restore, to the satisfaction of the Engineer, any trees that have been damaged or destroyed at no additional cost to the Administration. Replacement of trees shall be in conformance with Section 02930 TREES, SHRUBS AND GROUND COVER.

C. Mitigation of wetland impact shall be as determined by USACOE, MDE, and/or DNR.

D. Replacement of trees shall be of the same species as those damaged or destroyed unless otherwise directed by the Engineer. The replacement size shall be the same as the damaged or destroyed trees when the trees measure less than 4 inches in diameter. Damaged trees 4 inches DBH or greater shall be replaced with 2 inch caliper trees in conformance with the following:

SIZE OF DAMAGED OR DESTROYED TREES INCH DBH	NUMER OF 2 INCH CALIPER REPLACEMENT TREES
4	5
6	8
8	10
10	13
12	15
16	20
20	25
24	36
32	48
40	80
60	135
80	200
120 or Greater	360

PART 4 - MEASUREMENT AND PAYMENT

4.01 SITE CLEARING:

A. Site Clearing will not be measured.

B. Site Clearing will be paid at the lump sum price bid, complete, accepted, which price will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as specified .

END OF SECTION

SECTION 02240

TEST PIT EXCAVATION

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes excavation and backfilling for test pit to determine the location of underground structures and utilities. Test pits will also be used to determine the limits of undercut in pavement areas.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 DESIGNATION

A. It shall be the responsibility of the contractor to determine the location of underground structures and utilities prior to excavation operations

B. Test pits shall be of the size, depth, and location as authorized by the Engineer.

C. The size of test pits shall be minimized over guy wire anchors and other foundation elements.

PART 4 - MEASUREMENT AND PAYMENT

4.01 TEST PIT EXCAVATION:

A. Test Pit Excavation will be measured per cubic yard for the material actually removed from within the limits specified, and deemed reasonably necessary to perform the work, as determined by the Engineer.

B. Test Pit Excavation will be paid for at the Contract unit price bid per cubic yard, complete and accepted, which price will be full compensation for all excavation, tamped backfill, material, equipment, tools, labor and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02315

EXCAVATION

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes excavation and grading for parking lots, roadways, parking lots, and their appurtenances to the lines and grades specified in the Contract Documents; excavation and backfill for structures as specified in the Contract Documents or as directed by the Engineer; and excavation of material when sufficient materials are not available from other excavations as specified in the Contract Documents.

1.02 SUBMITTALS:

A. Submit the following for approval in accordance with Section 01300 SUBMITTALS – Work Related Submittals and the additional requirements as specified for each:

1. Shop Drawings

   a. Include manufacturer's product specifications and Installation Instructions:

      i. Sheet, shoring, and form details

2. Samples

   a. At least twenty-one calendar days in advance of desired date of approval, submit for testing two 1 cubic foot samples of material proposed for fill, backfill and embankments, or certified test results of same, performed by an independent test laboratory certifying that the proposed material complies with the specifications.

3. Certifications

   a. Permits for disposal of excavated material:

      i. Obtain written permits and releases from owners of property where material will be deposited.

      ii. Submit copies of each permit and release from each property owner absolving the Administration from responsibility in connection with such disposal.

   b. Sheet, shoring, and form details

c. Graded aggregate subbase

d. Subfoundation concrete

e. Borrow material

f. Weigh tickets and truck designations

g. Borrow pit permits

1.03 QUALITY ASSURANCE:

A. The following Codes, Regulations, Reference Standards and Specifications apply to work included in this section:

1. Codes and regulations of the jurisdictional authorities

2. Reference Codes and Standards

a. AASHTO: T-180.

b. ASTM: C33, D423, D424.

1.04 CLASSIFICATION:

A. Roadway Excavation:

1. Class 1 Excavation – Excavation of any width.

2. Class 1-A Excavation - Excavation of unsuitable material below the lowest excavation limits established in the Contract Documents.

3. Rock Excavation - Excavating material in place which cannot be loosened or broken down by using earth excavating equipment and which requires removal by other methods.

B. Borrow Excavation:

1. Excavation for material when sufficient quantities of suitable materials are not available on site from other excavations as specified in the Contract Documents.

C. Roadway Excavation shall include the following:

1. Cut areas, including ditches within the cut sections, and excavation for entrances, approach roads, streets, intersections, gutters, ditches, berm ditches, sidewalk ramps, and flumes.

2. The use of all suitable materials from excavation in the construction of embankments throughout the limits of the work as directed by the Engineer, including temporary storage of material on site, as required, to be used as backfill later.

3. The removal and disposal of below grade structures other than as specified below:

   a. The removal and disposal of existing buildings, including foundations, footings or any part thereof, and backfilling, as specified in the Contract Documents.

   b. The removal of all or part of existing concrete, concrete block, brick or stone structures (headwalls, toe walls, etc.), as specified in the Contract Documents.

D. Borrow Excavation:

1. Furnishing, excavating, hauling, and placing material.

2. All necessary clearing and grubbing, the removal and disposal of overburden or other unsuitable spoil material and the trimming, shaping, dressing and draining.

3. All work prescribed for backfills, embankments, subgrade, and earth shoulders.

4. Reclamation of the pit or location from which borrow material is secured.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Roadway Excavation:

1. Not applicable

B. Borrow Excavation:

1. Borrow excavation shall be a soil or soil aggregate mixture and shall conform to the following:

   a. Maximum dry density and optimum moisture content of the material shall be determined as specified in T-180, Method C unless the material has more than 35 percent retained on the No. 4 sieve, in which case Method D shall be used. Material with a

maximum dry density of less than 100 lb/ft^3 is unsatisfactory and shall not be used in embankments unless otherwise specified in the Contract Documents. Potentially expansive materials shall not be used.

b. Recycled Portland cement concrete or recycled HMA pavement may be used as select borrow with the written approval of the Engineer. All recycled or rehandled material shall conform to Section TC-6.09.

i. Select borrow shall conform to A-2, A-3, or A-2-4 material as specified in the Contract Documents. The maximum dry density shall be a minimum of 105 lb/ft^3.

ii. 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.

iii. Modified borrow shall have a minimum of 50 percent retained on the No. 4 sieve, a maximum liquid limit of 30 when tested as specified in T-89, and a maximum plasticity index of 9 when tested as specified in T-90. The maximum dry density shall not be less than 125 lb/ft^3. A-5 material, as defined in the Contract Documents shall not be used.

iv. Common borrow shall have a maximum dry density of not less than 100 lb/ft^3.

C. Geosynthetic Stabilized Subgrade Using Graded Aggregate Base:

1. Graded Aggregate Base shall conform to SHA Standard Specification Section 901.01.

2. Geotextile for Subgrade Stabilization-Class ST shall conform to SHA Standard Specification Section 921.09.

3. Securing Pins or Staples shall conform to SHA Standard Specification Section 921.09

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS:

A. Roadway Excavation:

1. Use of Excavated Materials:

a. No excavated material shall be wasted without prior approval of the Engineer.

b. Borrow shall not be used unless provisions have been made for utilizing all available suitable excavated material in embankments.

2. Broken Pavement Material:

a. Existing pavement, sidewalks, gutter, curb or combination curb and gutter materials from the excavation shall be wasted and removed from the site.

3. Rock Excavation:

a. Boulders and rock from the excavation greater than 6 inches in any direction shall not be used in the work, and shall not be placed within 12 inches of subgrade.

4. Frozen Material:

a. Frozen material is prohibited from being placed in embankments.

b. Frozen material shall be stockpiled outside the construction site and reserved for future use.

c. Any material that is wasted shall be replaced.

d. Rehandling of excavated material and replacement of wasted material shall be at no additional cost to the Administration.

5. Drainage:

a. During construction of the roadway, the roadbed shall be maintained in a well drained condition at all times.

b. Excavated material is prohibited from being deposited or left within 3 ft of the edge of the ditch or channel or be permitted to obstruct normal surface drainage into the ditch or channel.

c. Ditches draining from cuts to embankments or otherwise shall be constructed to avoid damage to embankments by erosion.

d. All drainage necessary to provide free and uninterrupted flow of the surface and underground water shall be installed before surfacing is placed.

e. When stabilized side and outlet ditches provide the principal means for drainage, the cutting and stabilization of ditches for the

disposition of surface water shall be the first work in the grading operation.

6. Excavation Beyond Specified Limits:

a. Widening of the cut or excavation sections beyond the limits of the typical cross section as specified in the Contract Documents is prohibited except by written authorization from the Engineer. When authorized by the Engineer the procurement of additional materials for embankments, unless otherwise specified under Borrow Excavation, shall conform to the following:

i. Finished Excavation:

1) The widening of cuts or excavation sections shall be finished so that completed flat and slope areas shall be uniform in appearance. The slopes shall not be steeper than the cut slopes specified in the Contract Documents or as directed by the Engineer.

ii. Roadway Excavation Limits:

1) If the Engineer directs the Contractor to excavate beyond the limits of the typical cross section originally proposed, prior to the starting of roadway excavation in a cut section, all material within the limits will be classified as Class 1 Excavation.

2) If the Contractor, with approval of the Engineer, elects to obtain material by widening cuts beyond the limits of the typical cross section originally proposed and within the right-of-way or easement, the excavation of the materials will be classified as Class 1 Excavation.

iii. Borrow Excavation Beyond Specified Limits:

1) If the Engineer directs the Contractor to excavate beyond the limits of the typical cross section originally proposed after the Contractor has substantially completed the roadway excavation in the cut section, all material removed beyond the limits of the typical cross section will be classified as Borrow Excavation.

7. Unsuitable Material:

a. Unstable or other unsuitable material encountered at or below the typical section specified in the Contract Documents shall be removed to the extent directed by the Engineer and classified as Class 1-A Excavation. In rock areas the limit of the measurement will be at the bottom of the typical section. All voids created by removal of unsuitable material, except when rock is encountered at subgrade, shall be backfilled to the lines and grades with the material specified in the Contract Documents. Backfill material shall conform to the following:

i. Maximum dry density and optimum moisture content of the material shall be determined as specified in T 180, Method C unless the material has more than 35 percent retained on the No. 4 sieve, in which case Method D shall be used. Material with a maximum dry density of less than 100 lb/ft^3 is unsatisfactory and shall not be used in embankments unless otherwise specified in the Contract Documents. Potentially expansive materials, such as steel slag, shall not be used.

ii. Recycled portland cement concrete or recycled HMA pavement may be used as select borrow with the written approval of the Engineer. All recycled or rehandled materials shall conform to Section TC-6.09.

iii. Select Borrow. Select borrow shall conform to A-2, A-3, or A-2-4 material as specified in the Contract Documents. The maximum dry density shall be a minimum of 105 lb/ft^3.

iv. Common Borrow. Common borrow shall have a maximum dry density of not less than 100 lb/ft^3.

8. Widening Excavation Limits:

a. The area to be excavated for widening shall be limited to the extent that the excavated area can be backfilled within the same working day using the excavated material or common borrow to form a temporary wedge. Refer to Standard No. MD-104.92 for the same area to be backfilled. The 4:1 or flatter fill slope shall be maintained. The material shall be compacted as directed by the Engineer and remain in place until placement of the graded aggregate base course.

9. Limits of Measurement:

a. The lower limit of measurement shall be pavement or shoulder subgrade.

b. Measurement where concrete pavement is to be removed will be taken to 1ft outside of the outer edge of the pavement on each side. Where concrete curb or combination concrete curb and gutter is built contiguous to the pavement, measurement for excavation will be the outer limits of the concrete curb or combination curb and gutter.

c. Slides or breakages not attributable to the Contractor's negligence as determined by the Engineer will be measured and included in the final quantities for Class 1 Excavation.

d. Measurement will be made for the removal of topsoil and root mat when it is required to be removed from fill areas. In case of removal of root mat, however, Class 1 Excavation shall only apply when strata underlying the root mat are suitable for supporting embankment. If material is unsuitable for supporting embankment then removal of root mat and unsuitable will be measured as Class 1-A Excavation.

e. Excavation will always be measured in its original position. No liquids will be included in any measurement.

f. No measurement will be made for any additional excavation required to construct new curb, curb and gutter, paved ditch, paved gutter, paved flume, or sidewalk paving.

10. Methods of Measurement:

a. Template Method:

i. For work in the area of the ADA ramps, excavations will be computed using the template from preliminary cross sections of the original ground surface combined with templates of the typical cross sections, unless otherwise directed by the Engineer.

ii. Excluded volumes are:

1) Undercutting for cushion over rock.

2) Salvaged topsoil from under embankments.

3) Removal of root mat from under embankments.

iii. The template method will not be used:

1) Where there are approved changes in design and typical section.

2) Where there are approved deviations from planned slope faces in rock cuts.

3) Where the original ground conditions upon which preliminary cross sections were taken have been changed before the Contractor begins work.

4) For Class 1-A excavation.

5) When work of the Contractor does not conform to the line, grade, or cross section.

b. Cross Section Method of Measurement:

i. When specified, quantities for payment of Excavation will be computed by average end areas, from the cross sections of the original ground combined with cross sections of the completed work. Class 1 Excavation will be allowed in median areas of cuts sections only where 4 in. or greater of topsoil are to be placed.

ii. This method will also apply to Class 1-A and Class 2 Excavation unless otherwise specified.

c. Recomputation of Quantities:

i. The Contractor or the Administration may elect to recompute quantities in any section where it is believed the planned quantities are incorrect.

ii. When recomputation reveals an error, the corrected quantity will be used.

B. Structural Excavation:

1. All excavation contiguous to existing pavements and structures shall be sheeted, shored, braced, and supported in a substantial manner to prevent settlement, movement, or damage to the pavement or structure. Excavated material shall not be placed in any manner that may endanger any structure and shall be kept out of waterways.

2. All suitable material removed from the excavation shall be placed in backfill or stored for future use. Excavated material shall not be wasted without permission of the Engineer. Boulders, logs or other unforeseen obstacles encountered shall be removed. Unsuitable material shall be disposed of in an approved disposal area.

3. The elevation for the bottom of trenches shall be as shown on the drawings.

4. The elevation for the bottom of footings specified in the Contract Documents shall be considered as approximate only, and the Engineer may, during the period of construction, order changes in dimensions or elevations of footings to secure a satisfactory foundation.

5. Footings for structures shall be on suitable foundations, and no concrete shall be placed until subgrade is approved by the Engineer.

6. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface, either level or stepped as directed by the Engineer. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When concrete is to rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation. Final removal of the foundation material to grade shall not be made until just before concrete is placed.

7. Whenever a condition is encountered where subgrade is part rock and part soil, the rock shall be removed to a depth of 6 inches below subgrade and replaced with suitable material as directed by the Engineer.

8. Faces of footings shall be plumb against either undisturbed material, rock, sheeting, shoring, or forms. Faces of footing shall bear against a minimum 1 ft depth of rock. If the excavation will not stand plumb, the Contractor shall furnish and install sheeting, shoring, or forms as required. When specified in the Contract Documents, sheeting used to construct spread footings shall be left in place and cut off 2 ft below grade. When not specified, or when sheeting is used to construct pile supported foundations, the sheeting may be removed.

9. The design of sheeting and shoring shall be the responsibility of the Contractor. When the material retained by the sheeting and shoring is greater than 6 ft high, the detail, procedure, and computations shall be submitted the same as specified for falsework details in TC-4.01 and the Contract Documents. The experience specified in TC-4.01 will be waived.

10. Forms used for footings shall be removed and the void between the footing and embankment shall be backfilled with subfoundation concrete or tamped fill utilizing graded aggregate subbase. The material shall be compacted to not less than 92 percent of the maximum density when tested in conformance with T 180, Method C. Subfoundation concrete shall be used for this backfill when footings are submerged. Working drawings for forms used for footings are not required to be submitted for approval unless directed by the Engineer or the footing exceeds 6 ft. However, working drawings for forms are required for footings of any thickness in submerged areas, cofferdams and adjacent to railroad tracks.

11. Where excavation to suitable bearing must be made below the as-planned bottom of the foundation, the additional excavated spaces under these substructure units shall be backfilled with subfoundation concrete or the footing elevation shall be lowered, or the footing deepened as specified in the Contract Documents or as directed by the Engineer.

12. All excavated spaces resulting from structure excavation not occupied by the portions of the permanent work shall be backfilled with suitable material. The backfilling shall be carried to the surface of the surrounding ground or grade as specified in the Contract Documents. Borrow shall not be used until the available project excavation is exhausted. The top surface of the backfilled areas shall be neatly graded. Backfill compaction shall conform to the following:

    a. Immediately after spreading of each layer, the material shall be compacted with compaction equipment approved by the Engineer. Rolling shall be done in a longitudinal direction along the embankment, beginning at the outer edges and progressing towards the center. The travel paths of traffic and equipment shall be dispersed over the width of the embankment to aid in obtaining uniform compaction.

    b. Material 1 ft below the top of subgrade shall be compacted to not less than 92 percent of the maximum dry density as specified in AASHTO T 180. Material in the top 1 ft shall be compacted to not less than 97 percent of the maximum dry density. When necessary, the layer shall be wetted or dried in order to compact the layer to the required density. The resultant moisture content of embankment material, when finally compacted to required density, shall be within two percentage points of optimum.

    c. Mechanical or vibratory tampers may be used. This method of compaction shall be used wherever materials cannot be adequately compacted by other methods approved by the Engineer. The approved material to be compacted shall be placed in horizontal layers not to exceed 6 in. loose depth over the entire area to be tamped and uniformly compacted by means of mechanical or vibratory tampers. The moisture and compaction requirements shall conform to item b above. When structures are installed below subgrade in embankments, the tamped fill shall be placed to a depth of 1 ft over the top of the structure, while in excavated sections the tamped fill shall extend to the surface of the furnished earthwork. Tamping may be required over additional widths when the material cannot be adequately compacted by other means.

13. Backfilling against various structures shall be as follows:

a. Backfilling against brick masonry is not permitted until seven days after completion of the section.

b. Backfilling is not permitted until curing is completed and the concrete has achieved 80 percent of the specified compressive strength.

c. Fill placed around footings, culverts and piers shall be deposited on both sides to approximately the same elevation at the same time.

d. The bed for backfill shall be built up in horizontal layers so that at all times there is a horizontal berm of uniformly compacted material behind the structure for a distance at least equal to the height of the abutment or wall remaining to be backfilled, except insofar as undisturbed material protrudes into this area. Compaction of berms and backfills shall conform to 3.01.B.11 above. Jetting of fills or other hydraulic methods involving liquid or semi liquid pressure within the berm area is prohibited.

C. Borrow Excavation:

1. Obtaining Borrow Material:

a. Borrow material may be obtained using one of the following methods:

i. Option 1 - Acquire material from a licensed commercial operating supplier. If this option is used, 3.01.D.2 through 3.01.D.5 do not apply.

ii. Option 2 - Make application to the Department of Natural Resources under the Annotated Code of Maryland, Environment, Subtitle 8, entitled "Surface Mining".

iii. Option 3 - Make application to the Administration to operate under the standard adopted in conformance with the Annotated Code of Maryland, Environment, Subtitle 8, "Surface Mining, Subsection 15-834 entitled "Exemptions". A Contractor who elects to use Option 3 shall submit an application to the Administration fulfilling all the requirements of the cited subtitle.

b. If the Contractor elects, a borrow pit may be established on privately owned property and the Administration may grant an "Exemption for a Surface Mining Permit" normally issued by the Water Resources Administration (WRA). Before a permit can be granted, the Contractor shall submit to the Administration written

proof that all local permits or approvals have been secured for the borrow pits.

i. An exemption under Option 3 will require approval of an excavation and reclamation plan along with the drainage patterns and methods of attaining satisfactory drainage and soil conservation as the work progresses.

ii. The plan shall also provide for surface restoration suitable for the proposed subsequent land use after reclamation is completed and the proposed method of accomplishment.

c. Borrow pits located within the 100 year floodplain of any waterway having a drainage area of 400 acres or more (100 acres for Class II and IV trout streams) shall also have the Department of Natural Resources (DNR) approval. Borrow pit operations that impact either tidal or nontidal wetlands shall also be approved by DNR. Copies of the U.S. Army Corps of Engineers 404 permit or the State wetlands permit or license will be provided before an exemption will be granted.

i. The determination as to applicability of waterway construction or wetland permits shall be the responsibility of the Contractor.

ii. If the pit is in operation and the Administration discovers that the Contractor is not in conformance with these regulations, the Administration will take the appropriate action required including work shutdown, until the Contractor is in conformance.

2. Clearing and Grubbing:

a. Clearing within the borrow area includes removing and disposing of trees, bushes, shrubs, vegetation, rotten wood, rubbish, fences and structures.

b. Grubbing is removing from the ground and disposing of all stumps, roots and stubs, brush and debris.

3. Borrow Pit Material:

a. The Contractor shall notify the Engineer a minimum of 30 days in advance of the opening of any borrow pit so that soil analysis, elevations, and measurements of the ground may be made.

b. After the pit is opened, the material excavated shall be used only for the project intended.

c. The Contractor shall not excavate additional material for other purposes until the final survey is made of the pit.

4. Borrow Pit After Excavation:

a. The borrow pit shall conform to the Reclamation (Permit) Plan after the necessary quantity of material has been removed. Steep slopes and sheer faces shall be avoided.

b. All disturbed material areas shall be seeded and mulched as specified in Section 02920 – TURF ESTABLISHMENT at no additional cost to the Administration. Shaping and seeding requirements do not apply to commercial borrow pits.

5. Borrow Excavation Beyond Specified Limits:

a. Refer to 3.01.A.6.

6. Compaction:

a. Immediately after spreading each layer, the material shall be compacted with compaction equipment approved by the Engineer. Rolling shall be done in a longitudinal direction along the embankment, beginning at the outer edge and progressing towards the center. The travel paths of traffic and equipment shall be dispersed over the width of the embankment to aid in obtaining uniform compaction.

b. Material 1 ft below the top of subgrade shall be compacted to not less than 92 percent of the minimum dry density as specified in T 180. Material in the top 1 ft shall be compacted to not less than 97 percent of the minimum dry density. When necessary, the layer shall be wetted or dried in order to compact the layer to the required density. The resultant moisture content of the embankment material, when finally compacted to required density, shall be within two percentage points of optimum.

7. Methods of Measurement:

a. Cross Section Method of Measurement:

i. This method of measurement is required unless the alternate method below is approved by the Engineer. See Section 3.01.A.10.b.i for description of cross section method.

b. Alternate Method of Measurement:

i. When requested by the Contractor in writing, the Engineer may approve an alternate method of measurement for the computation of borrow excavation quantities. This alternate method will not be considered for approval unless the Contractor can show that the cross sectional method computed by average end area is not a feasible method of measurement. When approved in writing by the Engineer, this alternate method shall consist of measuring the borrow excavation in approved hauling vehicles.

ii. The Contractor shall designate, prior to the start of hauling operations, the identification number of each vehicle to be used. The Engineer will determine the water level capacity of each vehicle. The measured capacity shall be multiplied by a factor of 0.85 to determine pay volume.

iii. The Contractor shall furnish a delivery ticket to the Engineer for each load of borrow material delivered to the project. Any ticket not signed by the Engineer to acknowledge receipt will not be used in the computation of the borrow quantity. The ticket shall include the following:

1) The supplier's name.

2) The Administration's Contract number.

3) The date and ticket number.

4) The vehicle identification number.

5) Type of material delivered.

6) Pay volume computed as specified in (ii) above.

D. Geosynthetic Stabilized Subgrade Using Graded Aggregate Base:

1. Subgrade Preparation: When geosynthetic stabilized subgrade using graded aggregate base is directed by the Engineer, the area where the geotextile is to be placed shall be cut to the depth directed by the Engineer. The subgrade upon which the geotextile is to be placed shall be brought to the line, grade, and cross section directed. The subgrade shall be as smooth as practical and free of debris. Construction traffic on the subgrade shall be minimized. Ruts formed by construction traffic shall be removed by reshaping the affected area. The subgrade shall not be overworked and shall be approved by the Engineer prior to placement of the geotextile.

2. Geotextile Placement: Geotextile shall be placed on the prepared surface for the full width of the area to be treated. The geotextile shall be unrolled

on the subgrade parallel to the base line without dragging it across the grade. Wrinkles and folds in the geotextile shall be removed by stretching and pinning. The geotextile shall be overlapped a minimum of 30 in. at roll edges and ends. Overlaps at the end of the roll shall be in the direction of aggregate placement with the roll being covered on top of the next roll. Overlaps and ends shall be pinned in accordance with manufacturer recommendations. Damaged geotextile shall be repaired or replaced immediately as directed by the Engineer at no additional cost to the Administration. Geotextile patches shall be overlapped a minimum of 3 feet into undamaged geotextile. Traffic, including construction equipment, is prohibited on the bare geotextile.

3. Aggregate Placement: Placement of the graded aggregate base shall be in conformance with Section 501, with the following exceptions:

   a. Aggregate shall be placed within three working days of geotextile placement. The graded aggregate base shall be placed in loose lifts no greater than 8 in. thick. The graded aggregate base shall be placed by end dumping and spreading. Construction shall be parallel to the base line. Turning of construction equipment on the graded aggregate base shall be kept to a minimum.

   b. Immediately after placement, the graded aggregate base material shall be compacted to at least 95% of maximum dry density with a moisture content within 2 percent of optimum moisture content, as determined by T 180.

   c. Graded aggregate base material shall not be vibrated unless otherwise specified or directed by the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 CLASS 1 EXCAVATION:

A. Class 1 Excavation will be measured per cubic yard complete in place and accepted.

B. Class 1 Excavation will be paid per cubic yard complete, in place, accepted, which price will be full compensation for all excavation, hauling, backfill, compaction, disposal, material, equipment, tools, labor and all work incidental to complete the item as specified.

C. The removal and disposal of existing pavement, sidewalk, concrete pads, asphalt ditches, curb, and combination curb and gutter, shall not be measured under Excavation, but shall be paid for under the applicable demolition item.

4.02 CLASS 1-A EXCAVATION:

A. Class 1-A Excavation will be measured per cubic yard, complete in place and accepted as approved by the Engineer.

B. Class 1-A Excavation will be paid for at the contract unit price bid per cubic yard complete, accepted, which price will be full compensation for all excavation, hauling, backfill, compaction, disposal, material, equipment, tools, labor and all work incidental to complete the item as specified.

4.03 BORROW EXCAVATION:

A. Borrow Excavation will be measured per cubic yard complete in place and accepted.

B. Borrow Excavation will be paid for at the contract unit price bid per cubic yard, complete in place, accepted, which price will be full compensation for all clearing and grubbing, furnishing, excavating and hauling, sloping, formation and compaction, backfills, subgrade, material, equipment, tools, labor and all work incidental to complete the item as specified.

4.04 GEOSYNTHETIC STABILIZED SUBGRADE USING GRADED AGGREGATE BASE:

A. Geosynthetic Stabilized Subgrade Using Graded Aggregate Base will be measured per cubic yard complete in place and accepted.

B. Geosynthetic Stabilized Subgrade Using Graded Aggregate Base will be paid for at the contract unit price bid per cubic yard, complete in place, accepted, which price will be full compensation for furnishing and placing the geotextile and graded aggregate base, compaction, test strip, and for all material, equipment, tools, labor and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02330

EMBANKMENT AND SUBGRADE

PART 1: GENERAL

1.01 DESCRIPTION:

A. This work shall consist of constructing the embankment and subgrade of suitable material obtained from roadway, structure, borrow, and other excavation included in the Contract. The material shall be placed, processed, and compacted to the lines and grades specified in the Contract Documents.

B. Related Work Specified Elsewhere:

1. SECTION 02315 - Excavation

2. SECTION 02370 - Erosion And Sediment Control

PART 2: PRODUCTS

2.01 MATERIALS:

A. Soil and soil aggregate mixtures used in the construction of embankments shall conform to the common burrow requirements is Section 02315 unless otherwise specified in the Contract Documents.

B. Rock may be used in embankments, provided that individual pieces do not exceed 24 inches in any dimension. Larger size rocks may be wasted with the approval of the Engineer.

C. Frozen material shall be handle as specified in Section 02315. Any material that freezes after being placed in the embankment shall not be covered until it has thawed.

D. The Engineer may require the use of specially selected material adjacent to structures to insure good compaction or to protect the surface from damage. Rock is prohibited. Embankment material at locations of pile supported foundations shall be a type that piles may be easily driven trough the embankment.

PART 3: EXECUTION

3.01 EMBANKMENT FOUNDATION:

A. The Engineer will inspect the foundation prior to the construction of an embankment. Topsoil, root mat, or unsuitable material shall be removed to the depth directed by the Engineer.

B. When embankment is placed on an existing pavement, the pavement shall be thoroughly broken up, scarified or removed as specified in the Contract Documents or as directed by the Engineer.

C. When test rolling is specified in the Contract Documents or directed by the Engineer, the foundation shall be tested by rolling with a 35 ton pneumatic tired roller or as approved by the Engineer.

3.02 PLACING AND SPREADING:

A. The material shall be placed in horizontal layers across the full width of the embankment. An adequate crown shall be maintained to provide drainage at all times.

B. Embankment On Unstable Ground - When embankment is to be constructed on wet and unstable ground that will not support the weight of the construction equipment, the first layer of the fill may be constructed by depositing material in a layer no thicker than that required to support the equipment. Subsequent layers shall conform to C below.

C. Earth Embankment - Except as otherwise specified, no layer shall exceed 8 inch compacted depth.

D. Rock Embankment

1. In rock embankment the thickness of layers shall be determined by the size of the rock or a 24 inch maximum depth, whichever is less. The portion of the embankment less than 6 foot below the subgrade at the profile grade line shall be placed in layers not more than 8 inches compacted depth, and these layers shall be filled solid and fully choked with spalls, rock dust, or earth. Each layer shall be filled and compacted before the next layer is placed.

2. The top of rock material shall provide a uniform surface, determined by connecting with straight lines the points on the typical cross section which are 9 inches below any median ditch invert and 9 inches below the bottom of the pavement structure and then sloping downward and outward under the shoulders at a rate of 3/4 inch per foot to the outer slope of the embankment.

3. The remaining upper portion of the embankment, unless otherwise specified in the Contract Documents, shall be constructed of suitable earth, free from stones that would be retained on a 3 inch sieve.

3.03 BENCHING:

A. When embankment is to be placed and compacted on hillsides or when new embankment is to be compacted against existing embankments, the slope on which the embankment is to be placed shall be continuously benched where they are steeper than 4:1 when measured at right angles to the roadway. The benching operation shall be done as the embankment is brought up in layers. Benching shall be a minimum width of 5 foot. Each horizontal cut shall begin at the intersection of the original ground and the vertical sides of the previous cut. Material conforming to embankment requirements cut from the benches shall be compacted along with the new embankment material at no additional cost to the Administration.

3.04 COMPACTION:

A. Immediately after spreading of each layer, the material shall be compacted with compaction equipment approved by the Engineer. Rolling shall be done in a longitudinal direction along the embankment, beginning at the outer edges and progressing towards the center. The travel paths of traffic and equipment shall be dispersed over the width of the embankment to aid in obtaining uniform compaction.

B. Material 1 foot below the top of the subgrade shall be compacted to not less than 92 percent of the maximum dry density as specified in T 180. Material in the top 1 foot shall be compacted to not less than 97 percent of the maximum dry density. In-place density shall be determined by MSMT 350 or 352. When necessary, the layer shall be wetted or dried in order to compact the layer to the required density. The resultant moisture content of the embankment material, when finally compacted to required density, shall be within two percentage points of optimum.

C. The Contractor shall provide a Portland cement concrete compaction block having dimensions 18 X 18 X 9 inches and weighing at least 200 lb. One 18 X 18 working face shall have a level broomed surface.

3.05 STABILITY OF EMBANKMENTS:

A. The Contractor shall be responsible for the stability of all embankments in the Contract and shall remove and replace with acceptable material any embankment or portion thereof that has been constructed with unsuitable material. The Contractor shall remove and replace unstable material and remove and replace portions of the embankment that become unstable or

displaced as a result of the Contractor's operations at no additional cost to the Administration.

3.06 PROTECTION OF STRUCTURES AND UTILITIES DURING CONSTRUCTION:

A. The Contractor shall be responsible for protecting all structures and utilities from any damage in the handling, processing, or compacting of the embankment or backfill material. Particular care shall be exercised in the vicinity of arches, retaining walls, culverts and utility trenches to assure that no undue strain or movement is produced. In areas where rollers cannot be used, the embankment or backfill shall conform to Section 02315.

3.07 SUBGRADE:

A. The subgrade shall be constructed and shaped to the specified cross section after all cuts, embankments and backfilling have been substantially completed. The subgrade shall be proof rolled as specified above.

3.08 MAINTENANCE:

A. During construction and after completion of the embankment and subgrade, the embankment and subgrade shall be maintained by the Contractor until finally accepted.

B. Embankment and subgrade material that may be lost or displaced as a result of natural causes such as storms and cloudbursts, or as a result of unavoidable movement or settlement of the ground or foundation upon which the embankment and subgrade is constructed shall be replaced by the Contractor with acceptable material form excavation or borrow.

C. The Contractor shall at all times maintain ditches and drains to provide adequate drainage.

D. The travel paths of any traffic or construction equipment on the embankment and subgrade shall be held to a minimum to avoid the displacement of material or formation of ruts. When ruts 2 inch or more in depth are formed in the subgrade they shall be removed by reshaping and recompacting.

PART 4: MEASUREMENT AND PAYMENT

4.01 EMBANKMENTS:

A. Embankment, subgrade, and all necessary work will not be measured.

B. Embankment, subgrade, and all necessary work will not be paid, but will be incidental to the Contract unit price per cubic yard for the pertinent Class of Excavation. The payment will be full compensation for the formation, sprinkling, compaction, test rolling, shaping, scarifying, breaking or removing of the existing pavement, sloping, trimming, finishing, maintaining embankments and subgrade, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

4.02 REPLACEMENT OF MATERIAL:

A. Replacement of material lost as a result of natural causes will be measured.

B. Replacement of material lost as a result of natural causes will be paid for at the unit price per cubic yard for the pertinent Class of Excavation item or as directed by the Engineer.

4.03 COMPACTION:

A. Compaction by means of mechanical tampers or vibratory compactors will not be measured.

B. Compaction by means of mechanical tampers or vibratory compactors will not be paid for but will be incidental to the pertinent Class of Excavation item.

END OF SECTION

SECTION 02370

EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes the application of erosion and sediment control measures throughout the life of the project to control erosion and to minimize sediment transport. All erosion and sediment control devices and design shall be approved by the Engineer and the Maryland Department of the Environment (MDE).

B. The Contractor shall assign an employee to act as the project's Erosion and Sediment Control Manager (ESCM), who shall be responsible for implementing the MDE-approved Erosion and Sediment Control Plans

1.02 SUBMITTALS:

A. Product Data:

1. Geotextile fabric of each class specified
2. Corrugated PVC pipe
3. Corrugated steel pipe
4. Structural steel plate
5. Chain Link Fence for Super Silt Fence
6. Filter Log, 18 Inch

B. Manufacturer's Certificates:

1. Geotextile fabric
2. Structural steel plate

C. Source of Supply:

1. No.57 aggregate
2. 4" to 7" stone
3. Rip rap

PART 2 - PRODUCTS

2.01 CLASS I RIPRAP:

A. Geotextile Fabric Class C or Class SE: SHA Standard Specifications, Section 921.09.

B. Class I Riprap – SHA Std. Specifications, Section 901.02.01.

2.02 STABILIZED CONSTRUCTION ENTRANCE:

A. Geotextile Fabric Class C or Class SE: SHA Standard Specifications, Section 921.09.

B. Crusher Run Aggregate - SHA Std. Specifications, Section 901, Table 901A.

2.04 TEMPORARY STONE OUTLET STRUCTURE: Temporary Stone Outlet Structure – SHA Std. Specifications, Section 308.04.13.

2.05 SUPER SILT FENCE:

A. Geotextile Fabric Class F - SHA Std. Specifications, Section 921.09

B. Chain Link Fence Fence – SHA Std. Specifications Section 914.01.01

2.06 SILT FENCE: Geotextile Fabric Class F - SHA Std. Specifications, Section 921.09.

2.07 DEWATERING BASIN: Class 0 Riprap – SHA Std. Specifications, Section 901.02.01.

2.08 FILTER BAG: Geotextile Fabric Class F - SHA Std. Specifications, Section 921.09.

2.09 RIPRAP FOR SEDIMENT CONTROL: Class 0 Riprap – SHA Std. Specifications, Section 901.02.01.

2.10 FILTER LOG, 18 INCH ALONG CONTOUR:

C. Coir fibers or straw fibers bound by a biodegradable netting into a roll with a minimum diameter of 12-inches and a maximum length of 20-feet.

D. Stone for Sediment Control - Graded Aggregate Base minimum

E. 2 in. x 2 in. wood stakes, 36 in. length.

2.11 TEMPORARY SEEDING: Seeding – SHA Std. Specifications, Section 920.06.07(c).

2.12 TEMPORARY MULCHING: Mulching – SHA Std. Specifications, Section 920.04.01.

2.13 CURB INLET PROTECTION:

A. Geotextile Fabric Class E - SHA Standard Specifications, Section 921.09.

B. No. 57 Aggregate - SHA Std. Specifications, Section 901, Table 901A.

C. Wood: Wood items, including spacer, anchor, and weir shall be 2” x 4” hardwood.

D. Wire Mesh: As specified on the Contract Drawings.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS: All measures shall comply with the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The Contractor shall conduct an Erosion and Sediment Control meeting with MDE seven days prior to start of construction. MDE shall be notified in writing or by phone at (410) 537-3510.

3.02 SEQUENCE OF CONSTRUCTION: The Contractor shall follow the sequence of construction specified on the erosion and sediment control plans included in the Contract Drawings. In the event that this sequence required modifications for any reason, the Contractor shall immediately notify the Engineer and MDE for approval.

3.03 INSTALLATION AND MAINTENANCE: The Contractor shall install and maintain all erosion and sediment control measures as specified on the Contract Drawings. The Contractor shall ensure that all runoff from disturbed area is directed to an approved sediment control devices. The Contractor shall ensure that all control devices are functioning properly, repaired when damaged and cleaned out as the first order of business following a storm event.

3.04 REMOVAL: When the construction area for each sediment control measure is stabilized, the Contractor shall remove the measure with the prior written approval of MDE’s Sediment Control Inspector and permanently stabilize the areas disturbed by this removal. All material removed shall become the property of the Contractor and shall be disposed in an approved waste-disposal facility.

PART 4 - MEASUREMENT AND PAYMENT

4.01 CLASS 1 RIPRAP:

A. Class I Riprap will be measured per square yard complete in place and accepted.

B. Class I Riprap will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for all material including geotextile, equipment, tools, labor, and all work incidental to complete the item as specified.

4.02 STABILIZED CONSTRUCTION ENTRANCE:

F. Stabilized Construction Entrance will be measured per ton complete in place and accepted.

B. Stabilized Construction Entrance will be paid for at the contract unit price bid per ton, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.03 REHABILITATE STABILIZED CONSTRUCTION ENTRANCE:

A. Rehabilitate Stabilized Construction Entrance will be measured per ton complete in place and accepted.

B. Rehabilitate Stabilized Construction Entrance will be paid for at the contract unit price bid per ton, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.04 TEMPORARY STONE OUTLET STRUCTURE:

A. Temporary Stone Outlet Structure will be measured per each complete in place and accepted.

B. Temporary Stone Outlet Structure will be paid for at the contract unit price bid per each, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.05 SUPER SILT FENCE:

A. Super Silt Fence will be measured per linear foot complete in place and accepted.

B. Super Silt Fence will be paid for at the contract unit price bid per linear foot, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.06 SILT FENCE:

A. Silt Fence will be measured per linear foot complete in place and accepted.

B. Silt Fence will be paid for at the contract unit price bid per linear foot, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.07 EROSION AND SEDIMENT CONTROL CLEANOUT EXCAVATION:

A. Erosion and Sediment Control Cleanout Excavation will be measured per cubic yard complete in place and accepted.

B. Erosion and Sediment Control Cleanout Excavation will be paid for at the contract unit price bid per cubic yard, complete in place, accepted, which price

will be full compensation for all excavation to remove accumulated sediment from all sediment control measures, material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.08 DEWATERING BASIN:

A. Dewatering Basin will be measured per each complete in place and accepted.

B. Dewatering Basin will be paid for at the contract unit price bid per each, complete in place, accepted, which price will be full compensation for all initial excavation and riprap and for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.09 FILTER BAG:

A. Filter Bag will be measured per each complete in place and accepted.

B. Filter Bag will be paid for at the contract unit price bid per each, complete in place, accepted, which price will be full compensation for all excavation to remove accumulated sediment from all sediment control measures, geotextile, pumps, material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.10 RIPRAP FOR SEDIMENT CONTROL:

A. Riprap for Sediment Control will be measured per cubic yard complete in place and accepted.

B. Riprap for Sediment Control will be paid for at the contract unit price bid per cubic yard, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.11 FILTER LOG, 18 INCH:

A. Filter Log, 18 Inch will be measured per linear foot complete in place and accepted.

B. Filter Log, 18 Inch will be paid for at the contract unit price bid per linear foot, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.12 TEMPORARY MULCHING:

A. Temporary Mulching will be measured per square yard of seed complete in place and accepted.

B. Temporary Mulching will be paid for at the contract unit price bid per square yard of mulch, complete in place, accepted, which price will be full compensation for

all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.13 TEMPORARY SEEDING:

A. Temporary Seeding will be measured per pound of seed complete in place and accepted.

B. Temporary Seeding will be paid for at the contract unit price bid per pound of seed, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.14 CURB INLET PROTECTION:

A. Curb Inlet Protection will be measured per each complete in place and accepted.

B. Curb Inlet Protection will be paid for at the contract unit price bid per each, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02372

SOIL STABILIZATION MATTING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes furnishing, placing and securing matting on seeded areas and re-graded areas, as specified in the Contract Documents or as directed by the Engineer.

1.02 SUBMITTALS:

A. Manufacturer's product specifications and installation instructions

1. Soil Stabilization Matting

B. Samples

1. Soil Stabilization Matting

C. Certifications

1. Soil Stabilization Matting

PART 2 – PRODUCTS

2.01 MATERIALS:

A. Soil Stabilization Matting:

1. Type A Stabilization Matting shall consist of a machine-produced mat of degradable natural or man made fibers. Matting shall be smolder resistant. When a chemical is used, it shall be nonleaching, nontoxic to vegetation and the germination of seed, and noninjurious to the skin.

2. Type A matting shall have a uniform thickness and distribution of fibers throughout. The top and bottom of the matting shall be covered with a degradable extruded plastic netting having a maximum mesh opening of 2 x 2 in. or covered on the top side with netting machine sewn or bonded on 2 in. centers along the longitudinal axis of the material. The average breaking strength of any two strands of netting shall be 5-lb. minimum. The netting shall be entwined with the matting fibers in a matter which shall provide sufficient reinforcement against damage during handling and placement and shall resist degradation for a minimum of six months and a maximum of one year.

B. Staples for Soil Stabilization Matting:

1. Staples for Type A Soil Stabilization Matting shall be U or T shaped steel wire having minimum gauges of No. 11 and No. 8 respectively. The U shaped staples shall average 1 to 1-1/2 inches wide and shall be 12 inches long. The T shapes staples shall have an 18-inch main leg, a 2-inch secondary leg, and a 4-inch head.

PART 3 - CONSTRUCTION

3.01 GENERAL:

A. When topsoil is specified for area where matting is to be placed, this work shall be completed before the soil stabilization matting operation is started.

3.02 PLACING:

A. Type A Soil Stabilization Matting shall be placed within 48 hours after seeding operations have been completed in the work areas. Matting shall be rolled in the direction of the water flow. Matting shall be laid smoothly and firmly upon the seeded surface, and stretching shall be avoided. Where more than one width of matting is required, the strips overlap at least 2 in. Ends shall overlap at least 6 in. The upgrade end of each strip of matting shall be turned down and buried to a depth of not less than 6 in with the soil firmly tamped against it. Overlapping shall be done with the upgrade section on top. The Engineer may require any other edge exposed to more than normal flow of water to be buried in a similar manner. Edges of matting shall be similarly buried around the edges of catch basins and other structures.

3.03 SECURING:

A. Type A Soil Stabilization Matting shall be securely fastened in place with staples driven vertically into the soil and flush with the surface. Staples shall be placed 2 ft apart along the edges and center of the matting. On all overlapping edges, staples shall be placed 18 in apart. At all ends of the matting, staples shall be placed 6 in apart.

PART 4 - MEASUREMENT AND PAYMENT

4.01 TYPE A SOIL STABILIZATION MATTING:

A. Type A Soil Stabilization Matting will be measured per square yard for various types of soil stabilization matting complete in place and accepted.

B. Type A Soil Stabilization Matting will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02460

BOLLARD

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes furnishing and installing Hot-Dipped Galvanized Steel Bollards and Ornamental Bollards as specified in the contract documents, or as directed by the Engineer.

1.02 SUBMITTALS:

A. Product data for hot-dipped galvanized steel bollards

PART 2 - PRODUCTS

2.01 STEEL BOLLARDS:

A. Hardware shall conform to the following:

1. The Steel Bollard shall be made of 6 in. (nominal diameter), schedule 40 steel pipe, hot-dip galvanized, per ASTM A53 Grade B.

2. Concrete shall be Mix No. 3 conforming to the requirements of SHA Standard Specifications, Section 902.10.03.

3. Steel housing for the Steel Bollard shall be installed in the hole in vertical position on a 6” bed of graded aggregate base and encased with concrete as shown on the Plans, and/or as directed by the Engineer.

4. An HDPE bollard sleeve with cap shall be placed over the entirety of the exposed steel bollard. The sleeve shall be smooth and designed to fit the specified pipe securely. The sleeve color shall be yellow.

B. Reflective Sheeting shall conform to the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, Special Provisions Insert, darted June 4, 2007, Section 950.030.08, Drums for Maintenance of Traffic.

PART 3 - EXECUTION

3.01 STEEL BOLLARDS

A. Steel bollards shall be installed such that final orientation of the post is fully vertical. Posts deemed to be leaning by the Engineer upon curing of concrete base shall be removed, the foundation materials shall be removed, and placement shall be re-executed at the Contractor's cost. Bollards dented or otherwise damaged shall not be used, or if installed, shall be removed, wasted, and replaced at the Contractor's cost.

B. The finish surface of the concrete encasement at the base of the bollard shall be flush with the surrounding finished ground.

C. For Steel Bollards, The yellow HDPE bollard sleeve shall extend to and be flush with the ground, but shall not be cast into the concrete. The HDPE bollard sleeve shall be the height specified on the plans. Double reflective bands shall be placed on the HDPE bollard sleeve as depicted on the plans.

3.02 SQUARE PERFORATED TUBULAR STEEL POST PLACEMENT:

A. If a Square Perforated Tubular Steel Post is to be inserted in the bollard, it shall be installed in compliance with SECTION 02890 SIGNS. If a sign is installed, a hole will be required in the top of the bollard sleeve cap to accommodate the sign post. This hole shall be of minimal size and shall fit the sign post securely. The hole shall cut into the top of the bollard sleeve cap such that it contains smooth edges. The HDPE bollard sleeve shall be discarded if damage is caused to the sleeve during the drilling of the hole for the sign post.

PART 4 - MEASUREMENT AND PAYMENT

4.01 STEEL BOLLARDS:

A. Steel Bollards will be measured per each complete in place and accepted.

B. Steel Bollards will be paid for at the Contract unit price bid per each, which payment will be full compensation for all materials, excavation, backfilling, disposing of the surplus material, labor, backfill, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

SECTION 02584

UNDERGROUND DUCTS AND UTILITY STRUCTURES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes furnishing and installing ducts in direct-buried duct banks and electrical hand boxes.

1.02 SUBMITTALS:

A. Product Data:

1. Electrical hand box hardware.

2. Conduit and ducts, including elbows, bell ends, bends, fittings, and solvent cement.

3. Duct-bank materials, including spacers and miscellaneous components.

4. Warning tape.

B. Shop Drawings: Show fabrication and installation details for underground ducts and electrical hand boxes and include the following:

1. For electrical hand boxes:

a. Duct sizes and locations of duct entries.
b. Reinforcement details.
c. Grounding details.

C. Record Documents: Show dimensional locations of underground ducts, and electrical hand boxes.

1.03 QUALITY ASSURANCE:

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with ANSI C2.

C. Comply with NFPA 70.

D. Installer: Company specializing in the installation of underground ducts and utility structures with a minimum of three years of documented experience, which shall be provided if requested by the Engineer.

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.

B. Store precast concrete units at Project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.

C. Lift and support precast concrete units only at designated lifting or supporting points.

1.05 PROJECT CONDITIONS:

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

1. Notify Owner at least two weeks in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's written permission.

B. Construction staking:

1. The Contractor shall provide stakes and reference marks necessary for all construction of the improvements covered by this Contract.

2. Final location of Control stakes shall be approved by the Engineer before proceeding with the proposed work.

3. It shall be the responsibility of the Contractor to inform his employees and his Subcontractors of the stakes' importance, and the necessity for their preservation. The cost of replacing such controls, should it become necessary for any reason whatsoever, shall be at the Contractor's expense.

C. All excavation shall meet the current requirements of OSHA and any other governing Federal, State, or local authority with regard to trench safety. The Project Engineer shall require a Trench Safety Plan signed and sealed by a registered Engineer of the State of Maryland.

1.06 COORDINATION:

A. Coordinate layout and installation of ducts and hand boxes with final arrangement of other utilities and site grading, as determined in the field.

B. Coordinate elevations of ducts and duct-bank entrances into hand boxes with final profiles of conduits as determined by coordination with other utilities and underground obstructions. Revise locations and elevations from those indicated as required to suit field conditions and to ensure duct runs drain to hand boxes and as approved by Engineer.

PART 2 - PRODUCTS

2.01 PRODUCTS AND MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:

1. Nonmetallic Ducts and Accessories:

a. Arnco Corp.
b. Certainteed Corp.; Pipe & Plastics Group.
c. Lamson & Sessions; Carlon Electrical Products.

2.02 DUCTS:

A. Rigid Nonmetallic Conduit: NEMA TC 2, Type EPC-40-PVC, UL 651, with matching fittings by the same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

2.03 ELECTRICAL HAND BOXES:

A. Electrical Hand Boxes shall conform to the hand hole requirements of Section 811 Electrical Hand Holes, Manholes, Pull and Junction Boxes in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and shall conform to the requirements of standard numbers MD 811.01 – MD 811.03 of the Maryland Department of Transportation State Highway Administration Book of Standards for Highway and Incidental Structures.

2.04 ACCESSORIES:

A. Duct Spacers: Rigid PVC interlocking spacers selected to provide minimum duct spacings and cover depths; produced by the same manufacturer as the ducts.

B. Duct-Sealing Compound: Non-hardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 deg F (2 deg C). Capable of withstanding temperature of 300 deg F (150 deg C) without slump and of adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals.

C. Warning Tape: Underground-line detectable warning tape shall consist of one layer of aluminum foil laminated between two layers of inert plastic film. The foil shall be 6 in. wide with a tensile strength of 60 lb. The plastic film shall have a minimum thickness of 4.5 mils.

2.06 CONSTRUCTION MATERIALS:

A. Electrical Hand Boxes: Construction materials for Electrical Hand Boxes shall conform to the hand hole requirements of Section 811 Electrical Hand Holes, Manholes, Pull and Junction Boxes, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

PART 3 - EXECUTION

3.01 APPLICATION:

A. Underground Ducts for Electrical Use: Type Sch. 40 PVC, direct-buried conduit.

B. Electrical Hand Box: Standard numbers MD 811.01 – MD 811.03 of the Maryland Department of Transportation State Highway Administration Book of Standards for Highway and Incidental Structures.

3.02 EARTHWORK:

A. Contractor shall provide test pits to locate all utilities and structures. Provide test pits as necessary to determine actual locations and profiles of obstructions to proposed work.

B. Contractor shall verify existing utilities, locations, and inverts and points of connection.

C. Excavation and Backfill: Comply with Division Site Work, but do not use heavy-duty, hydraulic-operated, compaction equipment.

D. Restore surface features at areas disturbed by excavation and reestablish original grades, unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

E. Restore all areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Section 02920 "Turf Establishment."

F. Restore disturbed pavement. Refer to Division 2 Sitework.

3.03 CONDUIT AND DUCT INSTALLATION:

A. Slope: Pitch ducts a minimum slope of 1:300 down toward hand boxes and away from buildings and equipment. Slope ducts from a high point in runs between two hand boxes to drain in both directions.

B. Curves and Bends: Use manufactured elbows for stub-ups at equipment. Use manufactured long sweep bends with a minimum radius of 25 feet (7.5 m), both horizontally and vertically, at other locations.

C. Use solvent-cement joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in the same plane.

D. Duct Entrances to Hand Boxes: Space end bells approximately 10 inches (250 mm) o.c. for 5-inch (125-mm) ducts and vary proportionately for other duct sizes. Change from regular spacing to end-bell spacing 10 feet (3 m) from the end bell without reducing duct line slope and without forming a trap in the line.

E. Nonmetallic Ducts: Support ducts on duct spacers, spaced as recommended by manufacturer and coordinated with duct size, duct spacing, and outdoor temperature. Install as follows:

1. Separator Installation: Space separators close enough to prevent sagging and deforming of ducts and secure separators to earth and to ducts to prevent floating during concreting. Stagger spacers approximately 6 inches (150 mm) between tiers. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.

2. Depth: Install top of duct bank at least 24 inches below finished grade in all areas.

F. Warning Tape: Bury warning tape approximately 12 inches (300 mm) below finished grade when installed in earth. Bury warning tape below

paving section when installed below pavement. Align tape parallel to and within 3 inches (75 mm) of the centerline of duct bank.

G. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig (1.03-MPa) hydrostatic pressure.

H. Pulling Cord: Install 100-lbf- (445-N-) test nylon cord in ducts, including spares.

3.04 HAND BOX INSTALLATION:

A. Installation of Electrical Hand Boxes shall conform to the hand hole requirements of Section 811 Electrical Hand Holes, Manholes, Pull and Junction Boxes, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and shall conform to the requirements of standard numbers MD 811.01 – MD 811.03 of the Maryland Department of Transportation State Highway Administration Book of Standards for Highway and Incidental Structures.

3.05 FIELD QUALITY CONTROL:

A. Testing: Demonstrate capability and compliance with requirements on completion of installation of underground ducts and electrical hand boxes.

B. Grounding: Test hand box grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance.

C. Duct Integrity: Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of the duct. If obstructions are indicated, remove obstructions and retest.

D. Correct installations if possible and retest to demonstrate compliance. Remove and replace defective products and retest.

E. Field Coordination with Southern Maryland Electric Cooperative (SMECO): Coordinate installation of underground ducts and utility structures with the SMECO Project Foreman.

F. Inspection: Allow for inspection of underground ducts and utility structures by a SMECO Inspector.

3.06 CLEANING:

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

B. Clean internal surfaces of electrical hand boxes. Remove foreign material.

PART 4 - MEASUREMENT AND PAYMENT

4.01 2 INCH SCHEDULE 40 RIGID PVC CONDUIT – TRENCHED:

A. 2 Inch Schedule 40 Rigid PVC Conduit – Trenched will be measured per linear foot complete in place and accepted.

B. 2 Inch Schedule 40 Rigid PVC Conduit – Trenched will be paid for at the Contract unit price per linear foot, which shall include full compensation for all excavation, backfill, and for all material, labor, equipment, tools and incidentals necessary to complete the work.

4.02 4 INCH SCHEDULE 40 RIGID PVC CONDUIT – TRENCHED:

A. 4 Inch Schedule 40 Rigid PVC Conduit – Trenched will be measured per linear foot complete in place and accepted.

B. 4 Inch Schedule 40 Rigid PVC Conduit – Trenched will be paid for at the Contract unit price per linear foot, which shall include full compensation for all excavation, backfill, and for all material, labor, equipment, tools and incidentals necessary to complete the work.

4.03 ELECTRICAL HAND BOX:

A. Electrical Hand Box will be measured and paid for as per hand holes in Section 811 Electrical Hand Holes, Manholes, Pull and Junction Boxes, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

END OF SECTION

SECTION 02630

STORM DRAINAGE

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes the construction of storm drain systems consisting of inlets, manholes, and pipe.

1.02 SUBMITTALS:

A. Contractor shall submit the following in accordance with Section 01300 SUBMITTALS of these Specifications:

1. Product data

   a. Concrete mixes
   b. Grout
   c. Castings for frames, covers, gratings, steps, and ballast screens
   d. Precast concrete inlets and manholes
   e. Reinforced concrete pipe and fittings
   f. Roofing paper
   g. Asphalt sealer
   h. CPP, Type S, pipe and fittings for storm drainage
   i. Corrugated Metal Pipe
   j. Ductile Iron Pipe
   k. Bricks
   l. Mortar mix

2. Shop drawings

   a. Frames and covers
   b. Gratings

3. Certificates of compliance

   a. Frames and covers
   b. Gratings
   c. Cement
   d. Reinforced concrete pipe and fittings
   e. CPP, Type S, pipe and fittings for storm drainage
   f. Corrugated metal pipe
   g. No. 57 Aggregate
   h. No. 2 Aggregate
   i. Geotextile, Class SE

4. Certified test results

a. Reinforced concrete pipe and fittings
b. CPP, Type S, pipe and fittings for storm drainage
c. Corrugated metal pipe
d. Concrete mixes

5. As-built drawings

1.03 DEFINITIONS:

A. Drainage Structures include inlets, manholes, pipes, pipe fittings, and pipe connections.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Concrete shall meet the requirements of SHA Section 902.10.03, Mix No, 2, 3 or 6 as indicated on the Contract Drawings.

B. Grout shall meet the requirements of SHA Section 902.11.

C. Castings for Frames, Covers, Gratings, and Steps shall be iron castings meeting the requirements of ASTM A 48, Class 30B.

D. Precast Concrete Inlets and Manholes shall meet the requirements of AASHTO M 199.

E. Reinforced Concrete Pipe, Fittings, and Connections shall meet the requirements of AASHTO M 170, Class 4 or 5, as indicated on the Contract Drawings.

F. Roofing Paper for Protecting Mortar Joints shall be composed of roofing felt saturated and coated on both sides with an asphaltic material. It shall not weigh less than 39.8 lb/100 sq ft. and shall not crack when bent 90 degrees over 0.5 in. radius at room temperature.

G. Asphalt Sealer for Concrete Pipe shall be a mixture of asphalt, mineral filler, and petroleum solvents, and shall have adhesive and cohesive properties.

H. Corrugated Polyethylene Pipe (CPP), Type S, Pipe shall meet the requirements of AASHTO M 252.

K. Brick shall meet the requirements of SHA Section Standards 903.02.

L. Mortar shall meet the requirements of SHA Section Standards 903.06.

PART 3 - EXECUTION

3.01 CONSTRUCTION SEQUENCE:

A. Pipe lengths and gradients shall be verified by the Contractor and shall be acceptable to the Engineer prior to installation.

B. When a pipe is laid on existing ground, on fill, or under fill, the embankment shall be constructed to a height of at least 9 in., but not more than 3 ft. above the top of the proposed pipe and then a trench shall be excavated to receive the pipe.

C. Underground drainage structures shall be completed before paving surface is placed. Manholes and inlets shall not be completed to final grade until the grading has been finished and all necessary arrangements have been made to insure suitable connections and tie-ins at proper grade and alignment with pavements, curbs, and gutters.

3.02 PIPE INSTALLATION:

A. Excavation: The width of trench shall be sufficient to permit thorough tamping of the backfill under the haunches and around the pipe. This width shall not be less than twice the outside diameter of the pipe or the outside diameter plus 18 in. on each side, whichever is less.

B. Bedding: Wherever rock is encountered, it shall be removed and replaced with a minimum 8 in. of select backfill to provide a constant cushion under the pipe or bell. When unsuitable foundation material is encountered, it shall be removed and replaced with select backfill for the full width of the trench, as directed by the Engineer.

C. Template: Unless otherwise specified in the Contract documents, Pipes 48 in. or more in nominal horizontal diameter shall be bedded in an approved foundation shaped by means of a template which will support the pipe for at least 10 percent of its overall height.

D. Installation: Pipes shall be laid with hubs upgrade. A single hole through the shell of the pipe will be permitted with an approved lifting device. After installation, the lay hole shall be filled.

E. Joints:

1. All joints shall be cemented or sealed. If mortar is used, it shall completely fill the joint and be used to form a bead around the outside of the joint. The inside of the joint shall be wiped and finished smooth. The mortar on the outside shall be protected from the air and sun for 48 hours or until the backfill is placed around the pipe. Cold weather protection shall be furnished for mortar joints by maintaining a temperature of not less than 40 F for 72 hours. Materials shall be preheated when the air temperature is less than 35 F.

2. As an alternative to mortared joints, asphalt sealer, rubber type gaskets, or resilient type material may be used. Care shall be exercised to insure the proper application of sealer on the underside of all joints. Unless otherwise specified in the Contract Documents, these materials shall be installed as recommended by the manufacturer.

F. Backfill: Earth for backfill shall be free from large lumps, clods, and rocks and shall be placed along the side of the pipe for the full width of the trench in layers not exceeding 6 in. uncompacted depth. Compaction shall conform to the requirements of Section 02315, EXCAVATION. Each layer shall be compacted simultaneously on both sides of the pipe by means of an approved mechanical tamper. Special care shall be taken to compact the fill thoroughly under the haunches of the pipe. This method of filling and compaction shall continue until the embankment is completed to a height of not less than 9 in. above the top of the pipe. The Contractor shall protect the pipe from damage due to construction equipment or other vehicular traffic passing over the pipe. Backfill may be placed immediately after laying the pipe, provided the mortar joints are protected with roofing paper or other approved material.

G. Removal of Existing Pipe: Removal of any existing pipes shall be in accordance with Section 02220 SITE DEMOLITION.

3.03 DRAINAGE STRUCTURES:

A. Castings: Frames for grates and covers for inlets and manholes shall be set in full beds of mortar and rigidly secured in place to proper grade and alignment.

B. Pipe Connections: Inlet and outlet pipes at drainage structures shall be set or cut flush with the inside faces of the structures and shall extend a sufficient distance beyond the outside faces of these walls to provide ample room for making proper connections. The joint around the pipe in the structure wall shall be completely and neatly closed with mortar or other approved material.

C. Inverts: Drainage structures containing two or more pipes shall have channelized inverts conforming to the Contract Drawings.

D. Precast Drainage Structures:

1. Precast Drainage Structures shall meet the requirements of Section 03400 except where superceded by this Section.

2. The placement and consolidation of the required bedding under the precast structures shall be a minimum 6 in. of No 57 aggregate.

E. Cast-in-Place Drainage Structures: Cast-in-Place Drainage Structures shall meet the requirements of Section 03300 except where superceded by this Section.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL:

A. All material, equipment, tools, labor, and all other work incidental and necessary to satisfactorily complete the items as specified will not be measured for payment, including but not limited to: maintenance of traffic; sawcutting of existing pavement, curb, sidewalk, etc. as required; excavation; bedding; [utility specific items]; backfill and compaction; topsoiling and seeding (for grassed areas); reconstruction of any disturbed curb or sidewalk, per the contract plans; and pavement patching per the contract plans (for paved areas). Curb, sidewalk, and pavement scheduled to be removed under the contract may not need to be restored at the direction of the Engineer, except as needed to maintain pedestrian traffic, vehicular traffic, or parking.

B. All material, equipment, tools, labor, and all other work incidental and necessary to satisfactorily complete the items as specified will not be paid for directly but will be considered incidental to the appropriate work item, including but not limited to: maintenance of traffic; sawcutting of existing pavement, curb, sidewalk, etc. as required; excavation; bedding; [utility specific items]; backfill and compaction; topsoiling and seeding (for grassed areas); reconstruction of any disturbed curb or sidewalk, per the contract plans; and pavement patching per the contract plans (for paved areas). Curb, sidewalk, and pavement scheduled to be removed under the contract may not need to be restored at the direction of the Engineer, except as needed to maintain pedestrian traffic, vehicular traffic, or parking.

4.02 HORIZONTAL ELLIPICAL REINFORCED CONCRETE PIPE, 14x23 INCHES:

A. Horizontal Ellipical Reinforced Concrete Pipe, 14x23 Inches will be measured per linear foot complete in place and accepted.

B. Horizontal Ellipical Reinforced Concrete Pipe, 14x23 Inches will be paid for at the contract unit price bid per linear foot, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.03 HORIZONTAL ELLIPICAL REINFORCED CONCRETE PIPE, 19x30 INCHES:

A. Horizontal Ellipical Reinforced Concrete Pipe, 19x30 Inches will be measured per linear foot complete in place and accepted.

B. Horizontal Ellipical Reinforced Concrete Pipe, 19x30 Inches will be paid for at the contract unit price bid per linear foot, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.04 DUCTILE IRON PIPE, 6 INCHES:

A. Ductile Iron Pipe, 6 Inches will be measured per linear foot complete in place and accepted.

B. Ductile Iron Pipe, 6 Inches will be paid for at the contract unit price bid per linear foot, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.05 CORRUGATED METAL PIPE, 15 INCHES:

A. Corrugated Metal Pipe, 15 Inches will be measured per linear foot complete in place and accepted.

B. Corrugated Metal Pipe, 15 Inches will be paid for at the contract unit price bid per linear foot, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.06 MODIFIED SHALLOW COG INLET, 5 FOOT OPENING

A. Modified Shallow Cog Inlet, 5 Foot Opening will be measured per each complete in place and accepted.

B. Modified Shallow Cog Inlet, 5 Foot Opening will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.07 COG/COS INLET FOR 8 INCH CURB, 5 FOOT OPENING

A. COG/COS Inlet For 8 Inch Curb, 5 Foot Opening will be measured per each complete in place and accepted.

B. COG/COS Inlet For 8 Inch Curb, 5 Foot Opening will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.08 COG/COS INLET FOR 8 INCH CURB, 10 FOOT OPENING

A. COG/COS Inlet For 8 Inch Curb, 10 Foot Opening will be measured per each complete in place and accepted.

B. COG/COS Inlet For 8 Inch Curb, 10 Foot Opening will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.09 PRECAST MANHOLE, 60 INCH DIAMETER:

A. Precast Manhole, 60 Inch Diameter will be measured per each complete in place and accepted.

B. Precast Manhole, 60 Inch Diameter will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the work as specified.

4.10 CONCRETE END SECTION FOR HERCP, 14x23 INCHES

A. Concrete End Section For HERCP, 14x23 Inches will be measured per each complete in place and accepted.

B. Concrete End Section For HERCP, 14x23 Inches will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.11 CONCRETE END SECTION FOR HERCP, 19x30 INCHES

A. Concrete End Section For HERCP, 19x30 Inches will be measured per each complete in place and accepted.

B. Concrete End Section For HERCP, 19x30 Inches will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.12 METAL END SECTION, 15 INCHES

A. Metal End Section, 15 Inches will be measured per each complete in place and accepted.

B. Metal End Section, 15 Inches will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.13 TYPE C ENDWALL FOR HERCP, 19x30 INCHES

A. Type C Endwall For HERCP, 19x30 Inches will be measured per each complete in place and accepted.

B. Type C Endwall For HERCP, 19x30 Inches will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

4.14 MODIFIED JUNCTION BOX:

A. Modified Junction Box will be measured per each complete in place and accepted.

B. Modified Junction Box will be paid for at the contract unit price bid per each, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the work as specified.

4.15 6 INCH CPP-SP OVERDRAIN PIPE:

A. 6 Inch CPP-SP Overdrain Pipe will be measured per linear foot complete in place and accepted.

B. 6 Inch CPP-SP Overdrain Pipe will be paid for at the contract unit price bid per linear foot, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor, and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02660

STORMWATER MICRO-BIORETENTION FACILITIES

PART 1: GENERAL

1.01 DESCRIPTION:

A. This Section includes specifications for the procurement and construction of three Stormwater Micro-Bioretention Facilities, which includes excavation, geotextile, bioretention soil mix, and all labor, materials and incidentals required to completed this item of work. All work shall be in conformance with this Section and as directed by the Engineer.

1.02 SUBMITTALS:

A. Contactor shall submit shop drawings to the Landscape Architect for review and approval of the following items prior to construction of this item of work:

1. At least twenty-one calendar days in advance of desired date of approval, submit for testing two 1 cubic foot sample of bioretention soil mix or certified test results, performed by an independent test laboratory certifying that the proposed material complies with the specifications.

PART 2: PRODUCTS

2.01 EXCAVATION FOR STORMWATER MANAGEMENT FACILITY

A. Not Applicable

2.02 GEOTEXTILE

A. Geotextile Fabric shall conform to SHA Standard Specification Section 921.09.01 for Class PE, Type 3.

2.03 BIORETENTION SOIL MIX

A. Bioretention Soil Mix (BSM): A homogeneous mixture composed by loose volume of 5 parts Coarse Sand, 3 parts Base Soil, and 2 parts Fine Bark. BSM shall conform to the following:

1. Components. Components of BSM shall be sampled, tested and approved before mixing as follows:

a. Coarse Sand. MSMT 356. Coarse Sand shall be washed silica sand or crushed glass that conforms to ASTM Fine Aggregate C-33. Coarse Sand shall include less than 1% by weight of clay or silt size particles, and less than 5% by weight of any combination of diabase, greystone, calcareous or dolomitic sand.

b. Base Soil. Base Soil shall be tested and certified by the producer to conform to the following requirements:

COMPOSITION - BASE SOIL				
TEST PROPERTY	**TEST METHOD**	**TEST VALUE AND AMENDMENT**		
Prohibited Weeds	—	Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected.		
Debris	—	No observable content of cement, concrete, asphalt, crushed gravel or construction debris when inspected.		
Grading Analysis	T 87	**Sieve Size**	**Passing by Weight Minimum %**	
		2 in.	100	
		No. 4	90	
		No. 10	80	
Textural Analysis	T 88	**Particle**	**% Passing by Weight**	
		mm	**Minimum**	**Maximum**
		2.0 – 0.050	50	85
		0.050 – 0.002	5	45
		less than 0.002	5	10
Soil pH	D 4972	pH of 5.7 to 6.9.		
Organic Matter	T 194	1.0 to 10.0 % by weight.		
Soluble Salts	EC1:2 (V:V)	500 ppm (1.25 mmhos/cm) or less.		
Harmful Materials	—	02920		

c. Fine Bark. Fine Bark shall be the bark of hardwood trees that is milled and screened to a uniform particle size of 2 in. or less. Fine Bark shall be composted and aged for 6 months or longer, and be free from sawdust and foreign materials.

A 1 to 2 lb sample of Fine Bark shall be submitted to the Landscape Operations Division for examination.

2. Composition. BSM shall be sampled and tested according to the requirements of MSMT 356 and conform to the following:

COMPOSITION- BIORETENTION SOIL MIX (BSM)					
TEST PROPERTY	**TEST METHOD**	**TEST VALUE AND AMENDMENT**			
Weeds	—	Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected.			
Debris	—	920.01.05(a)(2)			
Textural Analysis	T 88	**Particle**		**% Passing by Weight**	
		mm		**Maximum**	
		2.0 – 0.050		85	
		0.050 – 0.002		20	
		less than 0.002		8	
Soil pH	D 4972	pH of 5.7 to 7.1.			
Organic Matter	T 194	Minimum 1.5 % by weight.			
Nutrient Analysis and Soluble Salts	Mehlich-3	**Concentration**			
		Element	**Minimum**	**Maximum**	
			ppm	**ppm**	**FIV**
		Calcium	32	no limit	no limit
		Magnesium	15	no limit	no limit
		Phosphorus	18	92	100
		Potassium	22	no limit	no limit
		Sulfur	25	no limit	no limit
	EC1:2 (V:V)	Soluble Salts	40	500	n/a
Harmful Materials	—	02920			

(c) Amendment or Failure. BSM that does not conform to composition requirements for pH or nutrient analysis shall be amended as specified by the NMP. BSM that exceeds maximum phosphorus concentration or fails other composition requirements will not be accepted, and shall not be delivered or used as BSM.

(d) Storage. 02920. BSM shall be stored in a stockpile that is protected from weather under tarp or shed. BSM stored for 6 months or longer shall be resampled, retested, and reapproved before use.

(e) Approval. 02920

(f) Certification and Delivery. 02920

PART 3: EXECUTION

3.01 GENERAL:

A. The Contractor shall inspect all surrounding surface elevations prior to construction of the bioretention facility to verify that the intended design will work with surrounding grades as intended. Contactor shall notify the Engineer and Landscape Architect immediately of any conflicts.

B. Facility shall be constructed only after all contributing drainage areas are permanently stabilized. Do not construct stormwater bioretention facilities in areas previously used as erosion and sediment control facilities. Do not stockpile materials nor store equipment in these areas.

C. Use methods of excavation that minimize the compaction of underlying soil. Use excavators and backhoes operating on adjacent ground. If the bottom width of the area is greater than 15 ft, wide-tracked or marsh track equipment, or light equipment with turf-type tires may be used to excavate, grade, and place fill materials. Do not use equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires.

D. Rototill the excavation pit bottom to minimum depth of 6 in. to alleviate compaction from excavation activities. Remove any standing water from the excavation pit prior to rototilling. Only rototill soil that is friable. Do not rototill soil while in muddy or frozen condition.

E. Geotextile: Place tightly against the vertical sides of the excavation pit, pull tight to eliminate winkles and folds, and pin securely. Eliminate any voids between the geotextile and the soil and avoid wrinkling and folding the geotextile. Do not place geotextile on the bottom of the excavation pit. If placed in section, maintain a minimum 6 in. overlap.

F. Bioretention Soil Mix: Place Bioretention Soil Mix in horizontal layers not to exceed 12 in. in thickness. After each lift, apply water by spraying or sprinkling to saturate the entire area of the Bioretention Soil Mix. Prevent soil, fines, and other debris from intermixing with the Bioretention Soil Mix. Remove and replace any contaminated Bioretention Soil Mix.

PART 4: MEASUREMENT AND PAYMENT

4.01 EXCAVATION FOR STORMWATER MANAGEMENT FACILITIES

A. Excavation for Stormwater Management Facilities will be measured per cubic yard, complete in place and accepted.

B. Excavation for Stormwater Management Facility will be paid for at the contract unit price bid per cubic yard, complete in place, accepted, which price will be full compensation for excavation, hauling, disposal,

dewatering, rototilling, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

4.02 BIORETENTION SOIL MIXTURE FOR STORMWATER MANAGEMENT FACILITIES

A. Bioretention Soil Mixture for Stormwater Management Facilities will be measured per cubic yard, complete in place and accepted.

B. Bioretention Soil Mixture for Stormwater Management Facility will be paid for at the contract unit price bid per cubic yard, complete in place, accepted, which price will be full compensation for furnishing, hauling, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified. Removal of contaminated Bioretention Soil Mixture and replacement with uncontaminated Bioretention Soil Mixture will be no additional cost to the MTA.

4.03 GEOTEXTILE, CLASS PE, TYPE 3

A. Geotextile, Class PE, Type 3 will not be measured for payment but shall be incidental to the Bioretention Soil Mixture.

END OF SECTION

SECTION 02680

PERVIOUS CONCRETE PAVEMENT

PART 1: GENERAL

1.01 DESCRIPTION:

A. This Specification provides requirements for the construction of pervious concrete pavement. In case the requirements of this Specification conflict with the Contract Documents, the Contract Documents shall govern.

1.02 SUBMITTALS:

A. Contractor shall submit the following in accordance with Section 01300 SUBMITTALS of these Specifications:

1. Qualifications of Contractor related to construction of pervious concrete pavements.
2. Proposed concrete mixture proportions and density.
3. In-place pavement test results from previous work, completed in the last 12 months, including design void content, density, and concrete mixture proportions.
4. Two test panels, as described in 1.6.2, placed, jointed, and cured; each a minimum of 225 ft2 (20.9 m2) and having the required thickness specified in the Contract Plans. The test panels will be done by the actual staff that will be installing the pervious concrete on the site. The concrete for the test panels will be from the actual concrete supplier that will be providing the pervious concrete for the site. The test panels must be approved by the MTA.

1.03 DEFINITIONS

A. *Early-entry dry-cut saw*—a tool designed to produce joints in concrete commencing 1 to 4 hours after finishing and without raveling the cut edges.

B. *Exposure condition, moderate*—an environment, normally in temperate climate regions, in which concrete will only occasionally be exposed to moisture and will not be saturated before freezing and where no deicing agents or other aggressive chemicals are used.

C. *Exposure condition, severe*—an environment, normally in cold climate regions, in which concrete may be saturated or in almost continuous contact with moisture before freezing, and where deicing agents are used.

D. *Joint, construction*—the surface where two successive placements of concrete meet, across which it may be desirable to achieve bond, and where the first has undergone final set before the next placement.

E. *Joint, contraction*—formed, sawed, or tooled groove in a concrete structure to create a weakened plane to regulate the location of cracking resulting from the dimensional change of different parts of the structure.

F. *Joint, isolation*—a normally vertical interface allowing relative movement without transferring sufficient tension, compression, or traction forces to negatively affect the performance of a structure or pavement.

G. *Panel*—a concrete element that is relatively thin with respect to other dimensions and is bordered by joints or edges.

H. *Pavement, pervious*—a pavement comprising material with sufficient continuous voids to allow water to pass from the surface to the underlying layers.

I. *Permitted*—accepted or acceptable to the Engineer, usually pertaining to a request by Contractor, or when specified in Contract Documents.

J. *Reference standards*—standardized mandatory language documents of a technical society, organization, or association, including the building codes of local or state authorities, which are referenced in the Contract Documents.

K. *Subbase*—a layer or layers in a pavement system between the subgrade and a portland-cement concrete pavement.

L. *Subgrade*—the soil prepared to support a structure or a pavement system.

1.04 REFERENCED STANDARDS

A. Standards of ACI and ASTM referred to in this specification are listed with serial designation including year of adoption or revision, and are part of this specification.

1. ACI Standards

   Standard Specification for Cold Weather Concreting

2. ASTM Standards

   a. C29/C29M-97(2003) - Standard Test Method for Bulk Density (Unit Weight) and Voids in Aggregate

   b. C42/C42M-04 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete

   c. C94/C94M-07 - Standard Specification for Ready-Mixed Concrete

   d. ASTM C1688 / C1688M - 12 Standard Test Method for Density and Void Content of Freshly Mixed Pervious Concrete

   e. C140-06 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units

f. C172-04 - Standard Practice for Sampling Freshly Mixed concrete

g. C174/C174M-06 - Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores

h. C979-05 - Standard Specification for Pigments for Integrally Colored Concrete

i. C1077-06 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation

j. D994-98(2003) - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)

k. D1751-04 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

l. D1752-04a - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

m. D3385-03 - Standard Test Method for Infiltration Rate of Soils in Field Using Double- Ring Infiltrometer

n. D3665-06 - Standard Practice for Random Sampling of Construction Materials

o. E329-06a - Standard Specification for Agencies Engaged in Construction Inspection and/or Testing

1.05 QUALITY CONTROL

A. *General*—Test and inspect concrete materials and operations as work progresses as described in 1.05.K. Failure to detect defective work or material early will not prevent rejection if a defect is discovered later, nor shall it constitute final acceptance.

B. *Contractor qualifications*—The Contractor shall employ no less than one National Ready Mixed Concrete Association (NRMCA) certified pervious concrete craftsman who must be on site, overseeing each placement crew during all concrete placement, or the Contractor shall employ no less than three NRMCA certified Pervious Concrete Installers, who shall be on site working as members of each placement crew during all concrete placement, or the Contractor shall employ no less than five NRMCA certified Pervious Concrete Technicians, who shall be on site working as members of each placement crew during all concrete placement unless

otherwise specified. Alternative documentation of qualifications shall be permitted when approved by the Engineer.

C. *Test panels*—Test panels shall be placed using the mixture proportions, materials, and equipment as proposed for the project. Test panels, if acceptable, may be incorporated into the project. Panels must be free of debris and reflect final surface conditions in order to qualify for acceptance. Test panels shall be installed using the same mix, tools and personnel for the permanent pervious concrete and shall be placed with the expected mix preparation times form the supplier. Test the density of fresh concrete for the test panels in accordance with ASTM ASTM C1688/C1688M following the consolidation procedures described in ASTM C29/C29M, Jigging Procedure. Core hardened concrete for the test panels in accordance with ASTM C42/C42M, test thickness in accordance with ASTM C174/C174M, and test density in accordance with ASTM C140, Paragraph 9.3.

D. Fresh density shall be within ±5 lb/ft3 (80 kg/m3) of the specified fresh density.

E. Tolerance for thickness and density reported as the average of three cores of each test panel shall be as follows:

1. The average compacted thickness shall not be more than 1/4 in. (6 mm) less than the specified thickness, with no single core exceeding 1/2 in. (13 mm) less than the specified thickness; nor shall the average compacted thickness be more than 1-1/2 in. (38 mm) more than the specified thickness.

F. When a test panel is outside one or more of the limits of 1.05.D and 1.05.E, the test panel shall be rejected, removed, and replaced at the Contractor's expense.

G. When the test panel complies with 1.05.D and 1.05.E, the panel may be left in place and included in the completed work.

H. *Testing agencies*—Agencies that perform testing services on concrete materials shall meet the requirements of ASTM C1077. Agencies inspecting the work shall meet the requirements of ASTM E329. Testing agencies performing the testing shall be accepted by Engineer prior to construction.

I. Field tests of concrete required in 1.05.K shall be performed by an individual certified as both an NRMCA Certified Pervious Concrete Technician or equivalent and an American Concrete Institute (ACI) Concrete Field Testing Technician—Grade 1 or equivalent.

J. Advise the Architect/Engineer at least 48 hours before concrete placement.

K. Testing -

1. Obtain a minimum 1 ft3 (28 L) sample for acceptance tests in accordance with ASTM C172. Measure a minimum of one density

test during each day's placement in accordance with ASTM C1688/C1688M following the consolidation procedures described in ASTM C29/C29M, Jigging Procedure. Determine density using a minimum 0.25 ft3 (0.007 m3) cylindrical metal measure. Fill and compact the measure in accordance with ASTM C29/C29M, Jigging Procedure. Fresh density shall be within ±5 lb/ft3 (80 kg/m3) of the specified fresh density.

2. Remove three cores from each lot of 5000 ft (450 m2), in accordance with ASTM C42/C42M, not less than 7 days after placement of the pervious concrete. Cores shall be a minimum nominal 4 in. (100 mm) diameter. Select three locations in accordance with ASTM D3665. Measure the cores for thickness (ASTM C42/C42M) and density (ASTM C140). After thickness determination, trim and measure the cores for density in the saturated condition as described in Paragraph 9.3, Saturation, of ASTM C140. Immerse the trimmed cores in water for 24 hours, drain for 1 minute, remove surface water with a damp cloth, then weigh immediately. Tolerance for thickness and density reported as the average of three cores of each lot shall be as follows:

   a. The compacted thickness shall not be more than 1/4 in. (6 mm) less than the specified thickness, with no single core exceeding 1/2 in. (13 mm) less than the specified thickness; nor shall the average compacted thickness be more than 1-1/2 in. (38 mm) more than the specified thickness.

   b. Hardened density shall be within ±5% of the approved hardened density from the test panels.

   c. When a lot is outside one or more of the limits of 1.05.K.2, the lot shall be subject to rejection, removed, and replaced at the Contractor's expense unless accepted by the Owner.

3. Core holes shall be filled with concrete or preblended grout as approved by the Engineer.

L. Monitoring Equipment Installation and Coordination Testing -

Monitoring equipment to be supplied by the University of Maryland Baltimore County (UMBC) shall be installed by the Contractor at no more than six (6) total locations. Details of the two (2) types of monitoring points are included in this specification for the Contractor's information. The Contractor shall coordinate with UMBC personnel in order to properly schedule, identify monitoring point locations in the subgrade and complete the installation. The coordination effort shall be represented on the Contractor's CPM schedule. The Contractor shall contact Dr. Stuart Schwartz at 410-455-2748 (stu_schwartz@umbc.edu) UMBC no less than 14 calendar days prior to monitoring point installation. Details of the

proposed monitoring quipment is included at the end of this section for the Contractor's information.

PART 2: PRODUCTS

2.01 SUBBASE

A. Coarse aggregates shall meet the size and grading requirements of Contract Documents including:

1. No. 57 Coarse Aggregate Layer
2. No. 2 Stone Primary Subbase Layer
3. No. 89 Coarse Aggregate (Sand) Bedding Layer

2.02 PERVIOUS CONCRETE

A. Pervious Concrete shall comply with ASTM C94/C94M and the following requirements.

1. *Aggregates*—Nominal maximum aggregate size shall not exceed 1/3 of the specified pavement thickness.
2. *Admixtures*—Chemical admixtures that facilitate the production and placement of pervious concrete shall be permitted. The use of such admixtures shall be notified to the Architect/Engineer.
3. *Fibers*—The use of fibers in pervious concrete mixtures is permitted when approved by the Engineer.
4. *Pigments*—Use pigments complying with ASTM C979 if specified in Contract Documents.

2.03 ISOLATION JOINT MATERIAL

A. Isolation joint materials shall comply with ASTM D994, D1751, or D1752.

2.04 FORMS

A. Fabricate forms with steel, wood, or other material that is sufficiently rigid to maintain specified tolerances, and capable of supporting concrete and mechanical concrete placing equipment.

B. Forms shall be clean and free of debris of any kind, rust and hardened concrete.

2.05 GEOTEXTILE

A. Geotextile used for covering subbase layers as indicated in the Contract Plans shall conform to SHA Class PE, Type III.

PART 3: EXECUTION

3.01 SUBGRADE PREPARATION

A. Grade subgrade to over-excavation limits and in accordance with the erosion and sediment control sequence of construction specified in the Contract Plans.

B. Upon reaching subgrade elevation, no debris or other materials that may clog the subgrade may be stockpiled on the subgrade or in a location that would permit sediment-laden runoff from stockpiled areas to discharge onto the subgrade.

C. Keep all traffic off of the subgrade during construction to the maximum extent practical. Scarify subgrade disturbed or compacted by concrete delivery vehicles or other construction traffic, as directed by the Engineer.

3.02 SUBBASE

A. The subgrade shall be uniform and free of any and all debris or foreign material prior to placement of the subbase aggregate material.

B. Place the Sand Bedding Layer to the thickness specified in the Contract Plans and compacted to a maximum of 85% of the maximum dry density per AASHTO T-180.

C. Place the NO. 2 Stone Primary Subbase Layer over the Sand Bedding Layer in un-compacted, uniform lifts not to exceed 6-inches.

D. Place the No. 57 Stone Layer in un-compacted, uniform lifts not to exceed 6 inches. Concurrently place PVC overdrain where indicated on the Contract Plans.

E. Place geotextile over subbase layers in accordance with the details in the Contract Plans prior to placement of adjacent common borrow.

p. SETTING FORMWORK

A. Set, align, and brace forms so that the hardened pavement meets the tolerances specified in 3.09.

B. Apply form release agent to the form face, which will be in contact with concrete, immediately before placing concrete.

C. The vertical face of previously placed concrete may be used as a form.

D. Protect previously placed pavement from damage.

E. Do not apply form release agent to previously placed concrete.

F. Placement width shall be as specified in Contract Documents. Concrete placement width shall not exceed 20 ft (6 m) unless otherwise specified.

G. The Contractor shall have the responsibility of ensuring that all formwork is set to produce final grades in accordance with the Americans with Disabilities Act (ADA) for all handicap-accessible facilities where pervious concrete is specified.

3.04 BATCHING, MIXING, AND DELIVERY

A. Batch and mix in compliance with ASTM C94/C94M except that discharge shall be completed within 60 minutes of the introduction of mixture water to the cement. Increase time to 90 minutes when using an extended set control admixture. Water addition is permitted at the point of discharge.

3.05 PLACING AND FINISHING FIXED-FORM PAVEMENT

A. Deposit concrete either directly from the transporting equipment or by conveyor onto the pre-wetted subgrade or subbase, unless otherwise specified.

B. Do not place concrete on frozen subgrade or subbase.

C. Deposit concrete between the forms to an approximately uniform height.

D. Spread the concrete using a come-along, shorthandle, square-ended shovel, or rake.

E. Do not allow foot traffic on the fresh concrete.

F. Strike off concrete between forms using a formriding paving machine or vibrating screed. Other strike-off devices may be used when accepted.

G. Do not use steel trowels or power finishing equipment.

H. Finish the pavement to the elevations and thickness specified in Contract documents and meet the requirements of 3.09.

3.06 PLACING AND FINISHING SLIPFORM PAVEMENT

A. Slipform equipment is permitted.

B. Deposit and finish concrete in accordance with 3.05, except 3.05.D. and 3.05.F.

3.07 FINAL SURFACE TEXTURE

A. Compact fresh concrete to stay within the requirements of 3.09.

B. Compact the concrete along the slab edges with hand tools.

C. Compact concrete to a dense, pervious surface.

D. Final surface shall be free from surface-sealing from excess paste, debris or over-compaction.

3.08 EDGING

A. Edge top surface to a radius of not less than 1/4in. (6 mm).

3.09 TOLERANCES

A. Construct pavement to comply with the following tolerances:

1. Elevation: +3/4 in. (+19 mm), –0 in. (–0 mm)
2. Thickness: +1-1/2 in., –1/4 in. (+38 mm, –6 mm)
3. Contraction joint depth: +1/4 in. (6 mm), –0 in. (–0 mm)

B. Mechanically sweep pavement before testing for compliance with tolerances.

3.10 CURING

A. Begin curing within 20 minutes of concrete discharge unless longer working time is accepted by the Architect/Engineer.

B. Completely cover the pavement surface with a minimum 6 mil (0.15 mm) thick polyethylene sheet. Cut sheeting to a minimum of a full placement width. The maximum length of overlap

C. Cover all exposed edges of pavement with polyethylene sheet.

D. Secure curing cover material without using dirt or other loose materials.

E. Cure pavement for a minimum of 7 uninterrupted days, unless otherwise specified.

3.11 HOT- AND COLD WEATHER CONSTRUCTION

A. When hot weather is anticipated, submit detailed procedures for the production, transportation, placement, protection, curing, and temperature monitoring of concrete during hot weather.

B. In cold weather, comply with ACI 306.1, recording concrete temperature no less than twice per 24-hour period.

3.12 JOINTING

A. Unless otherwise specified, construct joints at the locations, depths, and with horizontal dimensions indicated in Contract Documents.

B. When jointing requirements are not indicated on the Project Drawings, submit drawings describing proposed jointing in accordance with Section 01200 SUBMITTALS of these Specifications and the requirements of

3.12.B.1 through 3.12.B.9. Do not proceed with work until the jointing requirements are accepted by the Engineer.

1. Indicate locations of contraction joints, construction joints, and isolation joints. Spacing between contraction joints shall not exceed 20 ft (6 m).
2. The larger horizontal dimension of a slab panel shall not exceed 125% of the smaller dimension.
3. The angle between two intersecting joints shall be between 80 and 100 degrees, as specified in Contract Documents.
4. Joints shall intersect pavement free edges at 90-degree angles and shall extend straight for a minimum of 1-1/2 ft (0.5 m) from the pavement edge where possible.
5. Align joints of adjacent pavement panels.
6. Align joints in attached or adjacent curbs within 1/4 in. (6 mm) of joints in pavement.
7. Contraction joint depth shall be 1/4 to 1/3 of the pavement thickness. Minimum joint width for saw-cutting is 1/8 in. (3 mm). When using an early-entry dry-cut saw, the depth of the cut shall be at least 1 in. (25 mm).
8. Use isolation joints only where pavement abuts fixed objects, such as buildings, foundations, and manholes.
9. Extend isolation joints through the full depth of the pavement. Fill the entire isolation joint with isolation joint material.

C. Create contraction joints by one of the following methods:

1. Tool contraction joints to the specified depth and width in fresh concrete immediately after the concrete is compacted.
2. Sawcut concrete after concrete has hardened sufficiently to prevent aggregate from being dislodged and soon enough to control pavement cracking. To minimize drying, ensure that curing materials are removed only as needed to make cuts.

PART 4: MEASUREMENT AND PAYMENT

4.01 CLEARING AND GRUBBING AND EXCAVATION

A. Clearing and grubbing and excavation necessary to achieve subgrade for the pervious concrete pavement system shall be measured and paid in accordance with the Contract Special Provisions for those items.

4.02 6-INCH SAND SUBBASE LAYER

A. The 6-Inch Sand Subbase Layer will be measured per square yard, complete in place and accepted.

B. The 6-Inch Sand Subbase Layer will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for furnishing, hauling, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

4.03 NO. 2 STONE

A. The No. 2 Stone will be measured per ton, complete in place and accepted.

B. The No. 2 Stone will be paid for at the contract unit price bid per ton, complete in place, accepted, which price will be full compensation for furnishing, hauling, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

4.04 6-INCH NO. 57 STONE

A. The 6-Inch No. 57 Stone layer will be measured per square yard, complete in place and accepted.

B. The 6-Inch No. 57 Stone layer will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for furnishing, hauling, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

4.05 GEOTEXTILE, CLASS PE, TYPE 3

A. Geotextile, Class PE, Type 3 will be measured in square yards, complete in place and accepted.

B. Geotextile, Class PE, Type 3, will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for furnishing, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

4.06 8-INCH PERVIOUS CONCRETE PAVEMENT

A. 8-Inch Pervious Concrete Pavement will be measured in square yards, complete in place and accepted.

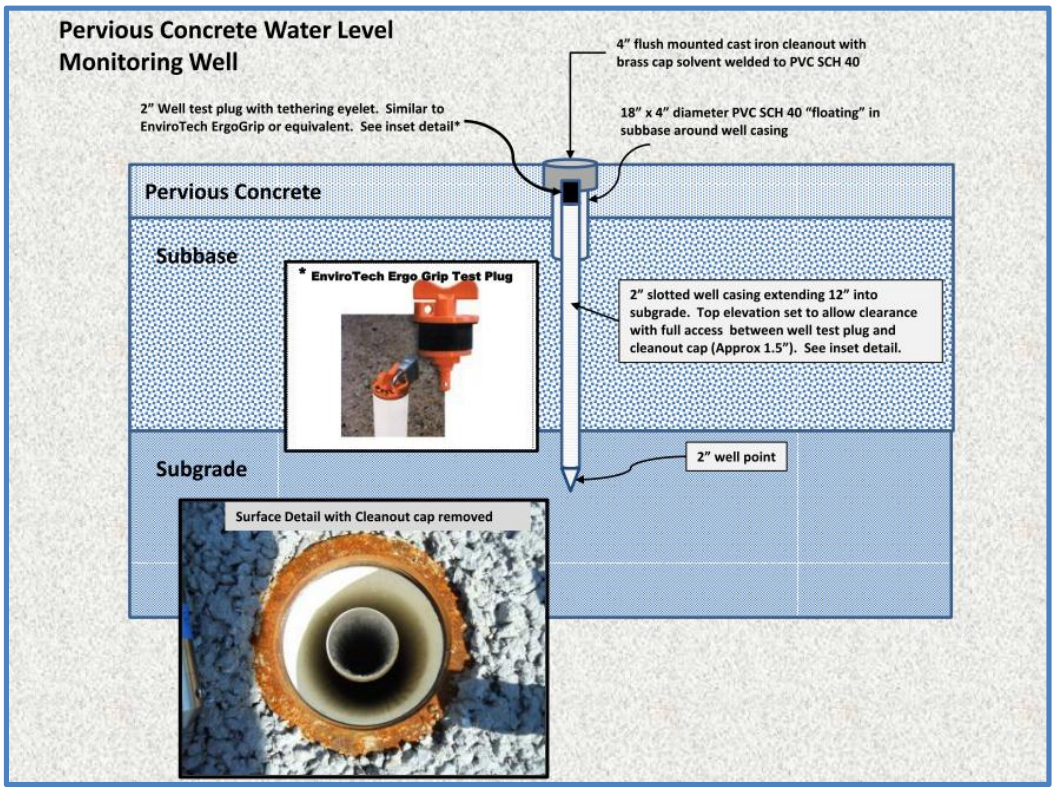
B. 8-Inch Pervious Concrete Pavement will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for furnishing, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

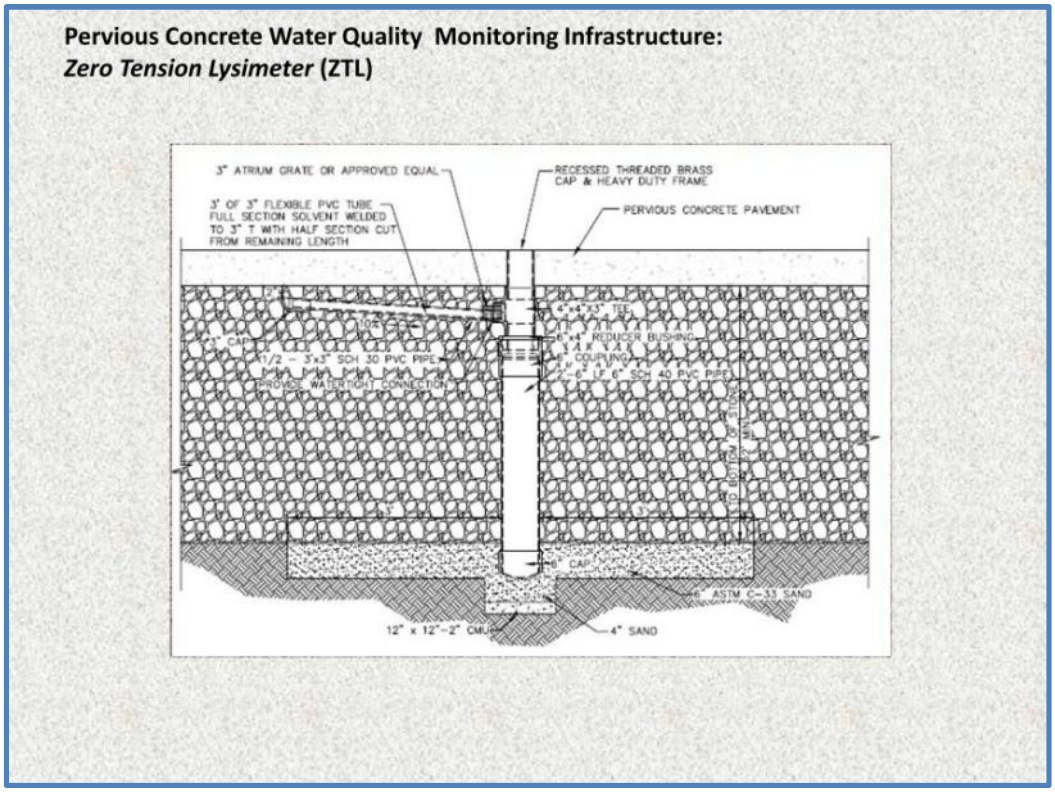
4.07 MONITORING EQUIPMENT

A. Monitoring Equipment to be installed in the pervious concrete portion of the project will not be measured for payment.

B. The cost of the Monitoring Equipment shall be incidental to the contract unit cost for 8-Inch Pervious Concrete Pavement, which will be full compensation for all scheduling, coordination with UMBC, placing the

equipment, and all for all material, labor, equipment, tools, and incidentals necessary to complete the item specified.





END OF SECTION

SECTION 02720

AGGREGATE BASE COURSE

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes constructing aggregate base courses for flexible and rigid pavement, sidewalks, curbs and gutters as specified in the Contract Documents or as directed by the Engineer.

1.02 SUBMITTALS:

A. Contractor shall submit the following in accordance with Section 01300 SUBMITTALS of these Specifications at least 30 days prior to the start of constructing the base course:

1. Documentation:

   a. Production plants
   b. Material sources
   c. Equipment lists

2. Field test procedures for compaction

3. Field test reports for compaction

1.03 EQUIPMENT:

A. All equipment, including the production plant and on-site equipment, shall be subject to approval by the Engineer. The plant shall be available for inspection by the Engineer at least 48 hours prior to the start of construction operations.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Graded Aggregate for Base Course shall meet the requirements of SHA Section 901.01.

2.02 PRODUCTION PLANTS:

A. Production Plants shall meet the requirements of SHA Section 915.

PART 3 - EXECUTION

3.01 WEATHER:

A. Temperature and Surface Conditions: Graded aggregate base shall be placed only when the ambient air and surface temperature is at least 32 F and rising. No material shall be placed on a frozen subgrade.

B. Precipitation: Construction shall not take place during precipitation. When precipitation has occurred during the previous 24 hours, the Engineer will determine if the subgrade is sufficiently dry. Any material en route from the plant to the job site may be placed at the Contractor's risk.

3.02 SUBGRADE PREPARATION:

A. The Contractor shall protect the subgrade against damage from all causes. Any part of the subgrade that is damaged shall be repaired or replaced by the Contractor at its own expense in a manner acceptable to the Engineer.

B. The subgrade shall be constructed as specified in Section 02315 EXCAVATION and as approved by the Engineer. If traffic, including construction equipment, is allowed to use the subgrade foundation or preceding layer, it shall be distributed over the entire width of the course to aid in obtaining uniform and thorough compaction. If ruts are formed, they shall be removed by reshaping and recompacting the affected area as specified in Section 02315 EXCAVATION.

3.03 TRANSPORTATION:

A. Mixed base materials shall be handled and transported in a manner that minimizes segregation and loss of moisture. All loads shall be covered in conformance with State laws unless hauling is off road and is approved by the Engineer. Dumping into piles, hauling over the completed base course, and stockpiling of material on the job site is prohibited unless approved by the Engineer.

3.04 SPREADING:

A. The base material shall be uniformly spread without segregating the coarse and fine particles, in layers of approximately equal thickness, to provide the specified planned depth. Shoulders or berms not less than 2 ft wide shall be built up on each side of the base to the top elevation of each uncompacted layer unless the base is placed against concrete curbs or gutters.

3.05 GRADE OR FINISHED SURFACE CONTROL:

A. The surface of the base material shall be brought to line and grade and shaped to the specified cross section. Grades shall be set longitudinally and transversely with fixed controls not to exceed 25 ft. spacing. The surface material shall be compacted and smoothed over its full width using a smooth faced steel wheeled roller, if rolling is not feasible, by mechanical tampers and vibratory compactors as

approved by the Engineer. The finished grade shall not deviate more than 1/2 in. from the established grade.

3.06 FINISHING:

A. The surface of the base material shall be shaped to the required lines, grades and cross section specified in the Contract Documents.

3.07 COMPACTION:

A. Immediately after placement, the base material shall be compacted to the required density. During compaction operations, the moisture content of the material shall be maintained within 2 percent of the materials optimum moisture. The optimum moisture content and maximum dry density of graded aggregate base shall be determined as specified by MSMT 321.

B. Graded Aggregate Base shall be compacted to a density not less than 97 percent of the maximum dry density. In-place density shall be measured as specified in MSMT 350 or 352.

C. Compaction operations shall begin at the sides of the course; overlap the shoulder or berm at least 1 ft and progress toward the center. The compaction operation shall continue until all compaction marks are eliminated.

3.08 MAINTENANCE:

A. During construction and after completion of the base course, the Contractor shall maintain the base course and protect it against damage from all causes. Any part of the base course that is damaged shall be repaired or replaced for the full depth by the Contractor at its own expense in a manner acceptable to the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL:

A. Impacts due to Weather, Subgrade Preparation, Transportation, Grade or Finished Surface Control, Finishing, Compaction, and Maintenance will not be measured for payment.

B. Impacts due to Weather, Subgrade Preparation, Transportation, Grade or Finished Surface Control, Finishing, Compaction, and Maintenance will not be paid for directly, but will be considered incidental to the appropriate aggregate base course item.

4.02 3 INCH GRADED AGGREGATE BASE COURSE:

A. 3 Inch Graded Aggregate Base Course will be measured per square yard complete in place and accepted.

B. 3 Inch Graded Aggregate Base Course will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as specified.

4.03 4 INCH GRADED AGGREGATE BASE COURSE:

A. 4 Inch Graded Aggregate Base Course will be measured per square yard complete in place and accepted.

B. 4 Inch Graded Aggregate Base Course will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as specified.

4.04 6 INCH GRADED AGGREGATE BASE COURSE:

A. 6 Inch Graded Aggregate Base Course will be measured per square yard complete in place and accepted.

B. 6 Inch Graded Aggregate Base Course will be paid for at the contract unit price bid per square yard, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02745

HOT MIX ASPHALT PAVEMENT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes providing Hot Mix Asphalt pavement surface and base courses on prepared constructed base course or subgrade in conformance with section, lines and grades shown.

1.02 SUBMITTALS:

A. Contractor shall submit to the Engineer for approval a mix design and a proposed paving plan, including production plants, location of plants with respect to the project site, equipment, and material sources.

B. In accordance with SECTION 01300 SUBMITTALS, the Contractor shall submit to the engineer:

1. Product data for mix designs

2. Certification for mix designs

3. Documentation for:

   a. Paving plan
   b. Production plants
   c. Equipment
   d. Materials sources

4. Certified test results for mix designs

5. Field test procedures

6. Field test reports

1.03 QUALITY ASSURANCE:

A. Referenced Standards:

1. Maryland State Highway Administration Standard Specifications for Construction and Materials (SHA)

1.04 EQUIPMENT:

A. All equipment, including the production plant and paving equipment, shall be subject to approval by the Engineer. The plant shall be ready for inspection by the Engineer at least 48 hours prior to the start of the construction operations.

B. Pavers

1. Pavers will be inspected and approved by the Engineer based upon requirements in the manufacturer's specification manual with a copy to be provided by the Contractor. The paver shall be a self-contained, power propelled unit capable of spreading the mixture true to line, grade and cross slope. The paver shall be equipped with a screed or strike off assembly, which can produce a finished surface of the required smoothness and texture without tearing, shoving or gouging the mixture. The paver shall have automatic controls for transverse slope and grade. Controls shall be capable of sensing grade from an outside reference line or ski and sensing the transverse slope of the screed to maintain the required grade and transverse slope within plus or minus 0.1 of the required slope percentage.

2. Manual operation will be permitted in the construction of irregularly shaped and minor areas, or where directed by the Engineer.

3. Whenever a breakdown or malfunction of any automatic control occurs, the equipment may be operated manually for the remainder of the workday as directed by the Engineer.

4. Reference lines or other suitable markings to control the horizontal alignment shall be provided by the Contractor, subject to the approval of the Engineer.

C. Rollers: Rollers shall be self propelled, reversible, steel wheeled or pneumatic tired. Vibratory rollers may be used, except they shall not be in vibratory mode when paving on surface courses without the approval of the Engineer. Pneumatic tire rollers shall have multiple tires of equal size with smooth tread. Wheels shall be arranged to oscillate in pairs, or they may be individually sprung. Tires shall be uniformly inflated at the operating pressure approved by the Engineer. The Contractor shall furnish the Engineer a manufacturer's table showing this data. The difference in tire pressure between any two tires shall not be greater than 5 psi. The Contractor shall provide a means for checking the tire pressure on the job at all times.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Performance Graded Asphalt Binders

1. Performance graded asphalt binders shall meet the requirements of SHA Section 904.02.

B. Tack Coat

1. Tack coat shall meet the requirements of SHA Section 904.03.

C. Hot Mix Asphalt Mixes

1. Hot Mix Asphalt mixes shall meet the requirements of SHA Section 904.04.

2.02 PRODUCTION PLANTS:

A. Production Plants shall meet the requirements of SHA Section 915.

PART 3 - EXECUTION

3.01 WEATHER:

A. Pavement shall be placed only when the ambient air and surface temperature is at least 40^0 F and rising for surface course and at least 32^0 F and rising for base courses. The base shall be clean and dry and approved by the Engineer before HMA paving begins. HMA pavement shall not be placed on a frozen base. When weather conditions differ from these limits, material en route from the plant to the job site may be used at the Contractor's risk. If placement of the material is stopped by the Engineer, all material en route shall be wasted at the Contractor's expense.

3.02 FOUNDATION PREPARATION:

A. Prior to placement of paving material, the foundation shall be constructed as specified in the Contract Documents and approved by the Engineer. When paving over existing pavement, all excess crack filling or patch material shall be removed and all spalls and potholes shall be cleaned, tack coated, filled and tamped with hot mix asphalt before placement. Manholes, valve boxes, inlets, and other appurtenances within the area to be paved shall be adjusted to grade as directed by the Engineer.

B. Curbs, Gutters, and Other Supports: Where permanent curbs, gutters, edges, and other supports are planned, they shall be constructed and backfilled prior to placing the HMA, which shall then be placed and compacted against them.

3.03 TACK COAT:

A. Prior to application of the tack coat, the surface shall be cleaned of all loose and foreign materials. The tack coat shall be uniformly applied to the surface by full circulation spray bars that are laterally and vertically adjustable and provide triple fanning and overlapping action so that the resulting coating shall be residual asphalt applied at a rate of 0.01 to 0.05 gal/yd^2 as directed by the Engineer.

B. Tack coat shall be placed and protected with due regard to the travelling public such that vehicles and pedestrians are not permitted to travel in areas where tack has been placed, while maintaining required access through the work site. Hauling trucks shall not track tack coat onto adjacent pavement.

3.04 HOT MIX ASPHALT PLACEMENT:

A. HMA shall be placed by the paver. Delivery of the mixture by the hauling units and placement shall be continuous. The temperature of the mixture shall not be less than 225^0 F at the time of placement. Broadcasting of loose mixture over the new surface will not be permitted.

3.05 COMPACTION:

A. Immediately following placement of the HMA, the mixture shall be compacted by rolling to an in-place density of 92.0 to 97.0 percent of the maximum density. In-place compaction shall be completed before the mixture cools below 185^0 F, as determined by a probe type surface thermometer, supplied by the Contractor and approved by the Engineer.

B. Rollers shall start at the sides and proceed longitudinally toward the center of the pavement. Successive trips of the roller shall overlap by at least one half the width of the roller, and alternate trips shall not end at the same point. After rolling is completed, no traffic of any kind will be permitted on the pavement until the pavement has cooled to less than 140^0 F or as directed by the Engineer.

3.06 JOINTS:

A. Both longitudinal and transverse joints in successive courses shall be staggered so that one is not above the other. Transverse joints shall be staggered by the length of the paver. Longitudinal joints shall be staggered a minimum of 6 in.

B. Joints shall be constructed to provide a continuous bond between the old and new surfaces. Joints shall be coated with tack coat as directed by the Engineer. In the case of surface course, the edge of the existing pavement shall be cut back for its full depth on transverse joints to expose a fresh surface and the surface shall be coated with tack coat material as directed by the Engineer. Before placing the

mixture against curbs, gutters, headers, manholes, etc., all contact surfaces shall be coated with tack coat.

3.07 PATCHING

A. When utilities are constructed through existing pavement, a width of pavement wide enough for proper compaction shall be removed prior to backfilling the trench. The trench shall be backfilled with select backfill to provide a stable surface flush with the bottom of existing graded aggregate base. Asphalt corresponding with the appropriate patching section shall be placed and compacted from the bottom of existing aggregate base to the top of existing pavement.

3.08 TIE-IN

A. Where pavement is placed such to tie in to existing pavement of sidewalk, the Contractor shall construct a butt joint as per the contract documents to eliminate any vertical difference between the edge of final placed pavement and edge of existing sidewalk or asphalt.

B. For temporary conditions, a vertical difference of no more than 2 ½ inches between pavement and sidewalk edges is permissible for conditions under which vehicular traffic will cross the temporary tie-in. When the temporary tie-in joint is a component of an active pedestrian pathway, a vertical difference of no more than ½ inch between pavement and sidewalk edges is permissible.

3.09 FIELD QUALITY CONTROL:

A. Acceptance will be determined by nuclear in-place density test data. The nuclear gauge shall be calibrated in conformance with MSMT 417.

B. The Contractor shall take a one-minute special calibration nuclear test from each lift. A special calibration nuclear test is defined as an average of two (minimum) special calibration readings taken at the same location after rotating the nuclear gauge 180^0 degrees.

C. Nuclear test-in-place density data shall be expressed as percentage of the maximum specific gravity determined for each day's production. The in-place density shall be 92.0 to 97.0 percent.

PART 4 - MEASUREMENT AND PAYMENT

4.01 HOT MIX ASPHALT SUPERPAVE 12.5mm FOR SURFACE, PG64-22, LEVEL 2:

A. Hot Mix Asphalt Superpave 12.5mm For Surface, PG 64-22, Level 2 will be measured per ton for the mix specified, complete in place and accepted.

B. Hot Mix Asphalt Superpave 12.5mm For Surface, PG 64-22, Level 2 will be paid per ton, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, impacts due to weather, foundation preparation, tack coat, compaction, joints, field quality control, maintenance and all work incidental to complete the item as specified.

4.02 HOT MIX ASPHALT SUPERPAVE 19.0mm FOR BASE, PG64-22, LEVEL 2:

A. Hot Mix Asphalt Superpave 19.0mm For Base, PG 64-22, Level 2 will be measured per ton for the mix specified complete in place and accepted.

B. Hot Mix Asphalt Superpave 19.0mm For Base, PG 64-22, Level 2 will be paid per ton, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, impacts due to weather, foundation preparation, tack coat, compaction, joints, field quality control, maintenance and all work incidental to complete the item as specified.

4.03 PATCHING:

A. Patching shall not be measured or paid but shall be incidental to the relevant utility or pipe construction item.

END OF SECTION

SECTION 02746

PAVEMENT GRINDING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes grinding hot mix asphalt to the depth at location specified in the Contract documents, or as directed by the engineer, including butt joint grinding for pavement tie-in.

1.02 SUBMITTALS:

None required

1.03 QUALITY ASSURANCE:

A. Referenced Standards:

1. Maryland State Highway Administration Standard Specifications for Construction and Materials (SHA)

1.04 EQUIPMENT:

A. Grinding equipment shall have a cutting mandrel with carbide tipped cutting teeth and shall de designed specifically for grinding asphalt surfaces to close tolerances. The equipment shall accurately establish slope elevations.

B. A vacuum equipped street sweeper, capable of removing all loose material from the roadway without causing dust to escape into the air, shall follow immediately behind the grinding machine.

PART 2 - PRODUCTS

None required

PART 3 - EXECUTION

3.01 TOLERANCES:

A. The final pavement surface shall have a transverse pattern of 0.2 in. center to center of each strike area. The difference between the high and low of the matted surface shall not exceed 1/16 in.

3.02 DRAINAGE:

A. When necessary, the existing pavement adjacent to the ground pavement areas shall be ground, to maintain an adequate cross slope for drainage.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GRINDING HOT MIX ASPHALT PAVEMENT:

A. Grinding Hot Mix Asphalt Pavement with carbide cutting bits will be measured per square yard. The square yard measurement will be computed from the actual width and length measurements of the area that has been ground.

B. Grinding Hot Mix Asphalt Pavement will be paid for at the Contract unit price per square yard, which payment will be full compensation for grinding, removal and disposal of ground material, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

SECTION 02750

REINFORCED CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in the Section includes providing Reinforced Concrete Pavement on prepared constructed base course in conformance with section, lines and grades shown.

B. Reinforced Concrete Pavement shall meet the requirements of MSHA 902.10, Mix No. 7. Early Strength Reinforced Concrete Pavement shall meet the requirements of MSHA 902.10, Mix No. 11.

1.02 SUBMITTALS:

A. In accordance with SECTION 01300 SUBMITTALS, the Contractor shall submit the following:

1. Working Drawings indicating construction joint and expansion joint layout, and openings.

2. The source and proportions of materials to be used in the required concrete mix, including admixtures.

3. Certificates of Compliance to specifications of materials provided.

1.03 QUALITY ASSURANCE:

A. Referenced Standards:

1. American Association of State Highway and Transportation Officials (AASHTO)

2. Maryland State Highway Administration Standard Specifications for Construction and Materials (SHA)

1.04 EQUIPMENT:

A. All equipment, including the production plant and form equipment, shall be subject to approval by the Engineer. The plant shall be ready for inspection by the Engineer at least 48 hours prior to the start of the construction operations.

B. The equipment and methods used shall provide a means of obtaining the prescribed weights within the allowable tolerances to achieve the consistency specified with a minimum amount of water to achieve proper placement of the

mixture in a condition of maximum density with no segregation, and to finish and cure the pavement as specified.

PART 2 - PRODUCTS

2.01 FORMS:

A. In accordance with SECTION 03150 FORMWORK

2.02 CONCRETE:

A. Portland Cement Concrete, conforming to Section 03300 CAST-IN-PLACE CONCRETE.

B. Reinforced Concrete Pavement shall meet the requirements of MSHA 902.10, Mix No. 7.

C. Early Strength Reinforced Concrete Pavement shall meet the requirements of MSHA 902.10, Mix No. 11.

2.03 REINFORCING STEEL:

A. Reinforcing steel shall conform to Section 03200 REINFORCING STEEL.

B. Joint Materials shall meet the requirements of SHA Section 911.

C. Epoxy Coatings for Reinforcement shall meet the requirements of SHA Section 917.02.

2.04 CURING MATERIALS:

A. Curing materials shall be burlap cloth, sheet materials, liquid membrane forming compounds, or cotton mats.

1. Burlap cloth shall be made from jute or kenaf and conform to M 182, Class 1, 2, or 3.

2. Sheet material shall conform to M 171 with the following exceptions:

a. White Opaque Burlap Polyethylene Sheeting. Tensile strength and elongation requirements are waived. The sheeting shall have a finished product weight of not less than 10 oz/yd2.

b. White Opaque Polyethylene Backed Nonwoven Fabric. The material shall conform to SHA Section 902.07.02(a), with the thickness requirement waived. The finished product weight shall be a minimum of 5 oz/yd2.

c. White Opaque Polyethylene Film. Tensile strength and elongation requirements are waived.

3. Liquid membrane forming compounds shall conform to M 148. Field control testing of the white pigmented curing compounds shall be on the basis of weight per gallon. The samples shall not deviate more than ± 0.3 lb/gal from the original source sample.

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

1. The covering shall be cotton cloth, burlap or jute having the following properties:

a. Cotton cloth covering shall weigh not less than 6.0 oz/yd2 and shall have an average of not less than 32 threads/in. of warp and not less than 28 threads/in. of filling. The raw material used in the manufacture of the cotton cloth shall be raw cotton, cotton comber waste, cotton card strip waste, or combinations thereof.

b. Burlap or jute covering for cotton mats shall weigh not less than 6.4 oz/yd2 and shall have not less than of 8 threads/in. of warp and not less than 8 threads/in. of filling. It shall be the grade known commercially as "firsts" and shall be free from avoidable imperfections in manufacture and from defects or blemishes affecting the serviceability.

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

2.05 FORM RELEASE COMPOUND:

A. Form release compounds shall effectively prevent the bond of the concrete to the forms. The form release compounds shall not cause discoloration of the concrete or adversely affect the quality or rate of hardening at the interface of the forms.

B. The flash point of the form release compound shall be a minimum of 100 F when tested as specified in T 73.

2.06 JOINT SEALER:

A. Joint sealer shall conform to D 3405 as modified by MSMT 404. The manufacturer shall furnish certification as specified in TC-1.02. Manufacturer's recommendations regarding heating and pouring temperatures will be used when

testing these materials. If a range of temperatures is recommended, the midpoint will be used as the pour point.

1. Silicone joint sealer and crack filler shall be low modulus, one component compound which may or may not require a primer for bonding to concrete. If a primer is required, it shall be as recommended by the sealant manufacturer and shall be placed on the joint faces following the insertion of the backup material.

2. Silicone material, when tested at 73 ± 3 F and 45 to 55 relative humidity, shall conform to the following:

TEST PROPERTY	TEST METHOD	SPECIFICATION LIMITS
Shore A Hardness, at 7 days	D 2240	10-25
Tensile Strength at 150 % Elongation, psi max	D 412 Die C	45
Elongation, % min	D 412 Die C	700
Adhesion in Peel, lb/in. min	Federal Spec TT-S-00230	20
Flow, 0.01 in. max	T 187	0.3
Tack-Free Time, minutes	D 2377	20-75

3. Each container of silicone sealer and crack filler shall have a minimum shelf life of six months. Material more than six months old shall be retested.

2.07 PREFORMED JOINT FILLER:

A. Preformed joint fillers shall conform to M 153. The bituminous fiber type shall conform to M 213, with the bitumen content determined using T 164. The weathering test shall be deleted for either type of material.

2.08 PRODUCTION PLANTS:

A. Production Plants shall meet the requirements of SHA Section 915.

PART 3 - EXECUTION

3.01 WEATHER:

A. Concrete placement shall begin only when the ambient air and surface temperature is at least 40° F and rising and discontinued anytime the temperature falls below 40° F. Concrete pavement shall not be placed on a frozen base. The Contractor shall cover freshly placed concrete to protect it from precipitation as required, and shall keep available sufficient material to protect the concrete. Concrete shall not be placed when the Engineer determines that wind would have

a detrimental effect of the work. When weather conditions differ from these limits, material en route from the plant to the job site may be used at the Contractor's risk. If placement of the material is stopped by the Engineer, all material en route shall be wasted at no additional cost to the Administration.

3.02 FOUNDATION PREPARATION:

A. Prior to placement of paving material, the foundation shall be constructed as specified in the Contract Documents and approved by the Engineer. The total width of the foundation shall extend a minimum of 4 inches outside the base of the fixed form. No additional payment will be made for the extended width. Manholes, valve boxes, inlets, and other appurtenances within the area to be paved shall be adjusted to grade as directed by the Engineer.

B. Curbs, Gutters, and Other Supports: Where permanent curbs, gutters, edges, and other supports are planned, they shall be constructed and backfilled prior to placing the concrete pavement, which shall then be placed against them.

3.03 FORMS:

A. Side forms shall be made of steel not less than 7/32 in. thick with a depth equal to the edge thickness of the pavement. Built up or warped forms shall not be used. Forms must be strong enough to retain the required shape throughout the paving process. The base of the form shall be equal to its height and a flat flanged tread of top surface not less than 2 inches wide. Stake sockets to accommodate a 1 inch diameter steel stake shall be provided at the minimum rate of three in each section of the form, except forms less than 10 feet long shall have at least two in each section.

B. Forms for keyways shall be rigidly fastened to the road from. Holes shall be provided through forms and keyways to accommodate required tie bars and dowels.

C. Tolerances for forms shall be 1/8" in 10 feet for the top and ¼" in 10 feet for the face. The forms shall provide means for locking the ends of abutting sections Forms shall be clean and coasted with an approved form release compound. Forms that are bent, deformed, or broken shall be removed or repaired as directed by the Engineer.

D. Grade controls shall be set at the corners of each form. If the foundation is disturbed after the forms have been set to the correct grade, the foundation shall be corrected by the Contractor and approved by the Engineer. The Contractor shall check the foundation using an approved device such as a scratchboard and make any required corrections prior to concrete placement.

E. Wood forms may be approved for use at the discretion of the Engineer when use of a metal form is judged to be impractical.

3.04 REINFORCEMENT:

A. Reinforcement shall be provided as specified in the Contract Documents. Reinforcement shall be kept clean and free from foreign material that may prevent proper bonding of the concrete. Reinforcement shall be epoxy-coated.

B. Dowel bars at joints shall be installed on the approved foundation parallel to the foundation grade ahead of slab reinforcement and concrete. Dowel bars shall be coated with a water insoluble lubricant as approved by the Engineer. Dowel bars shall be set on chairs or prefabricated assemblies approved by the Engineer, providing proper alignment, depth, and spacing. Chairs shall be submitted to the Engineer for approval prior to use.

C. Tie bars for longitudinal construction joints shall be placed on chairs so that at the initial set of the concrete they shall be at the proper alignment, depth, and spacing. Chairs shall be submitted to the Engineer for approval prior to use.

D. Fabric and mat reinforcement shall be furnished in flat sheets and shall be kept flat during placement. Reinforcement clearance shall be as specified in the Contract Documents.

3.05 CONCRETE PLACEMENT

A. Concrete shall be placed on a moist foundation. If the ambient temperature is 70^0 F and rising, the forms and reinforcement shall be sprinkled with cool water immediately prior to placement of the concrete. Concrete shall be placed on the foundation within the forms and rehandling shall be minimized.

B. The contractor shall take care to not damage concrete by operating equipment on newly placed pavement, either by operating equipment before it has reached a compressive strength of 3000 psi, or by operating equipment too close to the concrete edge, or by using equipment in such a manner as to cause spalling or other damage.

C. Concrete shall be deposited in a single layer. Reinforcement shall be set on chairs to maintain the stability and proper elevation of the reinforcement. Welding of reinforcement to the chairs in lieu of wire ties will be permitted, expect for epoxy coated reinforcement, welding will be permitted only if the epoxy coating reinforcement, welding will be permitted only if the epoxy coasting is applied after the welding. Any damage to epoxy coating shall be repaired as directed by the Engineer.

D. Concrete shall be consolidated using immersion type vibrators. The vibrators shall advance with the paving equipment. Vibrator spacing, amplitude, and depth shall ensure proper consolidation, clear reinforcement by ½”, and shall be approved by the Engineer. Thorough consolidation shall be ensured along the faces of all forms and joint assemblies, but vibrators shall not contact forms, assemblies, or underlying materials. Excessive vibration resulting in segregation shall be avoided.

E. The concrete shall be machine finished unless approved by the Engineer. The machine shall be equipped with two adjustable transverse screeds which can ensure concrete placement to the specified crown and grade. Following the transverse screeds, the concrete shall be screeded longitudinally. The width of the working face of the screeds shall be 6" minimum. A chevron (V shaped) nonreciprocating finishing float or other type as approved by the Engineer shall be used. The float shall be suspended from a frame that does not ride directly on the forms. Following the finishing float, a scraping straightedge 10 feet long, equipped with a long handle, shall be used to bring the pavement to the correct grade. When the finishing machine is operated over concrete which has partially set, provisions shall be made to prevent damage to the concrete by the machine wheels.

F. After finishing and before texturing of the concrete, the entire pavement surface shall be checked with a 10 foot long metal straightedge approved by the Engineer. The surface shall not deviate from a straight line or vertical curve transverselly or longitudinally more than 1/8 inch in 10 feet.

G. After the pavement is placed and before final acceptance, the thickness will be checked by the Engineer from cores cut by the Contractor. Coring shall be as specified in MSMT 552. Six cores shall be obtained at locations specified by the Engineer. Core holes shall be filled by the Contractor, at no additional cost to the Administration. When the thickness of pavement is deficient by more than 1 in., the full section of deficient pavement shall be removed and replaced by the Contractor at no additional cost to the Administration. Deficiencies up to 1 in. will be subject to reduced payment as specified in the Payment section.

H. Following concrete finishing and surface check, the roadway surface shall be given a textured finish using a texturing device which produces transverse corrugations 1/8 in. wide by 1/8 in. deep spaced between 5/8 and 7/8 in. A 2 in. space shall be provided between passes of the texturing device and a 3 in. space provided between the last corrugation and the center line of all transverse joints. Texturing shall begin when the concrete surface is plastic enough to allow texturing to the depth specified but dry enough to prevent the plastic concrete from flowing back into the grooves being formed. Care shall be exercised to avoid overlaps and the tearing of the concrete in the texturing operation. Texturing on open sections shall be uniform for the full width of pavement. On closed sections, the last 12 in. of the roadway adjacent to the curb shall be left untextured to facilitate drainage. The completed textured finish shall be uniform in appearance.

I. After texturing the surface, and when the concrete has taken its initial set, transverse and longitudinal slabs shall be edged using a tool with a 1/4 in. radius.

J. The Mix No. 7 concrete shall be allowed to cure for a minimum of 72 hours. The Mix No. 11 concrete shall be allowed to cure for a minimum of 24 hours. If the ambient air temperature falls below 40°F during the curing period, insulated blankets shall be used to maintain the concrete temperature above 40°F. Insulated blankets shall be used in addition to of the curing material. The Contractor shall

provide high/low thermometers to monitor the concrete temperature. The concrete shall be cured using one of the following methods:

a. **Liquid Membrane Forming Compound.** A liquid membrane forming compound used for curing shall be applied to the surface as soon as the free water has disappeared from the surface. The compound shall be applied using an approved spraying machine having drive wheels that straddle the freshly placed concrete. Standby equipment shall be on site in the event of failure of the spraying machine. The spraying machine shall be equipped with an adequate wind guard and shall produce a fine spray of material that covers the surface with a uniform continuous film. The film shall be free of pin holes and other imperfections and shall be free of checks, cracks or peelings. Discontinuities in the film shall be corrected by application of an additional coat to the affected area within 30 minutes of the original coat. The compound shall be applied in two applications at a rate of 1 gal/200 ft2 for both coats. Sprayed surfaces subjected to damaging rainfall within three hours after the second application shall be resprayed at no additional cost to the Administration. Vertical surfaces of longitudinal and transverse joints shall be kept free of curing compound by the use of rope or other masking methods approved by the Engineer. Sprayed surfaces shall be protected to revent disruption of the continuity of the membrane. Application of compound by hand operated spraying equipment in irregular areas shall be as directed by the Engineer.

b. **Burlap Curing.** Burlap shall be placed on the freshly placed concrete as soon as practical, without damaging the concrete. Burlap shall be overlapped to provide a double thickness on the entire surface. The burlap shall be saturated with water before placement and kept continuously wet during the curing period.

c. **Cotton Mat Curing.** Cotton mats shall be placed on the freshly placed concrete as soon as practical, without damaging the concrete. Mats shall be saturated with water prior to placement and kept continuously wet during the curing period.

d. **Sheet Materials.** Sheet materials conforming shall be placed on the freshly placed concrete as soon as practical without damaging the concrete. Sheets shall be lapped at least 1 ft and extend outside the slab. Laps and edges shall be held securely in place to provide continuous contact of the sheet with the pavement surface.

K. Form Removal: Unless otherwise directed by the Engineer, forms shall remain until the concrete has set at least 12 hours. The sides of slabs that are not damaged shall be cured for the remaining 60 hours of the 72 hour curing period. Damaged or honeycombed areas shall be repaired and cured for an additional 72 hours.

L. Joints shall conform to the details specified in the Contract Documents, be perpendicular to the finished grade of the pavement and be sealed as specified in Section 523. Transverse expansion and contraction joints shall be straight and continuous from edge to edge of the pavement.

a. **Transverse Construction Joints.** Transverse construction joints shall be installed at the end of each day's placing operations and at any other points within a paving lane when concrete placement is interrupted for 30 minutes or longer. These joints shall be located at a planned joint except in case of equipment breakdown. When concrete placement cannot be continued, the transverse construction joint may be installed within the slab unit but not less than 10 ft from a planned transverse joint. Transverse construction joints shall be doweled as specified in the Contract Documents, and sawed as specified in (c)(1).

b. **Expansion Joints.** Expansion joints shall be formed by means of a preformed filler material conforming to 911.02. The filler shall be securely held in position by means of metal supports, as approved by the Engineer, which shall remain in the pavement. A removable metal channel cap bar shall be used to hold the parts of the joint in proper position and protect the filler from damage during concreting operations. The cap bar shall be removable without damage to the pavement to provide a space for sealing of the joint. Adjacent sections of filler shall be fitted tightly together, and shall extend across the full width of the paving lane to prevent entrance of concrete into the expansion space. Expansion joints shall be formed around structures and features that project through, into, or against the pavement, using joint filler or as directed by the Engineer.

c. **Contraction Joints.** Longitudinal and transverse contraction joints shall be constructed by sawing. If gravel aggregate is used, joints shall be tooled or formed by using an insert approved by the Engineer.

d. **Sawed Joints.** Sawed joints shall be constructed by sawing a groove in the concrete with a 1/8 in. blade to the depth as specified in the Contract Documents. The time of sawing shall vary depending on existing and anticipated weather conditions and shall prevent uncontrolled cracking of the pavement. Sawing of the joints shall commence as soon as the concrete has hardened sufficiently to permit cutting the concrete without chipping, spalling, or tearing. Any membrane cured surface damaged during the sawing operations shall be resprayed as soon as the surface becomes dry. After completion of the curing period, the upper portion of the groove shall be widened by sawing to the width and depth specified. The saw blades may be single or gang type, with one or more blades mounted in tandem. Saw cutting into load transfer devices is prohibited. Immediately after the joint is sawed, the saw cut and adjacent concrete surface shall be thoroughly flushed with water until all waste from sawing is removed from the joint.

e. **Insert Type Contraction Joints.** Insert type contraction joints shall be constructed by installing a preformed insert in the plastic concrete to form a weakened plane to induce cracking. The equipment for installing inserts shall be a machine equipped with a vibratory bar for cutting a groove in the plastic concrete for placement of the insert or for vibrating the insert

into place at the prescribed joint location. Installation of the insert shall be to the required depth throughout the full width of the paving lane. Vibration units shall be arranged so that the vibration will be uniformly distributed throughout the bar. The intensity of vibration shall be adjustable as necessary to form a groove of proper size for the filler or for forcing the insert into the plastic concrete and consolidating the concrete around the in place insert. For concrete placed by slip form pavers, the edges of the plastic concrete shall be supported to prevent slumping during the vibration and placement of inserts. The vibratory float shall be used following placement of the insert material in lieu of hand floating or troweling the finish. The insert shall be installed in the plastic concrete immediately following the final machine finishing with a maximum of two joint spacings between the finishing machine and the inserter. Additional straightedge and texturing operations shall be accomplished without disturbing the installed insert. Adjacent sections of the joint inserts within each slab unit shall be securely joined together, and the insert shall be thoroughly consolidated against the full depth of the insert. The insert shall be perpendicular to the finished grade of the pavement and shall be straight in alignment at the joint locations specified, with the top of the insert flush or not more than 1/8 in. below the pavement surface. After the completion of the curing period, the top portion of fiberboard fillers or sawable preformed inserts shall be removed by sawing with a power saw as approved by the Engineer.

M. **Pavement Profile.** The pavement surfaces shall meet the elevations provided in the plans, providing positive drainage. Under no conditions shall pavement cross slopes exceed 5%.

N. **Opening to Traffic.** The pavement may be opened to vehicular traffic after having attained a compressive strength of 3000 psi. Tests of field samples shall conform to T 23.

3.06 TIE-IN

A. Where pavement is placed such to tie in to existing pavement of sidewalk, the Contractor shall construct a butt joint as per the contract documents to eliminate any vertical difference between the edge of final placed pavement and edge of existing sidewalk or asphalt.

B. For temporary conditions, a vertical difference of no more than 2 ½ inches between pavement and sidewalk edges is permissible for conditions under which vehicular traffic will cross the temporary tie-in. When the temporary tie-in joint is a component of an active pedestrian pathway, a vertical difference of no more than ½ inch between pavement and sidewalk edges is permissible.

PART 4 - MEASUREMENT AND PAYMENT

4.01 REINFORCED CONCRETE PAVEMENT

A. Reinforced Concrete Pavement will be measured per square yard complete in place and accepted.

B. Reinforced Concrete Pavement will be measured and paid for at the Contract unit price per square yard. The square yard measurement will be field measured on the basis of concrete pavement length field measured at the centerline of pavement, and field measured width. The payment will be full compensation for all materials, equipment, tools, labor, and incidentals required to perform the work, including but not limited to concrete, forms, reinforcement steel, chairs, epoxy coating, finishing, curing, joints, joint construction, saw cutting, and joint sealing.

Payment for areas that are accepted at a reduced price for deficient thickness as measured in Section 02755.3.05(G) will be adjusted by the following factors:

Excess Thickness:	1 (Full Payment, no additional)
0.00” to 0.20” Deficiency:	1 (Full Payment)
0.21” to 0.30” Deficiency:	0.8
0.31” to 0.40” Deficiency:	0.72
0.41” to 0.50” Deficiency:	0.68
0.51” to 0.75” Deficiency:	0.57
0.76” to 1.00” Deficiency:	0.50
Greater that 1.00” Deficiency:	0; Pavement must be reconstructed

4.02 EARLY STRENGTH REINFORCED CONCRETE PAVEMENT

A. Early Strength Reinforced Concrete Pavement will be measured per square yard complete in place and accepted.

B. Early Strength Reinforced Concrete Pavement will be measured and paid for at The Contract unit price per square yard. The square yard measurement will be field measured on the basis of concrete pavement length field measured at the centerline of pavement, and field measured width. The payment will be full compensation for all materials, equipment, tools, labor, and incidentals required to perform the work, including but not limited to concrete, forms, reinforcement steel, chairs, epoxy coating, finishing, curing, joints, joint construction, saw cutting, and joint sealing.

Payment for areas that are accepted at a reduced price for deficient thickness as measured in Section 02755.3.05(G) will be adjusted by the following factors:

Excess Thickness:	1 (Full Payment, no additional)
0.00” to 0.20” Deficiency:	1 (Full Payment)
0.21” to 0.30” Deficiency:	0.8
0.31” to 0.40” Deficiency:	0.72
0.41” to 0.50” Deficiency:	0.68

0.51” to 0.75” Deficiency:	0.57
0.76” to 1.00” Deficiency:	0.50
Greater that 1.00” Deficiency:	0; Pavement must be reconstructed

END OF SECTION

SECTION 02765

PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes the preparation and application of pavement markings of different types to roadway surfaces as specified in the Contract Documents or as directed by the Engineer. This includes durable and nondurable line markings (striping) and legends (letters and numbers), and symbols.

1.02 SUBMITTALS:

A. Contractor shall submit the following in accordance with Section 01300 SUBMITTALS of these Specifications:

1. Quality control plan

2. Certifications for quality control technicians

3. Inspection reports by quality control technicians

1.03 QUALITY CONTROL/QUALITY ASSURANCE:

A. The Contractor shall submit a written proposed Quality Control Plan (QCP), which shall be submitted to the Engineer for approval 30 days prior to the prestriping meeting.

B. The QCP shall contain procedures for random sampling as specified in MSMT 729, and shall show how the Contractor proposes to control the equipment and material to ensure conformance with the Specifications. The QCP shall contain the material manufacturer's application recommendations, personnel certifications, inspection and record keeping procedures, and minimum frequencies of sampling and testing as specified in MSMT 729. The QCP shall also detail when and how corrective action will be taken for unsatisfactory construction practices and deviations from the Specifications. Any deviation from the QCP shall be cause for immediate suspension of the marking operation. Operations shall not resume without the Engineer's approval.

1. Placement. Pavement marking placement operations shall not begin until the Engineer has approved the Contractor's QCP.

a. Widths. The traveled way lane widths and the width of longitudinal lines shall be as specified in the Contract Documents. Lane widths shall be measured from the center of the line to the center of the line once a control line is established for the lane configuration of the roadway. When measurements are taken from existing longitudinal lines, the point of reference shall be the center of the single line or the center of the space between dual lines. The traveled way lane widths shall be in compliance when they have an

acceptable appearance and do not deviate more than 2 in. from the proposed lane width.

b. Alignment. Markings shall be placed in a straight and uniform manner. Lane lines shall be in compliance when they have an acceptable appearance, and are visually in alignment, with no more than a 3/8 in. variation in any 40 ft section of traveled way. Longitudinal alignment shall be maintained through all intersections and breaks, even though the lines themselves may discontinue. Applying pavement line markings over longitudinal joints is prohibited; they shall be offset 2 in. or as approved by the Engineer.

c. Layout Markings. Any layout markings that detract from the overall appearance or function of the final markings as determined by the Engineer shall be removed at no additional cost to the Administration.

2. Certified Technicians. The Contractor shall provide Administration certified technicians to perform quality control testing and sampling. The technicians shall demonstrate to the Engineer that they have a thorough knowledge of sampling and testing procedures as specified in MSMT 729. Quality control shall be performed during the marking operations in conformance with the approved QCP. The Contractor shall identify where quality control tests were performed. Should a certified technician become delinquent in any of their duties (i.e., failed to have all the proper test equipment on the site, failed to perform tests, failed to submit documents to the Engineer at the end of the day, reported information that varies substantially from the Administration's results, etc.), then the technician's certification shall become invalid and a recertification shall be required. All pavement marking operations shall be suspended until the Contractor provides a certified replacement technician.

3. Records. The Contractor shall maintain complete records of quality control inspection results, including any action taken to correct problems. A copy of the QC results, signed by the certified technicians, shall be submitted to the Engineer daily. The Contractor's daily report shall identify where each of the following quality control tests were performed:

a. Ambient temperature

b. Pavement surface temperature

c. Material temperature

d. Material thickness

e. Retroreflectivity

f. Alignment

g. Color

4. Quality Assurance. The Administration will provide quality assurance by:

a. Conducting independent sampling and testing separate from the Contractor.

b. Periodically observing testing performed by the Contractor.

c. Directing the Contractor to take additional samples and perform additional tests at any time and at any location.

d. Monitoring the Contractor's conformance with the Quality Control Plan.

e. Evaluation of quality control results and testing performed by the Administration will provide the basis for final acceptance.

5. Independent assurance audits will be performed by the Administration to confirm and ensure that both the quality control personnel's test methods and quality control test equipment are in reasonable conformity with Administration specifications.

PART 2 - PRODUCTS

2.01 NONTOXIC LEAD FREE WATERBORNE PAINT:

A. 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 maintained by Maryland State Highway Administration's Office of Traffic and Safety.

B. Refer to Appendix J – Section 550 Pavement Marking Paint, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.02 PREFORMED THERMOPLASTIC PAVEMENT MARKINGS:

A. Preformed Thermoplastic is a durable pavement marking material. All Preformed Pavement Markings material shall be selected from the Qualified Products List from SHA Office of Traffic and Safety.

B. Refer to Appendix J – Section 556 Preformed Thermoplastic Pavement Markings, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

PART 3 - EXECUTION

3.01 CLEANING PAVEMENT SURFACES:

A. Pavement surfaces shall be dry and free of oil, dirt, grease, and other contaminants prior to application of pavement markings. Surfaces not in conformance shall be cleaned by the Contractor to a width 4 to 6 in. wider than the marking to be applied.

3.02 MARKING REMOVAL:

A. Existing pavement markings that conflict with new or altered traffic patterns shall be completely removed by the Contractor. Should the pavement be damaged, it shall be repaired or replaced as determined by the Engineer at no additional cost to the Administration.

B. Refer to Appendix J – Section 565 Removal of Existing Pavement Markings, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.03 CURING:

A. The Contractor shall protect the markings until dry or cured by placing warning devices as specified in the MUTCD and as approved by the Engineer. In the event that the uncured marking is damaged by a vehicle, the marking shall be reapplied, and marks left on the pavement by the vehicle shall be removed. This work shall be performed at no additional cost to the Administration.

3.04 OBSERVATION PERIOD:

A. The Contractor shall be responsible for any defects in materials and workmanship of the pavement markings for a period of 180 days for durable and 60 days for nondurable materials from the date the pavement is opened to traffic.

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

1. More than five percent of the substrate is exposed in any 2000 ft section of longitudinal pavement marking lines.

2. Retroreflectance values have dropped below minimum retroreflectivity as specified in the Contract Documents.

3. Marking is discolored on a visual comparison with the color chips.

4. The Contractor shall remove and replace all failed markings within 30 days of receiving written notification from the Engineer at no additional cost to the Administration.

3.05 NONTOXIC LEAD FREE WATERBORNE PAINT:

A. Refer to Appendix J – Section 550 Pavement Marking Paint, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.06 PREFORMED THERMOPLASTIC PAVEMENT MARKINGS

A. Refer to Appendix J – Section 556 Preformed Thermoplastic Pavement Markings, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

PART 4 - MEASUREMENT AND PAYMENT

4.01 5 INCH WHITE PAVEMENT MARKING PAINT LINE:

A. 5 Inch White Pavement Marking Paint Line will be measured per linear foot complete in place and accepted.

B. 5 Inch White Pavement Marking Paint Line will be paid for at the contract unit price bid per linear foot, which price shall 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.

4.02 5 INCH YELLOW PAVEMENT MARKING PAINT LINE:

A. 5 Inch Yellow Pavement Marking Paint Line will be measured per linear foot complete in place and accepted.

B. 5 Inch Yellow Pavement Marking Paint Line will be paid for at the contract unit price bid per linear foot, which price shall 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.

4.03 12 INCH WHITE PAVEMENT MARKING PAINT LINE:

A. 12 Inch White Pavement Marking Paint Line will be measured per linear foot complete in place and accepted.

B. 12 Inch White Pavement Marking Paint Line will be paid for at the contract unit price bid per linear foot, which price shall 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.

4.04 24 INCH WHITE PAVEMENT MARKING PAINT LINE:

A. 24 Inch White Pavement Marking Paint Line will be measured per linear foot complete in place and accepted.

B. 24 Inch White Pavement Marking Paint Line will be paid for at the contract unit price bid per linear foot, which price shall 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.

4.05 12 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE:

A. 12 Inch White Preformed Thermoplastic Pavement Marking Line will be measured per linear foot complete in place and accepted.

B. 12 Inch White Preformed Thermoplastic Pavement Marking Line will be paid for at the contract unit price bid per linear foot, which price shall 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.

4.06 WHITE PAVEMENT MARKING PAINT LEGENDS AND SYMBOLS:

A. White Preformed Thermoplastic Pavement Marking Legends and Symbols will be measured per square foot complete in place and accepted.

B. White Preformed Thermoplastic Pavement Marking Legends and Symbols will be paid for at the contract unit price bid per square foot, which price shall 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.

4.07 24 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE:

A. 24 Inch White Preformed Thermoplastic Pavement Marking Line will be measured per linear foot complete in place and accepted.

B. 24 Inch White Preformed Thermoplastic Pavement Marking Line will be paid for at the contract unit price bid per linear foot, which price shall 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.

4.08 REMOVAL OF EXISTING PAVEMENT LINE MARKINGS, ANY WIDTH:

A. Removal of Existing Pavement Line Markings, Any Width will be measured per linear foot complete in place and accepted.

B. Removal of Existing Pavement Line Markings, Any Width will be paid for at the contract unit price bid per linear foot, which price shall be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

SECTION 02770

CURBS AND GUTTERS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes construction of concrete curb, concrete combination curb and gutter, and monolithic median as shown on the Contract Drawings and as specified in the Contract Documents or where directed by the Engineer.

1.02 SUBMITTALS:

A. In accordance with SECTION 01300 SUBMITTALS, the Contractor shall submit the following:

1. Product data:

   A. Concrete design mix

   B. Curing materials

   C. Form release compound

   D. Joint filler materials

2. Certifications:

   A. Concrete design mix laboratory test reports and manufacturer's certificates attesting to conformance of ingredients with specifications

   B. Certificate stating that each admixture used is identical in composition to the sample used for acceptance testing and is compatible with all other materials in the design mix

3. Laboratory test results for concrete samples

4. Delivery ticket from the concrete supplier with each batch

PART 2 - PRODUCTS

2.01 CURING MATERIALS:

2.02 SHA Standard Specifications, Section 902.07.

2.03 FORM RELEASE COMPOUND:

A. Form release compounds shall effectively prevent the bond of the concrete to the forms. The form release compounds shall not cause discoloration of the concrete nor adversely affect the quality or rate of hardening at the interface of the forms.

B. The flash point of the form release compound shall be a minimum of 100 F (38 C) when tested as specified in AASHTO T 73

2.04 CONCRETE MIX NO. 3:

A. SHA Standard Specifications, Section 902.10.03.

2.05 CONCRETE MIX NO. 12:

A. SHA Standard Specifications, Section 902.10.03.

2.06 JOINT SEALER:

A. Joint sealer and crack filler shall conform to ASTM D 3406 as modified by MSMT 404. The manufacturer shall furnish certification that the material complies with the applicable specifications, and includes the actual test results to confirm the statement. Manufacturer's recommendations regarding heating and pouring temperatures will be used when testing these materials. If a range of temperatures is recommended, the midpoint will be used as the pour point.

2.07 PREFORMED JOINT FILLER:

A. Preformed joint fillers shall conform to AASHTO M 153. The bituminous fiber type shall conform to AASHTO M 213, with bitumen content determined by MSMT 408 or T 164. The weathering test shall be deleted for either type of material.

PART 3 - EXECUTION

3.01 EXCAVATION:

A. Excavation shall be to the specified depth and to a width that permits installation and bracing of the forms. The subgrade shall be compacted to 92 percent in conformance with AASHTO T 180, Method A, and trimmed to the proper shape and required grade. All soft and unsuitable material shall be removed and replaced with suitable material approved by the Engineer.

B. When curb, curb and gutter, or monolithic median is to be adjacent to existing pavement to remain, 12" of additional existing pavement shall be removed to allow for form placement, as per the Contract plans.

3.02 AGGREGATE BASE

A. Graded Aggregate Base shall be placed on the compacted subgrade in conformance with Section 02720, Aggregate Base Course, and in conformance with details provided in the Contract plans.

3.03 FORMS:

A. Fixed Form Method: Fixed forms shall be steel of an approved design, securely fastened and braced to prevent any movement during the placing of concrete. Forms shall extend to the full depth of the concrete. They shall not be less than 10 ft long. When installation is made along curves where the radius of the curb is less than 200 ft, flexible or curved steel or wooden forms shall be used. Form sections shall not be more than 6 ft long. Both wooden and steel forms shall be properly designed and acceptable to the Engineer. They shall be installed to prevent buckling or warping. The tolerance shall not exceed ¼ in. in 10 ft in either the grade or alignment. Forms shall be thoroughly cleaned and coated with form release compound each time they are used.

B. Slip-Form Method:

1. Slip-form equipment shall be approved by the Engineer and include the incorporation of automatic guidance controls to follow the line and grade references. On vertical and horizontal curves, an additional intermediate support shall be set in the field to establish a reference line acceptable to the Engineer. The use of ski or shoe sensors reflecting variations in the grade of the existing roadway surface will not be permitted.

2. Concrete mixing shall conform to SHA Section 915.03.04. The concrete shall be of such consistency that after extrusion, it shall maintain the shape of the curb and gutter without support. Slip form equipment shall include internal vibrating capability. The surface shall be free of surface pits larger than 3/16 in. diameter. The concrete shall require no further finishing other than broomed finish.

3. If during the operation of the slip-form equipment a tear occurs, it shall be repaired immediately or removed and replaced as directed by the Engineer.

3.03 CONCRETING:

A. Concrete shall be mixed in conformance with SHA Section 915.03.04. Volumetric batching and continuous mixing will be permitted. When the subgrade is dry, it shall be moistened with as much water as it can absorb. Consolidation of concrete placed in the forms shall be by spading or other methods approved by the Engineer. Except for curb face forms, the forms shall remain in place for a minimum of 12 hours and precautions taken to avoid damaging the concrete. Curb

face forms shall be stripped as soon as the concrete will retain its shape.**3.04 DEPRESSED CURBS:**

A. Curbs shall be depressed at entrances and sidewalk ramps as specified in the Contract Documents or as directed by the Engineer.

3.05 OPENINGS:

A. Drainage openings for the purpose of outletting rain spout water or other drainage shall be provided by constructing insert openings within the curb as directed by the Engineer.

B. Curb openings shall be provided as specified in the Contract Documents.

3.06 FINISHING:

A. Concrete shall be struck off to the cross section specified after which it shall be finished, floated smooth and followed with a broom type textured finish. The Engineer may permit other methods of finishing for the purpose of matching adjacent concrete finishes. Plastering will not be permitted. All exposed edges shall be edged with a 1/4 in. edging tool except the face edge of curb shall have a 1 in. radius. When finished, the top surface of curbs and gutters as well as the faces shall show no deviation from grade and alignment in excess of 1/4 in. per 10 ft. All honeycombed and damaged areas shall be repaired immediately after the removal of the forms in a manner acceptable to the Engineer.

3.07 JOINTS:

A. Fixed Form Method: Spacing between joints shall be 10 ft except where shorter spacing is necessary for closures and conformity to expansion and contraction joints in contiguous concrete pavements. No joint spacing shall be shorter than 4 ft. The joints shall be formed by using plate steel templates which are 1/8 to 3/16 in. thick and shall have a width and depth equal to the unit cross section. The templates shall be set perpendicular to the grade and line of the unit. Intermediate templates or sections of templates shall not be used. Where stationary structures such as inlets are encountered, an expansion joint shall be constructed for the full depth using 1/2 in. preformed expansion joint filler. Expansion joints shall be constructed at a maximum of 100 ft spacing, and at points of curves, tangents and at locations coinciding with adjoining pavement joints. Only the joints in the gutter portion of the combination curb and gutter shall be sealed. Expansion joints are not required when adjacent to a flexible pavement or away from any pavement.

B. Slip-Form Method:

1. Construction or contraction joints shall be sawed or formed and shall be a minimum of 2 in. deep and 1/8 in wide.

2. Expansion joints shall be as specified in the Contract Documents or as directed by the Engineer.

3. Joint Spacing shall be as specified in subsection 3.07.A of this section.

3.08 COLD WEATHER CONSTRUCTION AND CURING:

A. Weather Restrictions

1. **Temperature and Surface Conditions.** Begin concrete placement when the ambient air and surface temperatures are at least 40 F and rising. Discontinue placement whenever the temperature falls below 40 F. These requirements may be waived for incidental concrete construction. Do not place concrete on a frozen base.

2. **Precipitation.** Have sufficient approved material on hand to cover freshly placed concrete as protection against precipitation.

3. **Wind.** Cease placement when the Engineer determines that wind conditions may have a detrimental effect on the work. When weather conditions differ from these limits, placement of material en route is at the Contractor's risk. If the Engineer for any other reason stops placement, dispose of enroute material at no additional cost to the Administration.

B. Curing - Following texturing and edging, cure the concrete for at least 72 hours. Whenever the ambient air temperature falls below 40 F during the curing period, use insulated blankets to maintain the concrete temperature above 40 F. Use insulated blankets in addition to any curing material that is used. Provide a sufficient number of high/low thermometers to monitor the temperature of the concrete. Cure the concrete using one of the following methods:

1. **Liquid Membrane Forming Compound.** Use a liquid membrane forming compound that is in conformance with 902.07.03. Apply the material to the surface as soon as the free water has disappeared. Use an approved spraying machine having drive wheels that straddle the freshly placed concrete. Have standby equipment on site in the event of failure of the spraying machine. The spraying machine shall be equipped with an adequate wind guard and be capable of producing a fine spray of material that covers the surface with a uniform continuous film. Apply the compound in two applications, each at a rate of 1/2 gal/200 ft^2. Maintain the film free of pin holes, checks, cracks, peelings, and other imperfections. Correct discontinuities in the film by the application of an additional coat to the affected area within 30 minutes of the original coat. If sprayed surfaces are subjected to damaging rainfall within three hours after the second application, respray the surface at no additional cost to the Administration. Use rope or other approved masking methods to keep the vertical surfaces of longitudinal and transverse joints free of curing compound. Protect the sprayed surfaces to maintain the continuity of the membrane. Application of compound by hand operated spraying equipment in irregular areas shall be as directed. 2. **Burlap Curing.** Place burlap conforming to 902.07.01 on the freshly placed

concrete as soon as practical, without damaging the concrete. Overlap the burlap to provide a double thickness on the entire surface. Saturate the burlap with water before placement and keep it continuously wet during the curing period.

3. **Cotton Mat Curing.** Place cotton mats conforming to 902.07.04 on the freshly placed concrete as soon as practical, without damaging the concrete. Saturate the mats with water before placement and keep them continuously wet during the curing period.

4. **Sheet Materials.** Place sheet materials conforming to 902.07.02 on the freshly placed concrete as soon as practical without damaging the concrete. Overlap the material at least 1 ft and extend it outside the slab. Secure all laps and edges in place to provide continuous contact of the sheet with the pavement surface.

3.09 BACKFILL:

A. After the forms have been stripped and any necessary repairs are satisfactorily completed, the spaces in front and back of the curb, and combination curb and gutter, or monolithic median shall be backfilled to the required elevations using suitable material prior to any adjacent roadway rolling.

B. When curb, combination curb and gutter, or monolithic median has been placed adjacent to existing pavement, the area between the completed, cured curb and gutter and the existing pavement shall be backfilled with Concrete Mix. No 12, such that the top of Mix No. 12 is flush with the top of existing pavement, or 2” below final surface, whichever is lower.

PART 4 - MEASUREMENT AND PAYMENT

4.01 TYPE A CONCRETE CURB & GUTTER, 12” GUTTER PAN, 8” DEPTH:

A. Type A Concrete Curb & Gutter, 12” Gutter Pan, 8” Depth will be measured per linear foot complete in place and accepted.

B. Type A Concrete Curb & Gutter, 12” Gutter Pan, 8” Depth will be paid for at the contract unit price bid per linear foot, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as specified.

C. Depressed Type A Concrete Curb & Gutter will be paid for as Type A Concrete Curb and Gutter, 12” Gutter Pan, 8” Depth.

4.02 TYPE D CONCRETE CURB, 8” X 14”:

A. Type D Concrete Curb, 8” X 14” will be measured per linear foot complete in place and accepted.

B. Type D Concrete Curb, 8” X 14” will be paid for at the contract unit price bid per linear foot, complete in place and accepted, which price will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02775

CONCRETE SIDEWALK

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes constructing concrete sidewalks along with detectable warning surfaces as specified in the Contract Documents or as directed by the Engineer. The detectable warning surface shall conform to the most recent accessibility guidelines of the Americans with Disabilities Act (ADA).

1.02 SUBMITTALS:

A. In accordance with SECTION 01300 SUBMITTALS, the Contractor shall submit the following:

1. Working Drawings indicating construction joint and expansion joint layout, and openings.

2. Mix design for each change of ingredients and ingredient sources, including admixtures.

3. Certificates of Compliance to specifications of materials provided.

4. The Contractor shall construct a 2’x2’ size sample panel of the detectable warning surface, including all materials necessary to complete this work, for the Engineer’s prior approval prior to ordering pavers.

1.03 QUALITY ASSURANCE:

A. Referenced Standards:

1. American Association of State Highway and Transportation Officials (AASHTO)

2. Maryland State Highway Administration Standard Specifications for Construction and Materials (SHA)

PART 2 - PRODUCTS

2.01 FORMS:

A. In accordance with SECTION 03150 FORMWORK

2.02 CONCRETE:

A. Portland Cement Concrete, conforming to Section 03300 CAST-IN-PLACE CONCRETE.

B. Mix. No. 3 Concrete, Conforming to SHA Standard Specifications, Section 902.10.03

2.03 REINFORCING STEEL:

A. Reinforcing steel shall conform to Section 03200 REINFORCING STEEL.

2.04 CURING MATERIALS:

A. Curing materials shall be burlap cloth, sheet materials, liquid membrane forming compounds, or cotton mats.

1. Burlap cloth shall be made from jute or kenaf and conform to M 182, Class 1, 2, or 3.

2. Sheet material shall conform to M 171 with the following exceptions:

a. White Opaque Burlap Polyethylene Sheeting. Tensile strength and elongation requirements are waived. The sheeting shall have a finished product weight of not less than 10 oz/yd2.

b. White Opaque Polyethylene Backed Nonwoven Fabric. The material shall conform to 902.07.02(a), with the thickness requirement waived. The finished product weight shall be a minimum of 5 oz/yd2.

c. White Opaque Polyethylene Film. Tensile strength and elongation requirements are waived.

3. Liquid membrane forming compounds shall conform to M 148. Field control testing of the white pigmented curing compounds shall be on the basis of weight per gallon. The samples shall not deviate more than ± 0.3 lb/gal from the original source sample.

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

1. The covering shall be cotton cloth, burlap or jute having the following properties:

a. Cotton cloth covering shall weigh not less than 6.0 oz/yd2 and shall have an average of not less than 32 threads/in. of

warp and not less than 28 threads/in. of filling. The raw material used in the manufacture of the cotton cloth shall be raw cotton, cotton comber waste, cotton card strip waste, or combinations thereof.

b. Burlap or jute covering for cotton mats shall weigh not less than 6.4 oz/yd2 and shall have not less than of 8 threads/in. of warp and not less than 8 threads/in. of filling. It shall be the grade known commercially as "firsts" and shall be free from avoidable imperfections in manufacture and from defects or blemishes affecting the serviceability.

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

2.05 FORM RELEASE COMPOUND:

A. Form release compounds shall effectively prevent the bond of the concrete to the forms. The form release compounds shall not cause discoloration of the concrete or adversely affect the quality or rate of hardening at the interface of the forms.

B. The flash point of the form release compound shall be a minimum of 100 F when tested as specified in T 73.

2.06 JOINT SEALER:

A. Joint sealer shall conform to D 3405 as modified by MSMT 404. The manufacturer shall furnish certification as specified in TC-1.02. Manufacturer's recommendations regarding heating and pouring temperatures will be used when testing these materials. If a range of temperatures is recommended, the midpoint will be used as the pour point.

1. Silicone joint sealer and crack filler shall be low modulus, one component compound which may or may not require a primer for bonding to concrete. If a primer is required, it shall be as recommended by the sealant manufacturer and shall be placed on the joint faces following the insertion of the backup material.

2. Silicone material, when tested at 73 ± 3 F and 45 to 55 relative humidity, shall conform to the following:

TEST PROPERTY	TEST METHOD	SPECIFICATION LIMITS
Shore A Hardness, at 7 days	D 2240	10-25
Tensile Strength at 150 % Elongation, psi max	D 412 Die C	45

Elongation, % min	D 412 Die C	700
Adhesion in Peel, lb/in. min	Federal Spec TT-S-00230	20
Flow, 0.01 in. max	T 187	0.3
Tack-Free Time, minutes	D 2377	20-75

3. Each container of silicone sealer and crack filler shall have a minimum shelf life of six months. Material more than six months old shall be retested.

2.07 PREFORMED JOINT FILLER:

A. Preformed joint fillers shall conform to M 153. The bituminous fiber type shall conform to M 213, with the bitumen content determined using T 164. The weathering test shall be deleted for either type of material.

2.08 DETECTABLE WARNING SURFACES:

A. Detectable Warning Surfaces

1. Clay brick pavers shall conform to the requirements of ASTM C902, Class SX, Type 1, and Application PX. The pavers shall be standard 4”x8” size having dimensions of 2 ½” x 4”x8”, square edges, 12,500 psi minimum compressive strength and below 6% cold water absorption. Pavers shall meet requirements of the Americans with Disabilities Act and comply with Article 4.29.5 Detectable Warnings of the Federal Register.

2. All clay brick pavers shall have a Red Brick Color and shall meet the ADA Accessibility Guidelines for a 70% light reflectance value (LRV) contrast to adjoining surfaces. The paver surface shall have a minimum friction coefficient of 0.8 when tested in conformance with C 1028. Pavers shall be obtained from a single source. Contractor shall submit sample of paver material and color with manufacturer’s certification for approval by the Engineer.

3. The Detectable Warning Surface shall be 24” inches wide in the direction of pedestrian travel and extend the full width of the curb ramp, landing or blended transition. The Detectable Warning Surface shall consist of truncated domes aligned in a squared grid as indicated on the details.

B. Mortar

1. Mortar shall conform to SHA Standard Specifications, Section 903.06.

C. Concrete Base

1. 4” of Concrete Base, Mix No. 3 shall be be placed beneath the mortar bed as per the plans.

PART 3 - EXECUTION

3.01 SUBGRADE:

A. Compact subgrade of all sidewalks smooth and even. Loose material from the compacted subgrade surface shall be immediately removed before placing foundation.

3.02 FOUNDATION PREPARATION

A. Prior to placement of sidewalk material, the foundation shall be constructed as specified in the Contract Documents and approved by the Engineer. Manholes, valve boxes, inlets, and other appurtenances within the sidewalk area shall be adjusted to grade as directed by the Engineer.

B. Curbs and Other Supports: Where permanent curbs, edges, and other supports are planned, they shall be constructed and backfilled prior to placing the concrete sidewalk, which shall then be placed against them. 3-ply roofing paper, joint filler, or other materials shall be placed between the curb or other support and the sidewalk as specified on the Contract plans.

3.03 FORM CONSTRUCTION:

A. Set and brace forms to maintain straight and plumb lines on sides.

B. Set forms to the following grade and alignment tolerances:

1. Grade: Plus or minus 1/8 inch.

2. Alignment: Plus or minus 1/4 inch at any point and no more than 1/8 inch deviation from a 10 foot straightedge.

3.04 CONCRETE PLACEMENT:

A. Construct walkways to thickness to match existing sidewalk.

B. Moisten subgrade to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around structures or frames until they have been brought to the required grade and alignment.

C. Place concrete in one course monolithic construction for the full width and depth of walks.

D. Spread concrete as soon as it is deposited on the subgrade using methods that prevent segregation of the mix. Consolidate concrete along the face of the forms and adjacent to transverse joints. Use only square faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocation of joint materials.

E. Pour sidewalk concrete in alternate sections between expansion joints and allow to set and cure for a minimum of 24 hours before pouring adjacent panels or sections.

3.05 DETECTABLE WARNING SURFACES:

A. Concrete Base:

1. Install 4” mix no. 3 concrete base to the thickness and in locations as shown on the Plans. Pre-molded expansion joints ½” (inch) wide shall be provided between adjoining paving surfaces.

B. Clay Brick Pavers with Detectable Warning Surface:

1. Care shall be taken so that no damage occurs to the pavers during handling. All pavers shall be free of foreign matter before installation. Wet pavers several hours before laying.

2. Whole pavers shall be used wherever possible. If required, pavers shall be cut with an approved cutter to fit accurately, neatly and without damaged edges. All cut pavers shall be a minimum of one quarter (1/4) paver in size unless approved by the Engineer.

3. All whole and cut paver edges shall be free of chips, spalls, or cracks. Pavers shall be placed on a ½” (inch) mortar bed to the concrete in a basket weave pattern as indicated on the plans and as directed by the Engineer. Bricks shall be tightly placed with no joints between the pavers. The completed brick paver installation shall be cleaned and washed down to provide a finished workmanlike installation.

4. Brick pavers shall not be installed during rain or snowfall conditions or upon frozen sub-grade. Stockpiles of materials shall be covered each day after construction and during each precipitation event so that the maximum moisture content is not exceeded at any time.

3.06 JOINTS:

A. General:

1. Construct expansion, isolation, and contraction joints true-to-line with face perpendicular to surface of the walks.

2. Construct transverse joints at right angles to the pavement centerline.

3. When the walkway is abutting existing walks, place transverse joints to align with previously paved joints.

B. Contraction Joints:

1. Provide contraction joints to section the walkway into areas to match pattern and construction of existing joints.

C. Construction Joints:

1. Place construction joints at the end of pours and at locations where placement operations are stopped for a period of more than 1/2 hour, except where such pours terminate at expansion joints.

2. Construct joints using standard metal keyway-section forms.

3.07 CONCRETE FINISHING:

A. Perform concrete finishing using machine or hand methods as required.

B. After striking off and consolidating concrete, smooth the surface by screening and floating. Adjust the floating to compact the surface and produce a uniform texture.

C. After floating, test surface for trueness with a 10 foot straight edge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous, smooth finish.

D. Work edges of slabs and joints with a 1/4 inch radius edging tools.

E. After completion of floating and when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:

1. Broom finish to match existing concrete walks by drawing a fine-hair broom across the concrete surface. Repeat operation if required to provide a texture to match existing walks.

F. Leave forms in place for at least 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections of major honeycombing.

3.08 CURING:

A. Protect and cure finished concrete walks complying with SECTION 03300 CAST-IN-PLACE CONCRETE. Use moist curing methods for initial curing whenever possible. After removal of forms, extend curing to exposed edges.

3.09 REPAIR AND PROTECTION:

A. Repair or replace broken or defective walks (defects include graffiti).

B. Protect the walks from damage until acceptance of the work. Exclude pedestrians from walks for at least 3 days after placement.

C. Sweep concrete walks and wash free of stains, discoloration, dirt, and other foreign materials.

D. Provide necessary watchmen to prevent vandalism to freshly poured concrete walks.

PART 4 - MEASUREMENT AND PAYMENT

4.01 5 INCH CONCRETE SIDEWALK:

A. 5 Inch Concrete Sidewalk will be measured per square foot of finished surface including sidewalk ramps complete in place and accepted.

B. 5 Inch Concrete Sidewalk will be paid for at the contract unit price bid per square foot, in place and accepted which price will be full compensation for all materials, equipment, labor, tools, and incidentals necessary to complete this work.

4.02 DETECTABLE WARNING SURFACE FOR CURB RAMPS:

A. Detectable Warning Surface for Curb Ramps will be measured per square foot of finished surface complete in place and accepted.

B. Detectable Warning Surface for Curb Ramps will be paid for at the contract unit price bid per square foot, in place and accepted, which price will be full compensation for all materials, equipment, labor, and tools, and incidentals necessary to complete this work.

C. The 4” Concrete Base will be measured and paid for at the Contract unit price per Square Foot for 4 Inch Concrete Sidewalk, which will be full compensation for excavation, disposal of excess and unsuitable material, backfill and sub-grade preparation, forms, concreting, expansion joints, cold weather protection and curing, finishing and for all material, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION

SECTION 02830

WOOD FENCING

PART 1: GENERAL

1.01 DESCRIPTION:

A. This work shall consist of furnishing and installing private wood fencing and related components including fence planks, posts, and accessories along the limits specified in the Contract Documents and/or as directed by the Engineer.

1.02 REFERENCES:

A. AASHTO M 168 for Wood

B. AASHTO M 133 for Preservatives and Pressure Treatment

C. AASHTO A 153 for Galvanized for Fence Brackets and Nails

1.03 SUBMITTALS:

A. The manufacturer shall supply a complete wood fencing of the design, style, and picket spacing defined herein. The wood fencing includes all material as specified in the contract documents.

1. Product Data: Manufacturer's certification including material compliance and specified options.

1.04 DELIVERY :

A. Deliver fence panels, posts and accessories to project site, completely pretreated. Upon receipt at the job site, all materials shall be checked to ensure that no damages occurred during shipping. Materials shall be handled and stored properly to protect against damage and theft.

PART 2: PRODUCTS

2.01 MANUFACTURER:

A. Products from manufacturers having a minimum of five (5) years experience manufacturing wood fencing will be acceptable as equal if approved in writing and can demonstrate that they are capable of satisfying all design, material, fabrication, and specifications as described herein.

B. Approved Manufacturer:

1. Long Fence, Inc.
2. Academy Fence Co.
3. Clinton Fence Company
4. Other with comparable product line.

C. The final wood fencing selection shall be approved by the Engineer prior to the Contractor placing the order.

2.02 MATERIAL:

A. The materials for the fence boards, post, and framework shall be manufactured from pressure treated wood.

B. Fence posts:

1. Corner, Nominal Size = 6” x 6”

2. Interior, Nominal Size = 4” x 4”

3. Fence posts shall be spaced 6-feet on-center.

C. Fence Boards: Nominal Size = 1” x 4”

D. Top Rail: Nominal Size = 1” x 4”

E. Nails: 6d galvanized nails

F. Galvanized fence bracket

2.03 FENCING CRITERIA:

A. The wood fencing style shall be one-sided, vertical board.

B. The wood fencing shall be 6-feet in height.

C. The Contractor shall be responsible for all codes applicable to the design and construction of the wood fencing.

PART 3: EXECUTION

3.01 PREPARATION:

A. Verify areas to receive wood fencing are completed to final grades and elevations.

B. Ensure property lines, utility routing and legal boundaries of work are clearly established.

C. Coordinate fence installation with landscaping and other work in the area.

3.02 INSTALLATION:

A. Install the basic frame of the fence posts (spaced 6-feet on-center) along the limits shown in the Contract Documents.

B. Determine the height of the bottom rail. Nail the fence bracket to the side of the post using galvanized nails. Slide the rail into place, and nail rail to the bracket.

C. Install the top fence bracket. Slide top rail in place. Check and confirm position with a level. Nail top rail to the bracket.

D. Calculate best board spacing. Recommend minimal spacing (1” – 2”) for maximized privacy.

E. Install boards on the parking lot side of the rails only.

F. The use of extended boards and contoured end cuts shall be used, as directed by the Engineer.

G. The final installed wood fencing and posts shall be plumb and remain plumb after construction.

H. No gates are required, unless directed by the Engineer.

3.03 CLEANING:

A. Fence contractor shall remove unused material, level uneven areas due to excavations created by fence installations.

PART 4: MEASUREMENT AND PAYMENT

4.01 WOOD FENCING:

A. Wood Fencing will be measured per linear foot and shall include furnishing materials, hardware, posts, and accessories.

B. Wood Fencing will be paid for at the contract unit price bid per linear foot which will be full compensation for all material, equipment, tools, labor and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02871

BIKE RACK

PART 1: GENERAL

1.01 DESCRIPTION:

A. This Section includes specifications for the procurement and construction of one in-ground mounted Bike Rack, which includes excavation, bike rack, concrete footing, and all labor, materials and incidentals required to completd this item of work. All work shall be in conformance with this Section and as directed by the Engineer.

1.02 SUBMITTALS:

A. Contactor shall submit product information to the Landscape Architect for review and approval of the following items prior to construction of this item of work:

1. Submit manurfacturer's shop drawings for the bike rack, indicating material, dimensions and sizes, and showing methods of attachment.

2. Submit one 6" sample of the proposed material with the specified finish proposed for the project.

PART 2: PRODUCTS

2.01 CONCRETE:

A. Portland Cement Conrete, conforming to Section 03300 CAST-IN-PLACE CONCRETE.

B. Mix No. 3 Concrete, Conforming to SHA Standard Specifications, Section 902.10.03.

2.02 BIKE RACK:

A. Bike Rack shall be a five (5) loop design able to accommodate up to seven (7) bikes. Bike rack shall be constructed of schedule 40 tubular steel pipe, 2-3/8 in. O.D. in size, smooth in shape, with a gloss black powder-coated finish, and shall be supplied by one of the following:

1. Highland Products Group LLC
   3350 NW Boca Raton Boulevard, Suite B2
   Boca Raton, FL 33431
   Phone: 561-620-7878 or 888-447-2401
   Model: Highland Wave™ heavy duty bike rack

2. Victor Stanley, Inc.
   P.O. Drawer 330
   Dunkirk, MD 20754
   Phone: 301-855-8300.

Model: Cycle Sentry™ Series model BRCS-105 as manufactured by Secure Site Design™

3. Columbia Cascade
41975 S.W. Fifth Avenue
Portland, Oregon 97210-5293
Phone: 503-223-1157
Model: TimberForm Cycloops™ model 2170-7-C

or approved equal.

PART 3: EXECUTION

3.01 GENERAL:

A. The Contractor shall inspect all surrounding surface elevations prior to installation of the bike rack to verify that the proposed design will work with surrounding grades as intended. Contactor shall notify the Engineer and Landscape Architect immediately of any conflicts.

B. Bike Rack: Excavate area for the posts to be set to the depths shown on the detail plans and per the manufacturer's recommended details.

C. Set bike rack in concrete footing and use bracing or other means necessary to secure the bike rack in a vertical, plumb, true and level position while concrete footings are curing. Care should be taken to keep exposed surface of bike rack at the specified elevation and protected during construction and after completion for at least 2-3 days while concrete cures. Finished installation shall yield a finish which is clean and free of any surface blemishes. Contractor shall be responsible for repairing any surface blemishes caused by installation techniques utilized.

PART 4: MEASUREMENT AND PAYMENT

4.01 BIKE RACK:

A. Bike Rack will be measured for at the contract unit price bid per each for each bike rack installed.

B. Bike Rack will be paid per each unit, complete in place, accepted, which price will be full compensation for excavation, concrete footings, bike rack, and all material, equipments, tools, labor and all work incidental to complete the item as specified.

END OF SECTION

SECTION 02890

SIGNS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes furnishing and installing permanent signs of sheet aluminum installed on Signal Structures or on Square Perforated Tubular Steel Sign Post and Anchor Base or on Wood Sign Supports, as specified in the contract documents, or as directed by the Engineer. The work specified in this section also includes the removal of designated existing signs and ground mounted supports, as indicated in the contract documents.

B. The following guidelines apply to this work:

1. Maryland Manual on Uniform Traffic Control Devices, 2011 Edition, and subsequent revisions.

2. MSHA Standard Sign Book

3. FHWA Standard Highway Signs Book

4. AASHTO – Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, latest Edition

1.02 SUBMITTALS:

A. Product data for retroreflective sheeting, sign supports, hardware, and vandalism/installation stickers.

B. Manufacturer's certifications for

1. Retroreflective sheeting

2. Square Perforated Tubular Steel Sign Post and Anchor Base; and all hardware

PART 2 - PRODUCTS

2.01 REFLECTIVE SHEETING:

A. Reflective Sheeting shall conform to sheeting requirements and be listed on MDSHA Office of Traffic and Safety's Qualified Products List (QPL). Refer to Appendix J – Section 950 Reflectorization of Signs and Channelizing Devices, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

B. The following types of sheeting shall be used for the specified sign classifications:

1. Guide, Exit Gore and General Information Signs - Retroreflective sheeting for guide signs, exit gore, and general information (includes white on green, white on blue, white on brown and the reverse of these colors) shall meet or exceed the requirements for ASTM Type IX legend on ASTM Type IX background. Regulatory and warning messages within guide signs shall be non-reflective black legend on background sheeting which meets or exceeds the requirements for ASTM Type IX sheeting.
2. Warning signs - Retroreflective sheeting for black on fluorescent yellow warning signs shall be non-reflective black legend on background sheeting which meets or exceeds the requirements for ASTM Type IX sheeting. Regulatory messages within warning signs shall follow the guidelines for regulatory signs.
3. School signs - Retroreflective sheeting for school signs (black on fluorescent yellow and black on fluorescent yellow green) shall be non-reflective black legend on background sheeting which meets or exceeds the requirements for ASTM Type IX sheeting. Regulatory messages within school signs shall follow the requirements for regulatory signs.
4. Regulatory signs - Fall into three subcategories:
   i. "Red" regulatory signs (stop, yield, do not enter and wrong way) retroreflective sheeting for these signs and their supplemental panels (includes white on red and red on white) shall meet or exceed the requirements for ASTM Type IX sheeting.
   ii. All R7 and R8 series parking related signs and their supplemental panels, no trespassing signs, and signs directed at pedestrians and bicyclists only (includes red on white, green on white, blue on white, black on white and the reverse of these colors) shall be ASTM Type I legend on ASTM Type I background.
   iii. All other regulatory signs - retroreflective sheeting for these signs and their supplemental panels (includes black on white) shall be non-reflective black legend on ASTM Type IV background. Where red is specified, or where the color of the sign is white on black, the legend shall be ASTM type IV retroreflective sheeting on non-reflective black background. Warning messages within regulatory signs shall follow the guidelines for warning signs.
5. Route Markers - Retroreflective sheeting for route markers (includes black on white, green on white, white on green, white on red/blue) shall meet the requirements of guide signs above when specified as the legend of a guide sign. Retroreflective sheeting for all independent route markers and their auxiliary panels shall be ASTM Type IV and/or non-reflective black legend on ASTM Type IV background.
6. Logos and/or Graphics - Within signs shall follow the guidelines for the respective sign classification unless otherwise specified in the contract documents, or as directed by the engineer.
7. Civil Defense signs and Other signs - Not specifically falling into one of the categories above, shall follow the guidelines for the sign classification that most closely matches the color(s) of the proposed sign.

2.02 SIGN MATERIALS:

A. Sign Panels shall be sheet aluminum conforming to ASTM B 209, with an anodized mill finish. Alloys shall be either 6061 T6 or 5052-H38. Recycled alloys will not be accepted.

B. Provide and/or install Vandalism/Installation Date (VID) Stickers to the back lower right-hand corner of all installed signs. The Administration will supply VID stickers with all Administration supplied signs.

2.03 HARDWARE:

A. Hardware shall be stainless steel or anodized aluminum bolts, nuts, and washers, spaced at 12” maximum, with fiber or nylon washers installed between metal washer and sign face. All hardware shall be approved by ASSHTO and per manufacturer’s recommendations.

2.04 SQUARE PERFORATED TUBULAR STEEL POSTS:

A. Support shall conform to the following:

1.	Steel Posts	ASTM A570 Grade 50
2.	Galvanizing	ASTM A653 Designation G-90
3.	Spray Galvanizing Compound	ASTM A780

B. Square Perforated Tubular Steel Posts shall be formed from 12 gauge steel. All sides of the tubes shall have 7/16 in. die punched circular holes or perforated knock-outs, at one in. centers along their entire length.

C. The Square Perforated Tubular Steel Posts shall be two in. square tubes 12 ft long.

D. Square Tubular Steel Anchor Bases shall be comprised of two telescoping tubes. The first shall be 2 1/4 in. square, three ft long, formed from 12 gauge steel and shall snugly fit over the sign post. The second section shall be a 2 1/2 in. square, 18 in. long, formed from 12 gauge steel, and shall snugly fit over the 2 1/4 in. section.

PART 3 - EXECUTION

3.01 INSTALLATION OF SIGN PANELS

A. Design Wind Speed for all supports = 100 MPH, 10 year recurrence interval

B. Standard sign panel layouts are in accordance with the guidelines listed above.

C. Signs shall be installed plumb.

D. The following minimum thickness shall be used for the appropriate width of the sheet aluminum blanks, unless specified otherwise on the Contract Drawings:

Longest Dimension	**Minimum Thickness**
Up to 12”	0.040”
Greater than 12” to 24”	0.063”
Greater than 24” to 36”	0.080”
Greater than 36” to 48”	0.100”
Over 48”	0.125”

3.02 STORAGE OF SIGN PANELS:

A. Sign panels shall be stored in safe area away from traffic until ready to erect at new location.

3.03 SQUARE PERFORATED TUBULAR STEEL POSTS:

A. The Square Tubular Steel Anchor Base assembly shall be installed per manufacturer’s recommendations. The Square Tubular Steel Anchor Base assembly shall be constructed by placing the 18 in. base section over the 3 ft base section so that they are flush at the top and the holes are aligned. The entire unit shall be driven into the ground so that one or two rows of holes in the Square Perforated Tubular Steel Base are exposed. The base shall be driven so that it remains plumb and to provide the final sign assembly with the correct orientation.

B. Finished length of the Tubular Steel Posts shall be determined by adding the total height of the signs to 8 Ft, 2 in. The sign post shall be cut to the correct length, and cold spray galvanizing shall be applied to the cut end. The signs shall be bolted to the top of the post, using tamper proof bolts or drive rivets. The Square Tubular Steel Posts shall be lowered 8 in. into the base, and the post secured to the base using two corner bolts designed for this purpose.

3.04 REMOVE EXISTING SIGNS AND SUPPORTS:

A. Designated existing signs and supports including foundations if applicable shall be removed as specified on the Contract Drawings. All holes left after sign support removal shall be backfilled, compacted, and restored to conditions similar to the surroundings as approved by the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 SHEET ALUMINUM SIGNS:

A. Sheet Aluminum Signs will be measured per square foot, complete in place and accepted, and shall include furnishing, storage, hardware, drilled holes, and installation.

B. Sheet Aluminum Signs will be paid for at the Contract unit price per square foot, which will be full compensation for all material, equipment, tools, labor and all work incidentals to complete the item as specified.

C. Furnish and install or install Vandalism/Installation Date stickers will not be measured but the cost will be incidental to the Contract unit price for furnishing and installing or installing the signs.

4.02 SQUARE PERFORATED TUBULAR STEEL SIGN POSTS

A. 2 Inch Square Perforated Tubular Steel Sign Post will be measured and paid for at the Contract unit price per each. The payment will be full compensation for the sign post, corner bolts, and painting as required, and for all materials, labor, equipment, tools and incidentals necessary to complete the work.

4.03 SQUARE TUBULAR STEEL ANCHOR BASES

A. Square Tubular Steel Anchor bases will be measured and paid for at the Contract unit price per each. The payment will be full compensation for both tubes comprising the base section, all excavation, and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

4.04 REMOVE EXISTING GROUND MOUNTED SIGNS AND SUPPORTS

A. Remove Existing Signs and Supports for designated ground mounted signs will be measured per each sign assembly removed.

B. Remove Existing Signs and Supports for designated ground mounted signs will be paid for at the Contract unit price per square foot. The payment will be full compensation for the removal and disposal of the sign and support, removing concrete foundations, backfilling and compacting existing holes left after foundation removal, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

SECTION 02891

BUS SHELTER

PART 1 - GENERAL

1.01 GENERAL:

A. This work shall consist of furnishing and installing an MTA standard bus shelter where indicated on the plans and/or where directed by the Engineer.

PART 2 - PRODUCTS

2.01 BUS SHELTER:

A. Bus Shelter shall be a 5’ wide by 15’ long aluminum transit shelter as follows:

1. Dimensions: 5' wide x 15' long, overall height of shelter to be approximately 112".

2. Frame: 6063-T5 aluminum alloy extrusions with dark bronze anodized finish. Framing assembled using internally located mechanical fasteners.

3. Roof: Roof system is to be a vented 6mm bronze tinted polycarbonate hip style.

4. Windows: Fixed windows are single pane 1/4-inch clear tempered safety glass, glazed within wall systems.

5. Openings: Included will be two (2) (36" min.) entryway openings with a wind screen on one 15’ side of shelter.

6. Ventilation: There will be a 7” ventilation space at the bottom of the shelter.

7. Bench: One (1) 10' aluminum bench with backrest. Bench will attach directly to shelter framing.

B. Bus Shelter shall be supplied by one of the following:

Octagon Services Inc. DBA Shelters Direct
8580 Laureldale Drive
Laurel, MD 20724

Toll Free: (800) 393-9400 or (301) 317-6000 ext. 149
Model: 5X15-AL-TS-POLY-HIP-42078-04 - 5 FT X 15 FT ALUMINUM TRANSIT SHELTER
or approved equal.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS:

A. The Contractor shall inspect all surrounding surface elevations prior to installation of the bus shelter to verify that the proposed design will work with surrounding grades as intended. Contactor shall notify the Engineer immediately of any conflicts.

B. As indicated by the plans or when directed by the Engineer, the Contractor shall install bus shelters per manufacturer's instructions.

C. Any materials damaged by the Contractor and deemed unusable by the Engineer shall be replaced by the Contractor at no additional cost to the MTA.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BUS SHELTER:

A. Bus Shelter will be measured per each.

B. Bus Shelter will be paid for at the Contract unit price bid. This shall be full compensation for all materials, equipment, labor and tools necessary to complete this work.

END OF SECTION

SECTION 02895

TRAFFIC SIGNALS

PART 1 - GENERAL

1.01 DESCRIPTION

Furnish and install traffic signal and all associated equipment as specified in contract documents or as directed by the Engineer. This work specified in this section also includes the removal of existing traffic signal equipment, as indicated in the contract documents.

A. Furnish and install 8 inch and 12 inch LED vehicular traffic control signal heads and 16 inch LED countdown pedestrian traffic control signal heads.

B. Saw cut and seal saw cuts for signal loop detectors.

C. Furnish and install concrete for signal foundations.

D. Furnish and install 4 inch x 4 inch and 4 inch x 6 inch wood sign supports.

E. Furnish and install electrical handhole.

F. Furnish and install ground rod – ¾ inch diameter x 10 foot length

G. Furnish and Install Conduit

a. 3 inch schedule 80 rigid PVC conduit – bored
b. 4 inch schedule 80 rigid PVC conduit – bored
c. 2 inch schedule 80 rigid PVC conduit – trenched
d. 3 inch schedule 80 rigid PVC conduit – trenched
e. 4 inch schedule 80 rigid PVC conduit – trenched
f. 1 inch liquid tight flexible non-metallic conduit for detector sleeve

H. 250 Watt High Pressure Sodium Lamp and Luminaire

I. Embedded Metered Service Pedestal

J. Controller and Cabinet – Base Mount

K. Audible/Tactile Pedestrian Pushbutton Station & Signs and 2 Wire Central Control Unit

L. Cut, Clean, Galvanize and Cap Traffic Signal Structure

M. Electrical Cables and Wires

a. Electrical Cable 1- Conductor No. 8 AWG-THHN/THWN
b. Microloop Probe, 1000 Foot Lead in Cable
c. NonInvasive Detector, 1000 Foot Lead in Cable
d. Bare Copper Ground Wire, No. 6 AWG
e. Electrical Cable – 2 Conductor (No. 14 AWG)
f. Electrical Cable – 5 Conductor (No. 14 AWG)
g. Electrical Cable – 7 Conductor (No. 14 AWG)
h. Electrical Cable – 2 Conductor (No. 12 AWG)

N. Video Detection Camera and Cable Any Length

O. Remove and Dispose Materials and Equipment Per Assignment

P. Mast Arms
a. Steel Pole with a Single 38 Foot Mast Arm
b. Steel Pole with Twin 50 Foot and 60 Foot Mast Arms

Q. Pedestrian Poles
a. 10 Foot Breakaway Pedestal Pole
b. 14 Foot Breakaway Pedestal Pole

R. Construction Stakeout

S. Catalog Cuts and Working Drawings

T. Signs – Refer to Section No. 2890

U. 15 ft. Lighting Arm on Signal Structure

1.02 SUBMITTALS

All submittals shall conform to catalog cuts and working drawing requirements. Refer to Appendix J – Section 800 Catalog Cuts and Working Drawings, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

PART 2 - PRODUCTS

2.01 SIGNAL HEADS

A. Vehicular Traffic Control Signal Heads and Pedestrian Traffic Control Signal Heads shall conform to signal head requirements. Refer to Section 814 Signal Heads, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and

Appendix J – Section 800 LED Countdown Pedestrian Signals, Section 800 LED Traffic Signal Modules, Section 814 Signal Head, and Section 950.15 Traffic Signal Heads, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.02 SAW CUTS FOR TRAFFIC CONTROL DEVICES

A. Saw Cuts for signal loop detectors shall conform to saw cuts for traffic control devices requirements. Refer to Section 815 Saw Cuts For Traffic Control Devices, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.03 CONCRETE FOUNDATIONS

A. Concrete for Signal Foundations shall conform to concrete foundation requirements. Refer to Section 801 Concrete Foundations, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 902 Portland Cement Concrete and Related Products and Section 908 Reinforcement Steel, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.04 WOOD SIGN SUPPORTS

A. Wood Sign Supports shall conform to wood sign supports requirements. Refer to Section 812 Wood Sign Supports, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.05 ELECTRICAL HAND HOLES, MANHOLES, PULL AND JUNCTION BOXES

A. Electrical Handholes shall conform to handhole requirements. Refer to Section 811 Electrical Hand Holes, Manholes, Pull and Junction Boxes, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.06 GROUNDING

A. Ground Rod shall conform to grounding requirements. Refer to Section 804 Grounding, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.07 ELECTRICAL CONDUIT AND FITTINGS

A. Bored and Trenched Conduit shall conform to electrical conduit and fittings requirements. Refer to Section 805 Electrical Conduit and Fittings, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.08 LUMINAIRES AND LAMPS

A. Lamp and Luminaires shall conform to lamp and luminaire requirements. Refer to Section 806 Luminaires and Lamps, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.12

2.09 ELECTRICAL SERVICE EQUIPMENT

A. Embedded Metered Service Pedestal shall conform to electrical service equipment. Refer to Section 807 Electrical Service Equipment, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 800 Utility Connections and Utility Stakeout, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.10 TRAFFIC CONTROL DEVICE CABINETS AND EQUIPMENT

A. Base Mounted Cabinet and Controller shall be supplied by SHA Administration and conform to traffic control device cabinets and equipment requirements. Refer to Section 816 Traffic Control Device Cabinets and Equipment, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.11 AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGN

A. Pedestrian Pushbutton Station, Signs and 2 Wire Central Control Unit shall conform to audible/tactile pedestrian pushbutton station and sign requirements. Refer to Appendix J – Section 800 Audible/Tactile Pedestrian Pushbutton Station and Sign, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.12 CUTTING AND CAPPING MAST ARMS AND POLES

A. Cut, Clean, Galvanize and Cap Traffic Signal Structure shall conform to cutting and capping mast arms and poles requirements. Refer to Section 825 Cutting and Capping Mast Arms and Poles, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.13 ELECTRICAL CABLE, WIRE AND CONNECTORS

A. Electrical Cables and Wires shall conform to electrical cable, wire and connectors requirements. Refer to Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire and Section 800 Non-Invasive Magneto-Inductive Microloop Detector, Special Provisions of the

Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.14 VIDEO DETECTION CAMERA

A. Video Detection Camera and Cable shall conform to ip-based video traffic detection cameras requirements. Refer to Appendix J – Section 800 IP-Based Video Traffic Detection Cameras, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.15 SIGNAL EQUIPMENT TURN ON, PICK UP, REMOVAL AND MAINTENANCE

A. Remove and Dispose Materials and Equipment shall conform to signal equipment turn on, pick up, removal and maintenance requirements. Refer to Appendix J – Section 800 Signal Equipment Turn On, Pick Up, Removal and Maintenance, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.16 MAST ARMS AND MAST ARM POLES SINGLE, TWIN AND TRIPLE

A. Single and Twin Mast Arms shall conform to mast arms and mast arm poles single, twin and triple requirements. Refer to Appendix J – Section 800 Mast Arms and Mast Arm Poles Single, Twin and Triple, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.17 GALVANIZED TRAFFIC SIGNAL PEDESTAL POLES AND TRANSFORMER BASES

A. Pedestrian Poles shall conform to Galvanized Traffic Signal Pedestal Poles and Transformer Bases requirements. Refer to Appendix J – Section 800 Galvanized Traffic Signal Pedestrian Poles and Transformer Bases, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

2.18 BACKUP UPS SYSTEM FOR TRAFFIC SIGNALS

A. Backup UPS System shall be intergrated into propose type “S’ cabinet.

2.19 SIGNS

A. Refer to Section 02890 for Traffic Signal related signs.

2.20 15 FT. LIGHTING ARM

A. 15 ft Lighting Arm shall conform to lighting arm requirements. Refer to Standard No. MD 818.20, in the Maryland Department of Transportation State Highway Administration Standard for Highways and Incidental Structures.

2.21 MICROLOOP PROBE AND NONINVASIVE DETECTOR

A. Microloop Probe and NonInvasive Detectors shall conform to detection requirements. Refer to Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire and Section 800 Non-Invasive Magneto-Inductive Microloop Detector, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

PART 3 - EXECUTION

3.01 SIGNAL HEADS

A. Installation of Vehicular Traffic Signal Heads and Pedestrian Traffic Control Signal Heads shall conform to signal head installation requirements. Refer to Section 814 Signal Heads, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 800 LED Countdown Pedestrian Signals, Section 800 LED Traffic Signal Modules, Section 814 Signal Head, and Section 950.15 Traffic Signal Heads, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.02 SAW CUT FOR TRAFFIC CONTROL DEVICES

A. Installation of Saw Cuts for signal loop detectors shall conform to saw cuts for traffic control devices requirements. Refer to Section 815 Saw Cuts For Traffic Control Devices, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.03 CONCRETE FOUNDATIONS

A. Installation of Concrete for Signal Foundations shall conform to concrete foundation requirements. Refer to Section 801 Concrete Foundations, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 902 Portland Cement Concrete and Related Products and Section 908 Reinforcement Steel, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.04 WOOD SIGN SUPPORTS

A. Installation of Wood Sign Supports shall conform to wood sign support requirements. Refer to Section 812 Wood Sign Supports, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.05 ELECTRICAL HAND HOLES, MANHOLES, PULL AND JUNCTION BOXES

A. Installation of electrical handholes shall conform to handhole requirements. Refer to Section 811 Electrical Hand Holes, Manholes, Pull and Junction Boxes, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.06 GROUNDING

A. Installation of ground rods shall conform to grounding requirements. Refer to Section 804 Grounding, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.07 ELECTRICAL CONDUIT AND FITTINGS

A. Installation of bored and trenched conduit shall conform to electrical conduit and fittings requirements. Refer to Section 805 Electrical Conduit and Fittings, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.08 LUMINAIRES AND LAMPS

A. Installation of lamp and luminaires shall conform to lamp and luminaire requirements. Refer to Section 806 Luminaires and Lamps, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.09 ELECTRICAL SERVICE EQUIPMENT

A. Installation of Embedded Metered Service Pedestal shall conform to electrical service equipment. Refer to Section 807 Electrical Service Equipment, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 800 Utility Connections and Utility Stakeout, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.10 TRAFFIC CONTROL DEVICE CABINETS AND EQUIPMENT

A. Installation of base mounted cabinet and controller shall conform to traffic control

device cabinets and equipment requirements. Refer to Section 816 Traffic Control Device Cabinets and Equipment, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.11 AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGN

A. Installation of Pedestrian Pushbutton Station, Signs and 2 Wire Central Control Unit shall conform to audible/tactile pedestrian pushbutton station and sign requirements. Refer to Appendix J – Section 800 Audible/Tactile Pedestrian Pushbutton Station and Sign, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.12 CUTTING AND CAPPING MAST ARMS AND POLES

A. Installation of Cut, Clean, Galvanize and Cap Traffic Signal Structure shall conform to cutting and capping mast arms and poles requirements. Refer to Section 825 Cutting and Capping Mast Arms and Poles, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.13 ELECTRICAL CABLE, WIRE, AND CONNECTORS

A. Installation of Electrical Cables and Wires shall conform to electrical cable, wire, and connectors requirements. Refer to Section 810 Electrical Cable, Wire, and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire and Section 800 Non-Invasive Magneto-Inductive Microloop Detector, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.14 VIDEO DETECTION CAMERA

A. Installation of Video Detection Camera and Cable shall conform to ip-based video traffic detection cameras requirements. Refer to Appendix J – Section 800 IP-Based Video Traffic Detection Cameras, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.15 SIGNAL EQUIPMENT TURN ON, PICK UP, REMOVAL OR MAINTENANCE

A. Removal and Disposal of Materials and Equipment, Turn On and Pick Up Equipment shall conform to signal equipment turn on, pick up, removal and maintenance requirements. Refer to Appendix J – Section 800 Signal Equipment Turn On, Pick Up, Removal and Maintenance, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.16 MAST ARMS AND MAST ARM POLE SINGLE, TWIN AND TRIPLE

A. Installation of Single and Twin Mast Arms shall conform to mast arms and mast arm poles single, twin and triple requirements. Refer to Appendix J – Section 800 Mast Arms and Mast Arm Poles Single, Twin and Triple, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.17 GALVANIZED TRAFFIC SIGNAL PEDESTAL POLES AND TRANSFORMER BASES

A. Installation of Pedestrian Poles shall conform to Galvanized Traffic Signal Pedestal Poles and Transformer Bases requirements. Refer to Appendix J – Section 800 Galvanized Traffic Signal Pedestrian Poles and Transformer Bases, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.18 CONSTRUCTION STAKEOUT

A. Construction Stakeout shall conform to construction stakeout requirements. Refer to Section 107 Construction Stakeout, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 107 Construction Stakeout, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

3.19 SIGNS

A. Installation of Signs shall conform to Section 02890.

3.20 15 FT. LIGHTING ARM

A. Installation of 15 ft Lighting Arm shall conform to lighting arm requirements. Refer to Standard No. MD 818.20, in the Maryland Department of Transportation State Highway Administration Standard for Highways and Incidental Structures.

3.21 MICROLOOP PROBE AND NONINVASIVE DETECTOR

A. Installation of Microloop Probe and NonIvasive Detector shall conform to detector requirements. Refer to Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire and Section 800 Non-Invasive Magneto-Inductive Microloop Detector, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials

PART 4 - MEASUREMENT AND PAYMENT

4.01 8 INCH VEHICULAR TRAFFIC SIGNAL HEAD SECTION

A. 8 Inch Vehicular Traffic Signal Heads will be measured and paid for as per Section 814 Signal Heads, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 800 LED Traffic Signal Modules, Section 814 Signal Head, and Section 950.15 Traffic Signal Heads, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.02 12 INCH LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION

A. 12 Inch Vehicular Traffic Signal Heads will be measured and paid for as per Section 814 Signal Heads, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 800 LED Traffic Signal Modules, Section 814 Signal Head, and Section 950.15 Traffic Signal Heads, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.03 LED 16 INCH COUNTDOWN PEDESTRIAN SIGNAL HEADS

A. LED 16 Inch Countdown Pedestrian Traffic Control Signal Heads will be measured and paid for as per Section 814 Signal Heads, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 800 LED Countdown Pedestrian Signals, Section 814 Signal Head, and Section 950.15 Traffic Signal Heads, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.04 SAW CUT FOR SIGNAL (LOOP DETECTOR)

A. Saw Cuts for signal loop detectors will be measured and paid for as per Section 815 Saw Cuts For Traffic Control Devices, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.05 CONCRETE FOR SIGNAL FOUNDATION

A. Concrete for Signal Foundations will be measured and paid for as per Section 801 Concrete Foundations, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 902 Portland Cement Concrete and Related Products and Section 908 Reinforcement Steel, Special Provisions of the Maryland

Department of Transportation State Highway Administration Standard Specifications for Construction and Materials

4.06 WOOD SIGN SUPPORTS UP TO 4"X4"

A. Wood Sign Supports will be measured and paid for as per Section 812 Wood Sign Supports, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.07 WOOD SIGN SUPPORTS UP TO 4"X6"

A. Wood Sign Supports will be measured and paid for as per Section 812 Wood Sign Supports, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.08 FURNISH AND INSTALL ELECTRICAL HANDHOLE

A. Electrical handholes will be measured and paid for as per Section 811 Electrical Hand Holes, Manholes, Pull and Junction Boxes, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.09 GROUND ROD – 3/4 INCH DIAMETER x 10 FOOT LENGTH

A. Ground Rods will be measured and paid for as per Section 804 Grounding, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.10 3 INCH SCHEDULE 80 RIGID PVC CONDUIT - BORED

A. 3 Inch Bored Conduit will be measured and paid for as per Section 805 Electrical Conduit and Fittings, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.11 4 INCH SCHEDULE 80 RIGID PVC CONDUIT - BORED

A. 4 Inch Bored Conduit will be measured and paid for as per Section 805 Electrical Conduit and Fittings, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.12 2 INCH SCHEDULE 80 RIGID PVC CONDUIT – TRENCHED

A. 2 Inch Trenched Conduit will be measured and paid for as per Section 805 Electrical Conduit and Fittings, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.14 3 INCH SCHEDULE 80 RIGID PVC CONDUIT – TRENCHED

A. 3 Inch Trenched Conduit will be measured and paid for as per Section 805 Electrical Conduit and Fittings, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.15 4 INCH SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED

A. 4 Inch Trenched Conduit will be measured and paid for as per Section 805 Electrical Conduit and Fittings, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.16 1 INCH LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE

A. 1 Inch Liquid Tight Flexible Non-Metallic Conduit for Detector Sleeve will be measured and paid for as per Section 805 Electrical Conduit and Fittings, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.17 250 WATT HIGH PRESSURE SODIUM LAMP AND LUMINAIRE

A. 250 Watt High Pressure Sodium Lamps and Luminaires will be measured and paid for as per Section 805 Luminaires and Lamps, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.18 EMBEDDED METERED SERVICE PEDESTAL

A. Embedded Metered Service Pedestal will be measured and paid for as per Section 807 Electrical Service Equipment, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 800 Utility Connections and Utility Stakeout, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.19 CONTROLLER AND CABINET – BASE MOUNT (FOUR CHANNEL, TIME DELAY-OUTPUT, LOOP DETECTOR AMPLIFIER, EIGHT-PHASE, FULL-TRAFFIC-ACTUATED CONTROLLER WITH INTERSECTION MONITOR HOUSED IN A NEMA SIZE "S" BASE MOUNT CABINET AND VIDEO INTERFACE EQUIPMENT 1-8 CAMERAS)

A. Base Mounted Cabinet and Controller, including Backup UPS system, will be measured and paid for as per Section 816 Traffic Control Device Cabinets and Equipment, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 816 Traffic Control Device Cabinets and Equipment,

Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.20 AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS

A. Audible/Tactile Pedestrian Pushbutton Station and Signs will be measured and paid for as per Appendix J – Section 800 Audible/Tactile Pedestrian Pushbutton Station and Sign, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.21 2 WIRE CENTRAL CONTROL UNIT

A. 2 Wire Central Control Unit will be measured and paid for as per Appendix J – Section 800 Audible/Tactile Pedestrian Pushbutton Station and Sign, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.22 CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE

A. Cut, Clean, Galvanize and Cap Traffic Signal Structure will be measured and paid for as per Section 825 Cutting and Capping Mast Arms and Poles, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.23 ELECTRICAL CABLE – 2 CONDUCTOR (NO. 14 AWG)

A. Electrical Cable – 2 Conductor No. 14 AWG will be measured and paid for as per Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.24 ELECTRICAL CABLE – 5 CONDUCTOR (NO. 14 AWG)

A. Electrical Cable – 5 Conductor No. 14 AWG will be measured and paid for as per Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.25 ELECTRICAL CABLE – 7 CONDUCTOR (NO. 14 AWG)

A. Electrical Cable – 7 Conductor No. 14 AWG will be measured and paid for as per Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for

Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.26 ELECTRICAL CABLE – 2 CONDUCTOR (NO. 12 AWG)

A. Electrical Cable – 2 Conductor No. 12 AWG will be measured and paid for as per Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.27 ELECTRICAL CABLE – 1 CONDUCTOR NO. 8 AWG-THHN/THWN

A. Electrical Cable – 1 Conductor No. 8 AWG-THHN/THWN will be measured and paid for as per Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.28 MICROLOOP PROBE, 1000 FOOT LEAD IN CABLE

A. Microloop Probe, 1000 Foot Lead in Cable will be measured and paid for as per Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.29 NONINVASIVE DETECTOR, 1000 FOOT LEAD IN CABLE

A. Noninvasive Detector, 1000 Foot Lead in Cable will be measured and paid for as per Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire and Section 800 Non-Invasive Magneto-Inductive Microloop Detector, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.30 BARE COPPER GROUND WIRE, NO. 6 AWG

A. Bare Cooper Ground Wire, No. 6 AWG be measured and paid for as per Section 810 Electrical Cable, Wire and Connectors, in the Maryland Department of Transportation State Highway Administration Standard Specifications for

Construction and Materials and Appendix J – Section 950.06 Electrical Cable and Wire, Special Provisions of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.31 VIDEO DETECTION CAMERA AND CABLE ANY LENGTH

A. Video Detection Camera and Cable will be measured and paid for as per Appendix J – Section 800 IP-Based Video Traffic Detection Cameras, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.32 REMOVE AND DISPOSE MATERIALS AND EQUIPMENT PER ASSIGNMENT

A. Remove and Dispose Materials and Equipment Per Assignment will be measured and paid for as per Appendix J – Section 800 Signal Equipment Turn On, Pick Up, Removal and Maintenance, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.33 STEEL POLE WITH A SINGLE 38 FOOT MAST ARM

A. Steel Pole with a Single 38 Foot Mast Arm will be measured and paid for as per Appendix J – Section 800 Mast Arms and Mast Arm Poles Single, Twin and Triple, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.34 STEEL POLE WITH TWIN 50 FOOT AND 60 FOOT MAST ARMS

A. Steel Pole with Twin 50 Foot and 60 Foot Mast Arms will be measured and paid for as per Appendix J – Section 800 Mast Arms and Mast Arm Poles Single, Twin and Triple, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.35 10 FOOT BREAKAWAY PEDESTAL POLE

A. 10 Foot Breakaway Pedestal Pole will be measured and paid for as per Appendix J – Section 800 Galvanized Traffic Signal Pedestrian Poles and Transformer Bases, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.36 14 FOOT BREAKAWAY PEDESTAL POLE

A. 14 Foot Breakaway Pedestal Pole will be measured and paid for as per Appendix J – Section 800 Galvanized Traffic Signal Pedestrian Poles and Transformer Bases, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.38 CONSTRUCTION STAKEOUT

A. Construction Stakeout will be measured and paid for as per Section 107 Construction Stakeout, in the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials and Appendix J – Section 107 Construction Stakeout, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.39 CATALOG CUTS AND WORKING DRAWINGS

A. Catalog Cuts and Working Drawings will be measure and paid for as per Appendix J – Section 800 Catalog Cuts and Working Drawings, Special Provision of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials.

4.40 15 FT. LIGHTING ARM ON SIGNAL STRUCTURE

A. 15 ft Lighting Arm on Signal Structure will be measured and paid for as per each lighting arm, as per the contract documents.

END OF SECTION

SECTION 02920

TURF ESTABLISHMENT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes furnishing, placing, shaping, and compacting topsoil; furnishing and sowing turfgrass and bioretention seed mixtures; furnishing and installing turfgrass sod; furnishing and applying fertilizers, lime, and mulch; sod patching and repairing; refertilizing; and the maintenance and mowing of all sodded areas to the limits indicated on the Contract Drawings or where directed by the Engineer.

1.02 SUBMITTALS:

A. Topsoil: Certificate of compliance from a laboratory approved by the Engineer, stating pH, texture, and percent of organic content.

B. Seed: Certificate of compliance from the seed supplier stating percentages of the mixture, purity, germination rate, and maximum weed seed content of the grass seed mixture.

C. Sod: Certificate of compliance from the sod supplier stating that the sod is in compliance with Maryland Sod Law of the Annotated Code of Maryland. Each load of sod shall bear a Maryland State Certified label at the time of delivery to the project site.

D. Provide samples and technical data for all other products listed in Part 2 of this Specification section for testing and visual inspection.

1.03 QUALITY ASSURANCE:

A. Comply with the requirements of the Maryland Standard Method of Procedure for Seed Quality Control.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING:

A. Topsoil: Do not deliver until certificate of compliance has been approved by the Engineer.

B. Seed: Deliver with labels or tags in accordance with standard good practice and mixed as required.

C. Sod:

1. All sod shall be well rooted and shall have been grown in the state of Maryland. The sod shall be field grown for a minimum of 12 months.

2. Mow sod in the field to a height of 2 to 2-1/2 inches within five days prior of lifting.

3. When lifting, cut sod in sections not more than 4-1/2 feet in length, 14 to 20 inches in width, and to a uniform thickness of ¾ inch, plus or minus ¼ inch, including all of the fibrous roots. The sod

thickness measurement shall exclude top growth and thatch. The sod shall be relatively free of thatch at the time of cutting; a 3/8 thickness or less of thatch will be acceptable.

4. Deliver and place the sod within 48 hours after being cut. Sod shall be transported without breaking, tearing, or loss of soil.

5. In wet weather, allow sod to dry sufficiently to prevent tearing during handling and placing.

6. In dry weather, water sod to ensure its vitality and to prevent dropping soil in handling. Dried out sod will be rejected.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Topsoil:

1. Topsoil shall be natural, friable surface soil uniform in color and texture and from a source other than the project site. The topsoil shall be free from any parts of Johnsongrass, Canada Thistle, or Phragmites, and the topsoil shall not contain any residual chemicals which may be harmful to plant life.

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

Grading analysis shall be as follows:

SIEVE SIZE	MINIMUM PERCENT PASSING BY WEIGHT
50.00 mm (2 in.)	100
4.75 mm (No. 4)	90
2.00 mm (No. 10)	80

Topsoil shall be analyzed for sand, silt, and clay as specified in T88.

Textural analysis shall be as follows:

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

B. Turfgrass Seed Mix:

1. Seed shall be in accordance with SHA Std. Specifications, Section 920.06. Seed shall be sampled and tested by an inspector from the Turf and Seed Section, Maryland Department of Agriculture (MDA), Annapolis, Maryland. All seed containers shall be tagged with a MDA supervised mix program seed tag. Seed shall comply with the Maryland Seed Law, Agricultural Article of the Annotated Code of Maryland. The Authority for seed names shall be the current printing of USDA, Agriculture 505 Handbook.

C. Bioretention Seed Mix:

1. Seed shall be in accordance with the following:

23% Fox Sedge, PA Ecotype (Carex vulpinoidea, PA Ecotype)
20% Fowl Bluegrass (Poa palustris)
20% Virginia Wildrye, PA Ecotype (Elymus virginicus, PA Ecotype)
10% Deertongue, 'Tioga' (Panicum clandestinum (Dichanthelium c.), 'Tioga')
8% Lurid (Shallow) Sedge, PA Ecotype (Carex lurida, PA Ecotype)
4% Blue Vervain, PA Ecotype (Verbena hastata, PA Ecotype)
4% Green Bulrush, PA Ecotype (Scirpus atrovirens, PA Ecotype)
3% Soft Rush (Juncus effusus)
2% Autumn Bentgrass, Albany Pine Bush-NY Ecotype (Agrostis perennans, Albany Pine Bush-NY Ecotype)
2% Woolgrass, Coastal Plain NC Ecotype (Scirpus cyperinus, Coastal Plain NC Ecotype)
2% Ticklegrass (Rough Bentgrass), PA Ecotype (Agrostis scabra, PA Ecotype)
1% Seedbox, PA Ecotype (Ludwigia alternifolia, PA Ecotype)
1% Purplestem Aster, PA Ecotype (Aster puniceus Symphyotrichum)

2. Seed shall be applied at the rate of 20 pounds per acre.

3. Seed shall be sampled and tested by an inspector from the Turf and Seed Section, Maryland Department of Agriculture (MDA), Annapolis, Maryland. All seed containers shall be tagged with a MDA supervised mix program seed tag. Seed shall comply with the Maryland Seed Law, Agricultural Article of the Annotated Code of Maryland. The Authority for seed names shall be the current printing of USDA, Agriculture 505 Handbook.

D. Straw Mulch:

1. Straw shall consist of thoroughly threshed cereal grains. Straw shall be free of noxious weeds and weed seeds and shall be visually inspected to insure that it is free from mold, foreign substances, plants parts of Canada Thistle, Johnsongrass, or Phragmites, and is in an air-dry condition suitable for placing with mulch blower equipment.

E. Wood Cellulose Fiber:

1. Wood cellulose fiber will only be permitted when approved by the Engineer for the Infiltration Seed Mix. During summer seeding at least 70 percent of the hydromulch shall be applied after and separately from the seed and compost.

2. Wood cellulose fiber shall be a processed wood product having uniform fiber characteristics which will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form homogeneous slurry.

3. The fiber shall perform satisfactorily in hydraulic seeding equipment without clogging or damaging the system. The slurry shall contain a green dye that will provide easy visual inspection for uniformity of application.

4. The manufacturer shall furnish certification as specified in TC-1.02 showing that the material conforms to the following:

WOOD CELLULOSE FIBER REQUIREMENTS	
Particle Length, in. (mm)	Approximately ½ (13)
Particle Thickness, in. (mm)	Approximately 1/16 (1.5)
Net dry Weight Content	Minimum as stated on bag
TAPPI* T 509, pH	4.0-8.5
Ash Content, TAPPI* Standard T 413, % max	7.0
Water Holding Capacity, % min	90

* Technical Association of Pulp and Paper Industry

5. The material shall be delivered in packages of uniform weight which shall not exceed 75 lb (34 kg) net weight and shall bear the name of the manufacturer, the net weight, and supplemental statement of the net weight content.

F. Sod: A blend of 2-3 cultivars of Maryland certified Tall Fescue sod.

G. Fertilizer:

1. Fertilizer shall be commercial grade conforming to all State and Federal regulations and the Standards of the Association of Official Analytical Chemists.

2. Standard analysis shall be: 0-20-20, 5-20-20, 10-10-10, 10-20-0, 10-22-22 (50% nitrogen from 38-0-0 unreaform), 20-20-20 and 8-0-0 (ureaform). All analyses are subject to approval by the Engineer prior to application.

H. Lime:

1. Limestone shall contain not less than 85 percent calcium and magnesium carbonates. Dolomitic (magnesium) limestone shall contain at least 10 percent magnesium as magnesium oxide and 85 percent calcium and magnesium carbonates. Limestone shall conform to the following gradation:

2.

SIEVE SIZE	MINIMUM PERCENT PASSING BY WEIGHT
2.00 mm(No. 10)	100
0.850 mm (No. 20)	98
0.150 mm (No. 100)	50

I. Water: Potable water from fresh water sources, free of injurious chemicals and other toxic substances harmful to plant life.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS:

A. The Contractor shall perform turf establishment to the lines, grades, and limits shown on the Contract Drawings.

3.02 SCHEDULE OF PROCEDURES:

A. A schedule of turf establishment procedures shall be prepared and submitted to the Engineer prior to the initiation of turf establishment work.

B. Sodding shall be performed when the temperature is above 32°F and the ground is not frozen or muddy.

C. A schedule of seed mix establishment procedures shall be prepared and submitted to the Engineer prior to the initiation of all seed mix establishment work.

D. Seeding shall be performed when the temperature is above 32°F and the ground is not frozen or muddy.

3.03 PLACEMENT OF TOPSOIL:

A. The Contractor shall completely prepare and finish the surface of all areas to be covered with topsoil. Immediately prior to being covered with topsoil, the prepared surfaces shall be in a loose condition and free of stones or other foreign material 2 inches or greater. When topsoil is to be placed on slopes on which the subsoil blends with the topsoil, the Contractor shall work the topsoil into the subsoil by a means acceptable to

the Engineer. Where subsoils on slopes are of a character that they will not blend with the topsoil, the Contractor shall roughen, ridge, or serrate the slopes so as to provide a bond for the topsoil.

B. Topsoil shall be placed and spread over all areas indicated on the plans to a minimum 4 inch depth that, after settlement, the completed work shall be in conformance with the thickness, lines, grades, and elevations indicated on the plans. All clods, loose stones and other foreign materials which are larger than one inch in any dimension shall be removed. All gullies, washes or disturbed areas that develop subsequent to final dressing shall be prepared prior to seeding.

C. Limestone and other soil amendments shall be added as required by laboratory testing.

D. Topsoil placement and spreading shall not be performed during periods of either frozen or muddy soil conditions.

3.04 TURFGRASS SEEDING:

A. Preparing Seedbed. The 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 the seed mixes. The finished seedbed shall be free of weed or plant growth.

1. Areas Flatter than 3:1. Bulldozer cleat marks shall be removed and the cross and linear sections shall be evenly and uniformly leveled to establish a fine seed bed.

B. Seeding and mulching operations shall be performed following the schedule below:

Spring	March 1 through May 15
Summer	May 16 through July 31
Fall	August 1 through October 20
Late Fall	October 21 through November 20

C. Seeding equipment shall consist of spreaders, drills, hydroseeders, or other application equipment approved by the Engineer for applying materials in either a wet or dry form. All equipment shall be calibrated before material application to the satisfaction of the Engineer to assure that the seeding materials are applied accurately and evenly to avoid missed areas and overlaps.

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

E. Use of hydroseeders and spinner seeders shall be prohibited during windy periods when the materials could land on structures or on undesired areas.

F. Hydrodseeding equipment shall have a water tank equipped with a bar or liquid level gage calibrated to read in increments not larger than 50 gallons over the entire range of the tank capacity, and the gage shall be mounted so as to be visible to the nozzle operator. The tank shall also be equipped with an agitation system capable of keeping all the solids in the mixture in complete suspension at all times until used.

G. The mixtures shall be applied by means of high pressure spray which shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

H. Liming: When required, based upon laboratory testing, agricultural limestone shall be incorporated 2 inches into the topsoil before seed and fertilizer are applied. On slopes 3:1 and greater the limestone may be mixed with the seed and fertilizer.

I. Seeding and fertilizing:

1. All seed mixes shall be applied at the rate of 50 pounds per acre.
2. Seeding shall not be performed during periods of high winds.
3. Seed and fertilizer shall only be applied to previously prepared seedbeds.
4. When seed is applied with hydraulic seeders all mixtures shall be used within eight hours after the initial mixing. Mixtures greater than eight hours old shall be wasted in a manner acceptable to the Engineer.
5. Seed and fertilizer, when sewn by mechanical seeders, shall be incorporated into the topsoil to a depth not more than ¼ inch.

J. Mulching:

1. Mulch shall be applied immediately after seeding.
2. Straw mulch shall be applied so no more than 10 percent of the soil surface is exposed. Much applied by blowers shall provide a loose depth of not less than ½ inches nor more than 2 inches, and 95 percent of the mulch shall be 6 inches or more in length. Mulch applied by hand shall provide a loose depth of not less than 1-1/2 inches nor more than 3 inches.
3. Wood cellulose fiber will only be permitted on those slopes where steep or high slopes prohibit the use of straw application equipment.
4. Straw mulch shall be secured by applying wood cellulose fiber uniformly without displacing the straw mulch.

3.05 BIORETENTION SEEDING:

A. Preparing Seedbed. The 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 the seed mixes. The finished seedbed shall be free of weed or plant growth.

1. Areas Flatter than 3:1. Bulldozer cleat marks shall be removed and the cross and linear sections shall be evenly and uniformly leveled to establish a fine seed bed.

B. Seeding and mulching operations shall be performed following the schedule below:

Spring	March 1 through May 15
Summer	May 16 through July 31
Fall	August 1 through October 20
Late Fall	October 21 through November 20

C. Seeding equipment shall consist of spreaders, drills, hydroseeders, or other application equipment approved by the Engineer for applying materials in either a wet or dry form. All equipment shall be calibrated before material application to the satisfaction of the Engineer to assure that the seeding materials are applied accurately and evenly to avoid missed areas and overlaps.

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

E. Use of hydroseeders and spinner seeders shall be prohibited during windy periods when the materials could land on structures or on undesired areas.

F. Hydrodseeding equipment shall have a water tank equipped with a bar or liquid level gage calibrated to read in increments not larger than 50 gallons over the entire range of the tank capacity, and the gage shall be mounted so as to be visible to the nozzle operator. The tank shall also be equipped with an agitation system capable of keeping all the solids in the mixture in complete suspension at all times until used.

G. The mixtures shall be applied by means of high pressure spray which shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

H. Liming: When required, based upon laboratory testing, agricultural limestone shall be incorporated 2 inches into the topsoil before seed and fertilizer are applied. On slopes 3:1 and greater the limestone may be mixed with the seed and fertilizer.

I. Seeding and fertilizing:

1. All seed mixes shall be applied at the rate of 50 pounds per acre.

2. Seeding shall not be performed during periods of high winds.

3. Seed and fertilizer shall only be applied to previously prepared seedbeds.

4. When seed is applied with hydraulic seeders all mixtures shall be used within eight hours after the initial mixing. Mixtures greater than eight hours old shall be wasted in a manner acceptable to the Engineer.

5. Seed and fertilizer, when sewn by mechanical seeders, shall be incorporated into the topsoil to a depth not more than ¼ inch.

J. Mulching:

1. Mulch shall be applied immediately after seeding.
2. Straw mulch shall be applied so no more than 10 percent of the soil surface is exposed. Much applied by blowers shall provide a loose depth of not less than ½ inches nor more than 2 inches, and 95 percent of the mulch shall be 6 inches or more in length. Mulch applied by hand shall provide a loose depth of not less than 1-1/2 inches nor more than 3 inches.
3. Wood cellulose fiber will only be permitted on those slopes where steep or high slopes prohibit the use of straw application equipment.
4. Straw mulch shall be secured by applying wood cellulose fiber uniformly without displacing the straw mulch.

3.06 SODDING:

A. Sod shall be placed between the dates of August 15 and May 31.

B. Sod shall be placed without breaking, tearing, or loss of soil.

C. The areas to be sodded shall be prepared with a smooth, uniform surface true to line and cross section.

D. Areas to be sodded shall be limed and fertilized in accordance with Article 3.04.

E. Sod shall be placed with close joints and no overlapping. No cracks will be permitted between the pieces of sod. All sod shall be tamped or rolled after placing to close the seams between the sod pieces and to press the sod tightly against the topsoil surface. Hand tampers shall weigh approximately 15 pounds and have a flat surface of approximately 100 square inches; rollers shall weigh approximately 40 pounds per foot of roller width.

F. On slopes 2:1 and steeper, sod shall be placed with the long edges parallel to the contour starting on the bottom of the slope. Successive strips shall be neatly matched and all joints shall be staggered or broken. When placing sod in drainage ditches, the length of the strip shall be laid parallel to the direction of flow of the water.

G. Each strip or section of sod placed on slopes 2:1 or steeper and surface drainage ditches shall be staked securely with at least two 6 inch long “U” or “T” shaped metal staples or 6 inch wooden pegs spaced not more than 2 feet apart and driven flush with the top of the sod.

H. Each section of sod shall be thoroughly watered a minimum of three times after placement. The first watering of sod shall be within 4 hours after being placed and shall wet the soil to a depth of 3 inches below the sod. The second and third waterings shall be within 10 days after the sod has been placed. A minimum of 24 hours shall elapse between the second and third waterings.

I. After the sod has been watered three times, and no later than three weeks after placing, the sod shall be refertilized with 38-0-0 ureaform fertilizer at the rate of 4.6 pounds per 1000 square feet.

3.07 TURF MAINTENANCE:

A. Repair or replace any sodded area damaged during the life of the Contract. This damage includes erosion damage.

B. Water the sodded areas through the life of the Contract to establish a stand of grass of uniform density and color as approved by the Engineer. The Contractor shall monitor the water needs of the seeded and mulched and sodded areas to maintain adequate moisture in the upper 4 inches of the soil. The Contractor shall request the Engineer's approval for each watering.

C. All turf areas, shall be established and maintained to the satisfaction of the Engineer. Sodded areas must possess a uniform color and density acceptable to the Engineer.

3.08 MOWING:

A. Turf mowing shall occur during the entire growing season. Turf shall be mowed to a height of two and one half inches each time it has grown to a four inch height. It is estimated that mowing will occur approximately thirty times per calendar year.

B. The Contractor shall use appropriately sized equipment to mow the turf. Trimming shall include the use of monofilament spin trimmers at the time of each mowing operation where larger equipment cannot mow the turf.

C. The Contractor shall also edge turf areas with a gasoline engine powered edger along all edges where turf abuts concrete sidewalks. All resulting debris shall be removed from the site to the satisfaction of the Engineer. This edging shall occur at six week intervals in conjunction with mowing operations.

D. Trash and debris within areas to be mowed shall be collected and disposed of prior to mowing operations. Disposal shall be made offsite.

PART 4 - MEASUREMENT AND PAYMENT

4.01 FURNISHING AND PLACING 4" TOPSOIL:

A. Furnishing and Placing 4" Topsoil will be measured at the Contract unit price per square yard for the surface area acceptably prepared and covered with topsoil to the specified 4 inch depth.

B. Furnishing and Placing 4" Topsoil will be paid at the Contract unit price bid per square yard, which price shall include all material, labor, equipment, tools, and incidentals necessary to complete the work.

4.02 TURFGRASS SEEDING:

A. Turfgrass Seeding will be measured per square yard of surface area satisfactorily established in accordance with the Contract Documents and as specified or directed by the Engineer.

B. Turfgrass Seeding will be paid at the Contract unit price bid and shall include all material, labor, equipment, tools, and incidentals necessary to complete the work.

4.03 BIORETENTION SEEDING:

A. Bioretention Seeding will be measured per square yard of surface area satisfactorily established in accordance with the Contract Documents and as specified or directed by the Engineer.

B. Bioretention Seeding will be paid at the Contract unit price bid and shall include all material, labor, equipment, tools, and incidentals necessary to complete the work.

4.04 SODDING:

A. Sodding, including the initial three waterings and a single refertilizing, will be measured at the unit price per square yard of surface area measured in place and satisfactorily installed in accordance with the Contract Drawings and as specified or as directed by the Engineer.

B. Sodding will be paid at the Contract unit price bid per square yard, which price shall include all material, labor, equipment, tools, and incidentals necessary to complete the work.

4.05 MOWING:

A. Mowing of sodded areas, including the collection and disposal of trash and debris, trimming, and edging, will be measured per each mowing.

B. Mowing will be paid at the Contract unit price bid per each, which price shall include all material, labor, equipment, tools, and incidentals necessary to complete the work.

4.06 ADDITIONAL WATERING OF SODDED AREAS:

A. Additional Watering of Sodded Areas will be measured per 1000 gallons (MG) of water applied to the seeded and mulched areas and sodded areas. Water will be measured by means of satisfactorily installed meters, or by means of tank capacities, or by acceptable documentation of tanks of predetermined capacity. The Contractor shall furnish the Engineer with measurement and capacities to provide complete and accurate record of the quantity of water furnished and applied.

B. Additional Watering of Sodded Areas will be paid at the Contract unit price bid per 1000 gallons (MG) of water, which price shall include all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

SECTION 02930

TREES, SHRUBS AND GROUND COVER

PART 1: GENERAL

1.01 DESCRIPTION:

A. This Section includes specifications for furnishing and planting of trees, shrubs, and ground cover as indicated; and care and replacement during construction; and a one-year care and replacement period.

B. Note: In an effort to minimize nutrient runoff to the Chesapeake Bay watershed, fertilizers shall only be used during plant establishment. Quantities and types of fertilizers shall be determined by soil test results and as recommended by the testing agency.

1.02 QUALITY ASSURANCE:

A. All plants to be supplied shall be first class representatives of their normal species or varieties unless otherwise specified. All plant materials are to conform in size and grade as specified under the current edition of ANSI Z60.1 "American Standard for Nursery Stock." The current edition of "Hortus Third" shall be the authority for all plant names.

B. All plants shall be freshly dug at time of delivery and nursery grown unless otherwise specifically permitted, and shall have been growing for at least two years prior to award date of the contract within the states of Maryland, Delaware, Virginia, New Jersey, Pennsylvania, or New York.

C. All plant materials shall have normal, well developed branches and a vigorous root system. They shall be healthy, vigorous plants free from defects, decay, disfiguring roots, sunscald injuries, abrasions of the bark, plant diseases, insect pest eggs, borers, and all forms of infestations or objectionable disfigurements. Plant materials that are weak or which have been cut back from larger grades to meet certain specified requirements will be rejected.

D. Shade and flowering trees are to be symmetrically balanced according to their normal habit of growth. Shade trees of standard variety shall have a single leader and shall be branched as indicated on the plans. Major branches shall not have V-shaped crotches capable of causing structural weakness. Trunks shall be free of unhealed branch removal wounds greater than a one inch diameter. Evergreens are to be full foliage, specimens of mature growth. Deciduous shrubs shall be well furnished with branches and have ample, well balanced root systems capable of sustaining vigorous growth. Vines and ground cover shall have been growing for at least three months in the size of container specified.

E. Prior to digging, plant materials will be inspected by the Engineer. Plant material grown in fields or blocks which show evidence of containing any parts (seeds, rhizomes, roots) of Johnson Grass or Canada Thistle will not be accepted. Certain items selected will be marked with a seal furnished by the Engineer. An approval of material on such inspection shall not be construed as an acceptance of it. The plant materials will again be inspected at arrival on the subject site. Material arriving with broken seals, broken or loose balls, insufficient protection of roots or top, shriveled dry or insufficiently developed roots or which are weak and thin, or damaged or defective or which do not comply with the specifications will not be accepted. All container grown plants shall be well rooted, vigorous and established in the size container specified, shall have well balanced tops for the container size, and shall not be root bound.

F. Plant materials, represented by each shipment, invoice, or stock order shall be declared and certified free from disease of any kind. All necessary inspection certificates to the effect which are required by law for the necessary interstate or interdistrict transportation shall accompany each shipment, invoice, or order of stock.

G. All tree pruning shall conform to the current edition of the National Arborist Association's "Pruning Standards for Shade Trees".

1.03 SUBMITTALS:

A. Within ten days of the Notice-to-Proceed, the Contractor shall submit in writing an itemized list of sources of all plant items and shall give all necessary assistance when inspections are made by Engineer. The Contractor shall keep his list of plant sources to a minimum; the cost of plant inspection and tagging trips in excess of the Contractor's initial source list shall be deducted from his invoices. Representative samples of every shipment of plant materials shall be labeled as to genus, species, and specified size. No substitutions shall be made without the permission of the Engineer.

In cases where plant materials are not available at the time of planting, the Contractor shall submit, in writing, evidence that the plants are unavailable. Whenever possible, the first course of action shall be to substitute the plant with a similar cultivar of the same genus species. Caliper size of trees, height, spread, and growth characteristics of plants shall be the same as the originally specified plant. For flowering material, plant size, color, and bloom time of the proposed substitute plant shall be the same as the originally specified plant. All requests for substitutions shall indicating the originally proposed plant, the substitute plant, plant source, quanitity and cost, for approval by the Landscape Architect. Substitutions will be provided at no additional cost to the Administration.

No substitutions will be approved without the written consent of the Landscape Architect.

B. Provide samples of all products listed in Part 2 of this Specification Section for testing and visual inspection.

1.04 HANDLING AND PROTECTION:

A. All plant materials shall be dug immediately previous to the shipment. Special precautions shall be taken to avoid any unnecessary injury to, or removal of, fibrous roots. Each species or variety shall be handled and packed in the approved manner for that plant, having regard to the soil and climatic conditions and the time that will be consumed in transit or delivery. All precautions that are customary in good trade practice shall be taken to insure the arrival of the plants at the destination in a good condition for successful growth.

B. All plants which are required to be balled and burlapped prior to shipment are designated B&B in the itemized list of plant materials. Balled and burlapped plants shall be lifted so as to retain as many fibrous roots as possible. The burlap shall be firmly held in place by wrapping of cord or wire. No imitation or artificial burlap materials shall be used on any plant.

C. Ball diameters and depths shall be in conformance with ANSI Z60.1 and the dimensions given therein are the minimum which will be accepted and apply to the nursery plants only. Oversized and exceptionally heavy plants are acceptable at no increase in cost to the Administration.

D. On receipt of nursery stock at the site, the Contractor shall notify the Engineer. All plant shipments shall be accompanied by an invoice, furnished to the Engineer, giving detailed description of the plant materials and the date of shipment.

E. Immediately following the delivery and inspection at the site, all plants with exposed roots shall be heeled-in in moist soil and in a manner satisfactory to the Engineer. All plants heeled-in shall be properly maintained by the Contractor until planted.

F. All rejected material shall be immediately removed by the Contractor.

G. The balls of B&B plants shall, if not immediately planted after delivery and inspection, be adequately protected from heat, cold, and wind by covering until removed for planting, in a manner appropriate to the conditions and satisfactory to the Engineer. The Contractor shall, in loading, unloading, or handling of plants, exercise utmost care to prevent injuries to the branches and roots of the plants. The solidity of the balls of

B&B plants shall be carefully preserved. Plants with exposed roots which are being transported to and from "heel-in," being distributed in planting beds, or awaiting planting after distribution, shall have their roots protected from drying by means of "puddling," if necessary. The means employed shall be satisfactory to the Engineer, and shall depend on weather condition and the length of time the roots must remain out of ground.

PART 2: PRODUCTS

2.01 PLANT MATERIALS:

A. Plant materials are defined as trees, shrubs, ground cover, vines, and plants of all descriptions.

B. Collected plant material shall mean plants which are not nursery grown. No plant material shall be collected unless specifically indicated. Collected material shall be dug with a ball of earth and burlapped with the minimum diameter for nursery grown stock.

2.02 ORGANIC COMPOST:

A. Organic compost shall be composted leaves as prepared by the Maryland Environmental Service and subject to approval by the Engineer.

2.03 UREAFORM FERTILIZER:

A. Shall be 38-0-0 (ureaform). Ureaform fertilizer shall be commercial grade conforming to all State and Federal regulations and the Standards of the Association of Official Analytical Chemists.

2.04 SUPPLEMENTAL FERTILIZER:

A. The fertilizer shall be a slow release type contained in a perforated polyethylene bag with micropore holes for controlled feeding. Each bag shall contain four ounces of water soluble fertilizer analysis 16-8-16 minimum per unit to be effective for approximately eight years.

1. Minimum guaranteed analysis: 16-8-16

2. Total Nitrogen (N): 16% comprised of 9% Ammonical Nitrogen (NH3PO4) and 7% Nitrate Nitrogen (NO3N)

3. Available Phosphoric Acid (P2O5): 8% from Ammonium Phosphate (NH4PO4))

4. Soluble Potash (K2O): 16% from Potassium Chloride (KCL)

5. Potential Acidity equivalent to 850 lbs. Calcium Carbonate ($CaCO_3$) per ton.

2.05 MULCHING MATERIAL FOR PLANTING:

A. Mulching material shall be shredded bark from hardwood trees which has been milled and screened to a maximum 3 inch particle size. When placed, the mulch shall provide a uniform texture. The shredded hardwood bark shall not have been subjected to any conditions that would shorten its life or lose any of its value as a mulch. Mulching material shall be free from leaves, twigs, wood shavings, sawdust, toxic substances, and any foreign materials.

2.06 PLANTING ACCESSORIES:

A. Vertical Stakes: Vertical stakes shall be rough sawn straight grain oak or other wood approved by the Engineer, reasonably free from knot holes, bark, wane, warp, and splits, as determined by the Engineer.

B. Staking Wire: Staking wire shall be either number 12 or 14 gauge, new annealed galvanized wire.

C. Rubber Hose: Rubber hose for all trees shall be 5/8" or 3/4" black corded hose or approved equal.

D. Water: All water for plants shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. No water which is brackish will be permitted at any time. The Contractor shall identify to the Engineer all sources of water prior to use. The Contractor shall not use any water from any source which is disapproved by the Engineer.

E. Insecticide: An Engineer approved chemical which will provide protection against pests.

2.07 FURNISHED TOPSOIL:

A. Furnished topsoil: Furnished topsoil shall be natural, friable surface soil uniform in color and texture and not supplied from the project. Topsoil shall be free from any parts of Johnsongrass, Canada thistle, or Phragmites. The producer shall submit certification to the Engineer that the topsoil material being used is from an approved stockpile. The certification shall accompany the first load each day from the approved stockpile.

B. Topsoil shall have an organic content between 3 to 10.0 percent by weight when tested. Furnished topsoil shall have a corrected pH value of not less than 6.0 nor more than 7.5.

No particles shall be larger that 1 inch

SIEVE SIZE	MINIMUM PERCENT PASSING BY WEIGHT
1/2 in.	100
No. 4	90
No. 10	80

Topsoil shall be analyzed for sand, silt, and clay. 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

PART 3: EXECUTION

3.01 GENERAL:

A. No shipment of plant material shall be planted by the Contractor until such material has been inspected and accepted by the Engineer.

B. Planting Season:

1. All plant material shall be planted according to the following planting season schedule:

   Deciduous Material: March 1 to June 15
   October 15 to December 15

   Evergreen Material: March 15 to May 15 (Spring)
   August 15 to November 15 (Fall)

2. The periods above may be extended or reduced according to weather and soil conditions at the time and at the discretion of the Engineer. The Contractor shall use his best judgment when

scheduling the planting of deciduous and evergreen plant material, either B&B or containerized. Preparations for planting may begin earlier than the specified seasons, provided the staking of plant locations has been approved.

C. Subsurface Conditions:

1. When utility lines are encountered or other subsurface conditions in plant pits are otherwise unsuitable for the particular varieties of plants to be planted, as determined by the Engineer, he will direct that the plants be relocated in satisfactory locations.

2. Test Pits: Test Pits shall be excavated, when directed by the Engineer, and shall be a size necessary to locate and identify existing utility facilities or other obstructions.

3. Test drainage of tree pits and planting beds. Notify the Engineer of potential poor drainage of tree and shrub pits and planting beds considered detrimental to growth of plant material. Recommend a program for correction of poor drainage conditions and submit proposal to the Engineer. Do not proceed with planting operations in areas of poor drainage until conditions are corrected or direction is given.

D. Backfilling and Seeding Abandoned Planting Pits: When the Engineer directs that any plant pit be abandoned after it is partially or fully excavated, due to conditions which were not reasonably determinable prior to excavation, the Contractor shall backfill the pit with the excavated soil, in well compacted in 8 inch deep layers, and finished by respreading the stripped topsoil to the compacted finished grade. Unsuitable material shall be removed from the project. The disturbed area shall then be prepared, seeded and mulched or sodded, as directed and to the satisfaction of the Engineer.

3.02 GROUND PREPARATION:

A. Laying Out and Starting Work:

1. The Contractor shall provide the stakes and stake out the locations of all plant pits and the outlines of all planting areas and beds as shown and detailed on the plans. No excavation or cultivation shall be started until the locations and outlines have been approved by the Engineer.

2. All plants shall be planted in individual pits.

3. Planting beds shall mean beds which are specified to be cultivated, edged, prepared, and finished as specified. Individual pits shall be excavated for each plant within planting beds.

4. Planting beds shall have all existing vegetation removed to the limits indicated on the plans. These planting bed areas are then to receive two inches of organic compost spread upon their surfaces, followed by rototilling to a depth of six inches. The beds shall then be raked to create uniform surfaces acceptable to the Engineer prior to either planting or mulching operations.

5. Rocks greater than 1-1/2 inches in any dimension, debris, roots and root mats, and weeds shall be removed from the site after raking.

B. Excavation for Planting:

1. All pits shall be excavated as indicated on the plans; the bottoms of pits shall be horizontal. If augers or backhoes are used for excavation, the sides of the pits shall be scarified by a means acceptable to the Engineer.

2. All plant pits shall be excavated to a width three times the root ball diameter or as shown on the detail drawings.

3. Planting pit diameters may exceed the minimum diameters indicated at no additional cost to the Administration.

4. The Contractor shall use amended soil for backfilling plant pits. Shrubs which are located within planting beds do not require additional amended soil for backfilling.

5. Plant pits shall be backfilled with the amended soil within twenty-four hours of excavation.

C. Amended Soil:

1. Amended soil shall consist of existing soil removed from each plant pit excavation and organic compost.

2. The Contractor shall use the excavated soil at each plant pit location and thoroughly incorporate 15% by volume organic compost.

3. No amended soil backfill shall be placed in any pits until the excavated material has been removed and the pit has been inspected and approved by the Engineer.

4. No planting soil mixture shall be mixed, worked, or placed when it is in a muddy or frozen condition, as determined by the Engineer.

3.03 PLANTING:

A. General:

1. No plants shall be planted until they have been inspected as specified under Article 1.02. All seals and tags shall remain intact unless otherwise directed by the Engineer.

2. Planting shall be in conformance with the planting details included in the Contract Documents. All root balls shall be placed on undisturbed soil at the bottom of the pit.

3. All planting pits shall be deep enough to assure that 1/8 of the ball height or 2 inches maximum, whichever is the lesser, is above finish grade. Top of root ball is considered to be the same as the root flare of the trunk. Root flare of tree trunk shall be exposed prior to setting tree and measuring for planting pit depth. Any loose soil at the bottom of the pit shall be compacted by hand or with the bucket of a backhoe. Compaction shall be sufficient to support the plant without future settlement.

4. Balled and burlapped plants and containerized plants shall be set vertically upon the bottom of the pits and the amended soil shall then be filled in around the plant balls and tamped to cradle the ball as shown on the detail drawings. The top 1/3 of burlap around the plant balls shall be loosened and spread out away from the plants, or if it is too bulky, cut away and removed. Thereafter, complete the backfilling. All rope or cord shall be completely removed from the root balls and disposed off site. When wire baskets are present, the Contractor shall cut the basket in at least 4 locations down each side, and bend away from the plant ball to the same degree as the burlap so that no portion extends above finish grade. Never remove the wire basket.

5. Containers shall be carefully removed from potted plants prior to planting, and any rootbound areas of the plant ball loosened and un-ravelled as necessary to prevent girdling. Do not cut roots.

6. Every care shall be taken during the backfilling, tamping, and watering to avoid injuring the roots and to avoid air pockets. Any roots which are found to be bruised or broken before or during

planting shall immediately be pruned to sound tissue with a clean cut.

7. Watering shall mean full and thorough saturation of all backfill in the pits the same day the plants are planted. Water shall be applied only by an open end hose and at a very low pressure. When planted and watered, the plants shall be vertical and the ball shall have 1/8 of its height or 2 inches maximum, per Article 3.03.A.3., above finish grade.

8. Upon completion of planting, the outline of the planting beds shall be neatly edged, except on lower edge of planting beds on slopes where a three inch depth shoulder of amended soil or excavated topsoil shall be placed. All items identified in Article 3.02.A.5 shall be promptly removed from the site.

9. Individual plant pits shall be furnished with a shoulder of soil placed outside the rim of the pits to form a saucer over the entire area of the pits. Trees on flat areas must be shouldered with amended soil or excavated soil. Trees on slopes may be shouldered with excavated soil with a minimum of two inches of amended soil placed over the excavated soil. On all slopes, the soil shall be formed into an adequate compacted dam or shoulder on the downhill side to catch and hold water and avoid erosion, and the slope on the uphill side shall be properly regraded, all as detailed on the plans and to the satisfaction of the Engineer. Do not cover the root ball of plants with soil. All disturbed slopes, shoulders, dams, or other damaged areas shall be seeded and repaired to the satisfaction of the Engineer at no cost to the Administration.

B. Supplemental Fertilizer:

1. Supplemental fertilizer shall be used at the discretion of the Contractor.

2. Fertilizer packets shall be placed in the plant pits around the root balls following the manufacturer’s written instructions.

3. If and when it becomes necessary to remove and replace dead or unhealthy plants as specified under Article 3.05, Care and Replacement During Construction, care shall be exercised so as not to damage the fertilizer packet when removing the dead tree or planting the replacement. Any packet which may become damaged shall be promptly removed, along with any loose fertilizer in the plant pit, and shall be replaced with a new packet.

C. Mulching Material: All planting beds and pits shall be mulched with mulching material. The mulching material shall be spread to a uniform depth of two inches over the entire area of all plant pits, and all planting beds. The mulch shall be raked to an even surface to the limits as indicated on the plans, or as directed by the Engineer. All mulch shall be applied the same day as planting. The Contractor shall not plant more than that which can be mulched and watered in the same day. Never place mulch directly against the plant's trunk. Taper mulch away from plant as shown on the detail drawings. Mulch "volcanoes" will not be accepted

1. Prior to the application of mulch within a planting bed, 10 pounds of 38-0-0 ureaform fertilizer per 1000 square feet shall be evenly spread over the area to be mulched.

D. Staking:

1. All deciduous and all evergreen trees shall be staked with vertical stakes. All stakes shall be installed within 24 hours of the day the trees are planted and as detailed on the plans. Stakes shall be neat and secure, and shall evenly support the trees to the true vertical line.

   a. Deciduous trees less than 2 inch caliper shall not be staked unless specified on the plans.

   b. Trees less than 14 feet height and between 2-1/5 inch and 4 inch caliper shall have three eight foot stakes.

2. In driving stakes, the Contractor shall avoid damage to the branches of the trees, particularly evergreen and low branched minor trees. All stakes shall be driven just outside the ball and to solid bearing below the pit bottom.

3. Wires shall be covered with hose where in contact with trunk and branches, and shall be wrapped two full turns and around the stakes and secured so the tree is held firm and vertical. Tops of stakes shall be neatly trimmed to the proper height when so required.

E. Pruning:

1. Trees and shrubs shall be pruned only as necessary after inspection on the site and as directed by the Engineer with care being taken to preserve the natural appearance of the shrub or tree. Trees shall never be pruned prior to installation or inspection after installation.

Broken or badly bruised branches shall be removed with a clean cut. The pruning shall be done by skilled personnel in accordance with ANSI A300 and the best horticultural practice, appropriate to the type of shrub or tree and to the special requirements of the individual shrub or tree.

3.04 CLEAN-UP AFTER PLANTING:

A. During the course of planting, excess and waste material shall be continuously and promptly removed, the turf areas kept clear, and all reasonable precautions taken to avoid damage to existing structures, plants, and grass. When planting in an area has been completed, the area shall be thoroughly cleaned. All debris, rubbish, subsoil, and waste materials shall be cleaned up and removed from the property. Existing turf areas which have been injured by the work shall be regraded and seeded or sodded, and the entire area, when completed, shall be neat and clean to the satisfaction of the Engineer.

3.05 CARE AND REPLACEMENT DURING CONSTRUCTION:

A. The care and replacement of planting shall begin immediately after each plant item is satisfactorily completed as specified under Article 3.03, Planting, and shall continue during the entire life of the Contract. During such time, the Contractor shall do work which is necessary to establish and keep the plants in a healthy, thriving condition.

B. The Contractor shall water all plant pits and beds with the following minimum quantities of water for each watering:

1.	Deciduous trees	20 gallons per pit
2.	Evergreen trees	15 gallons per pit
3.	Shrubs	2.5 gallons per pit
4.	Ground cover	50 gallons per 100 square feet

C. The Contractor shall monitor the water needs of all plants throughout the life of the Contract. When the Contractor feels watering is necessary, the Engineer shall be notified for his concurrence and approval. All watering shall be accomplished using an open end hose. Water shall be applied at a low water pressure directly to each plant pit, allowing water to be absorbed into the plant pit soil until saturated, but without runoff.

D. All plants, plant saucers, and all planting beds, including those on steep slopes, shall be weeded of all weeds, vines, and grasses, at three to four week intervals during the growing seasons throughout the life of the Contract, or as otherwise directed by the Engineer. Each weeding shall be completed within five working days of the day on which weeding was designated to begin. The Contractor may request in writing the use of herbicides, approved by the Engineer, for the control of weeds and grasses. The Contractor shall prune and spray plants, and repair washouts when and as directed by the Engineer.

E. All dead or unhealthy plants shall be promptly removed from the project; if this occurs during the planting season, these plants shall be replaced at once; if between planting seasons, they shall be replaced within thirty days of the start of the next proper planting season. Plants that have sizable die-back beyond the normal pruning limit, as determined by the Engineer, shall also be replaced. If and when plant replacements are made, mulching material shall be replaced to its original specified depth at no additional cost to the Administration.

F. Plants in this Contract considered to be a fall digging hazard are: Ulmus americana 'Valley Forge'. Plants considered to be a fall digging hazard shall be replaced at once during the spring planting season or must be pre-dug and hardened off prior to installation during the next proper (fall) planting season.

3.06 PARTIAL ACCEPTANCE:

A. To be partially acceptable, each new planting shall be true to name and size, and in a healthy, thriving condition. Each plant pit or bed shall be properly filled and mulched, pruned, and staked.

3.07 ONE-YEAR CARE AND REPLACEMENT PERIOD:

A. A one-year care and replacement period shall commence after all plant material has been installed and has received partial acceptance as specified in Article 3.06.

B. The one-year care and replacement period will require the Contractor to properly and adequately care for all plant material from partial acceptance through final acceptance as specified in Article 3.08. This work will include weeding as specified in Article 3.05.D.

C. At the end of the one-year care and replacement period all new plants, including replacement plants, shall be true to name and color and shall be in a healthy, thriving condition, with foliage of normal density, size, and color. Any plants which fail to meet these requirements shall be removed

and replaced without additional payment. All replacements for the new plants shall be of the size, kind, and quality as specified for the original plants and shall require a one-year care and replacement period.

D. Time is an essential element in the establishment of plant materials, and it is important that care and replacement operations be vigorously prosecuted until completion, as the failure to complete this work within the designated time limits can result in unsatisfactory plant establishment and unsatisfactory future performance of the plants.

E. Thirty days prior to the end of the one-year care and replacement period, the Contractor shall remove all stakes, wires, hose, twine and plastic seals from all plant material which have been in place one full year or more. All these planting accessories shall be disposed off site to the satisfaction of the Engineer.

3.08 FINAL ACCEPTANCE:

A. Final acceptance by the Engineer will be contingent on compliance with the requirements of Articles 3.07 . If the landscape work is not acceptable to the Engineer, the Contractor shall replace the rejected work and continue specified maintenance until reinspected by the Engineer and found to be acceptable.

PART 4: MEASUREMENT AND PAYMENT

4.01 GLEDITISIA TRIACANTHOS 'SHADEMASTER', 2" CAL., B&B:

A. Gleditisia triacanthos 'Shademaster', 2" Cal., B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Gleditisia triacanthos 'Shademaster', 2" Cal., B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.02 QUERCUS PALUSTRIS, 2" CAL., B&B:

A. Quercus palustris, 2” Cal., B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Quercus palustris, 2” Cal., B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.03 ACER RUBRUM ’OCTOBER GLORY’, 2” CAL., B&B:

A. Acer rubrum ’October Glory’, 2” Cal., B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Acer rubrum ’October Glory’, 2” Cal., B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.04 BETULA NIGRA, 2” CAL., B&B:

A. Betula nigra, 2” Cal., B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Betula nigra, 2” Cal., B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and

replacement of planting until final acceptance; and furnishing and installing all replacements.

4.05 NYSSA SYLVATICA, 2” CAL., B&B:

A. Nyssa sylvatica, 2” Cal., B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Nyssa sylvatica, 2” Cal., B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.06 LIRIODENDRON TULIPIFERA, 1” CAL., CONT.:

A. Liriodendron tulipifera, 1” Cal., Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Liriodendron tulipifera, 1” Cal., Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.07 QUERCUS PALUSTRIS, 1” CAL., CONT.:

A. Quercus palustris, 1” Cal., Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Quercus palustris, 1” Cal., Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting;

excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.08 QUERCUS PHELLOS, 1” CAL., CONT.:

A. Quercus phellos, 1” Cal., Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Quercus phellos, 1” Cal., Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.09 ILEX OPACA, 4’ HEIGHT, CONT.:

A. Ilex opaca, 4’ Height, Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Ilex opaca, 4’ Height, Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.10 ILEX OPACA, 6’ HEIGHT, B&B:

A. Ilex opaca, 6’ Height, B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Ilex opaca, 6’ Height, B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.11 THUJA ’GREEN GIANT’, 4’ HEIGHT, CONT.:

A. Thuja ’Green Giant’, 4’ Height, Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Thuja ’Green Giant’, 4’ Height, Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.12 THUJA ’GREEN GIANT’, 6’ HEIGHT, B&B.:

A. Thuja ’Green Giant’, 6’ Height, B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Thuja ’Green Giant’, 6’ Height, B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and

replacement of planting until final acceptance; and furnishing and installing all replacements.

4.13 CERCIS CANADENSIS, 5' HEIGHT, B&B:

A. Cercis canadensis, 5' Height, B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Cercis canadensis, 5' Height, B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.14 AMELANCHIER ARBOREA, 5' HEIGHT, B&B:

A. Amelanchier arborea, 5' Height, B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Amelanchier arborea, 5' Height, B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.15 CHIONANTHUS VIRGINICUS, 5' HEIGHT, B&B:

A. Chionanthus virginicus, 5' Height, B&B will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Chionanthus virginicus, 5' Height, B&B will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting;

excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.16 PRUNUS LAUROCERASUS 'OTTO LUYKEN', NO. 5 CONT.:

A. Prunus laurocerasus 'Otto Luyken', No. 5 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Prunus laurocerasus 'Otto Luyken', No. 5 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.17 VIBURNUM DENTATUM, NO. 5 CONT.:

A. Viburnum dentatum, No. 5 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Viburnum dentatum, No. 5 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.18 ARONIA ARBUTIFOLIA, NO. 5 CONT.:

A. Aronia arbutifolia, No. 5 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Aronia arbutifolia, No. 5 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.19 ITEA VIRGINICA ’LITTLE HENRY’, NO. 3 CONT.:

A. Itea virginica ’Little Henry’, No. 3 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Itea virginica ’Little Henry’, No. 3 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.20 SPIRAEA JAPONICA ’LITTLE PRINCESS’, NO. 3 CONT.:

A. Spiraea japonica ’Little Princess’, No. 3 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Spiraea japonica ’Little Princess’, No. 3 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.21 ILEX GLABRA, NO. 3 CONT.:

A. Ilex glabra, No. 3 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Ilex glabra, No. 3 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.22 VACCINIUM ANGUSTIFOLIUM, NO. 3 CONT.:

A. Vaccinium angustifolium, No. 3 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Vaccinium angustifolium, No. 3 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.23 COREOPSIS VERTICILLATA ’MOONBEAM’, NO. 1 CONT.:

A. Coreopsis verticillata ’Moonbeam’, No. 1 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Coreopsis verticillata ’Moonbeam’, No. 1 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and

replacement of planting until final acceptance; and furnishing and installing all replacements.

4.24 RUDBECKIA FULGIDA ’GOLDSTURM’, NO. 1 CONT.:

A. Rudbeckia fulgida ’Goldsturm’, No. 1 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Rudbeckia fulgida ’Goldsturm’, No. 1 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.25 LIRIOPE MUSCARI ‘BIG BLUE’, NO. 1 CONT.:

A. Liriope muscari ‘Big Blue’, No. 1 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Liriope muscari ‘Big Blue’, No. 1 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.26 PENNISETUM ALOPECUROIDES ’HAMELN’, NO. 1 CONT.:

A. Pennisetum alopecuroides ’Hameln’, No. 1 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Pennisetum alopecuroides ’Hameln’, No. 1 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning;

mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.27 CAREX MORROWII 'ICE DANCE', NO. 1 CONT.:

A. Carex morrowii 'Ice Dance', No. 1 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Carex morrowii 'Ice Dance', No. 1 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; mulching individual shrubs not in shrub beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.28 LOBELIA CARDINALIS, NO. 1 CONT.:

A. Lobelia cardinalis, No. 1 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Lobelia cardinalis, No. 1 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.29 CHELONE GLABRA, NO. 1 CONT.:

A. Chelone glabra, No. 1 Cont. will be measured per each plant material item in the Bid Form actually furnished and planted in accordance with the plans, or as directed by the Engineer.

B. Chelone glabra, No. 1 Cont. will be paid at the Contract unit price bid for each plant material item. The price shall include the cost of furnishing the plant material and protection thereof before planting; excavating, planting, backfilling with amended soil; abandoned plant pits and test pits; supplemental fertilizer; pruning; wrapping, supporting trees; mulching trees not in beds; watering immediately after planting, repairing, and reseeding or sodding ground surfaces, disposal of excess excavated and waste materials; weeding and spraying; care and replacement of planting until final acceptance; and furnishing and installing all replacements.

4.30 PLANT BEDS:

A. Plant Beds will be measured per square yard of surface area of planting beds covered with mulch, including the application of ureaform fertilizer.

B. Plant Beds will be paid at the Contract unit price bid per square yard and shall include all material, labor, equipment, tools, and incidentals necessary to complete the work.

4.31 WATERING:

A. Watering during Care and Replacement During Construction and the One-Year Care and Replacement Period will be measured per 1000 gallons (MG) of water applied to the installed plant materials.

B. Watering during Care and Replacement During Construction and the One-Year Care and Replacement Period will be paid at the Contract unit price bid per 1000 gallons (MG) of water and shall include all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

SECTION 03150

FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes labor, materials, equipment and services necessary for and reasonably incidental to the design, construction and removal of formwork for cast-in-place concrete.

1.02 SUBMITTALS:

A. Samples or Manufacturers Literature: Furnish for the following materials, for approval prior to construction:

1. Form ties

2. Form oils, release agents, parting compounds

3. Plywood and fiberglass forms for exposed concrete

B. Shop Drawings of typical areas of forms for concrete work shall be submitted prior to fabrication and assembly. Show and coordinate layout and arrangement of construction joints, form panel joints and spacing of wall form ties for the full height of each wall.

1.03 QUALITY ASSURANCE:

Formwork shall conform to the requirements and provisions of the following publications. In the ACI publications referred to herein, the advisory provisions shall be considered mandatory, as though the word "shall" has been substituted for "should" wherever it appears.

A. American Concrete Institute (ACI) 301-05 "Standard Specifications for Structural Concrete".

B. American Concrete Institute (ACI) 318-08 "Building Code Requirements for Structural Concrete".

C. American Concrete Institute (ACI) 347 R -04 "Guide to Formwork for Concrete."

1.04 RESPONSIBILITY FOR FORMWORK:

A. Form design, engineering, erection, construction, bracing, shoring, stripping, removal, reshoring, etc. are the Contractor's complete responsibility.

PART 2 - PRODUCTS

2.01 FORMS FOR UNEXPOSED CONCRETE:

Unexposed concrete surfaces shall be defined as the exterior surfaces of the concrete that will be below the finished grade around the structure and shall be permanently in contact with soil or the surfaces to be covered by face veneer.

A. Plywood - American Plywood Association: EXT-APA (High-density overlay B-B Plyform, Class II). OR

B. Substantial Steel sheet metal for subgrade and other unexposed work. Clean the forms and remove nails when reusing.

2.02 FORMS FOR EXPOSED CONCRETE:

A. All concrete surfaces other than those defined as "unexposed concrete surfaces" in paragraph 2.01 shall be considered exposed concrete surfaces.

B. Plywood - American Plywood Association - EXT-APA, age sealed, sanded, grade trade-marked (High Density Overlay B-B Plyform Class I). OR

C. Steel sheet metal. Steel form surfaces shall not contain irregularities, dents or sags. Overlay shall not stain the surface of the concrete. Apply form sealer to all form surfaces in contact with finish faces of exposed concrete. Form sealer shall be compatible with paint and other finishes that will be applied to the concrete.

2.03 BRACING, WALERS, STUDS, SHORES, RESHORES:

A. Metal, or suitable graded lumber, of substantial size and configuration for loads to be supported.

2.04 FORM TIES:

A. Plastic cone type, with threaded steel rod or wire, with waterstop, as approved. Submit sample prior to commencing formwork. Rod type or wire type shall have no metal closer than 1-1/2" to finish surface.

2.05 FORM OILS, RELEASE AGENTS, PARTING COMPOUNDS:

A. Approved release, parting or "oil" materials must be compatible with the specified forms, with fair-faced exposure and with future finishes. Coat all forms properly before placing reinforcement and embedded items.

PART 3 - EXECUTION

3.01 FORMWORK FUNCTIONAL DESIGN:

A. Formwork shall be capable of containing concrete in its plastic state without loss of water or cement paste, and be removable without damage to concrete surfaces and edges. Arrange formwork for convenient inspection, cleaning, depositing and placement of concrete and draining of water. Design all components (form panels, connections, shoring, bracing, supports, reshores) to resist all live and dead loads, (wind, reshores, construction loads, traffic vibration) that will occur while in use. Design shall include the slow gain of concrete strength with age of previously cast members. Formwork shall be designed such that there is no deflection or weakness affecting established alignment of concrete surfaces. Provide all necessary shores, stringers, soffit forms and the like. Standard of formwork construction shall be ACI-347 R.

3.02 FORMWORK CONFORMATION:

A. Construct formwork with minimum practicable tolerances to produce concrete work true to lines, dimensions, shapes, locations, grades and elevations established on Contract Drawings. Provide all recesses, pockets, utility outlets, joints, keys and projections, notches, and openings.

3.03 WORKMANSHIP AND INSTALLATION:

All workmanship shall be in best formwork and carpentry practice. Formwork shall be installed with all proper bracing, connections, rough hardware and proper fastenings for the anchoring materials, for a rigid, secure and complete job.

A. Special Care Required: At ALL exposed concrete.

B. Framing and Blocking Lumber: Properly framed, closely fit, accurately set to required lines and levels, plumb, straight and true, and rigidly secure in place, with proper fastenings to adjacent materials.

C. Construction Tolerances: Construction tolerances shall be in accordance with ACI 301.

D. Joints, Openings, Recesses: Construct all indicated and required conditions, keys, jointing details and openings in strict accordance with indicated details; consult Drawings of all trades. Joints not indicated on Drawings, but desired by Contractor for construction jointing in Project sequences, shall be so located and built as not to impair strength of structure. Contractor shall seek written approval in advance from the Engineer for additional or relocated joints.

E. Protection for Re-Use: Provide protection and care in handling and stripping and

re-use location-to-location to assure continuing acceptability of condition of forms. Form units which are distorted, have an excessive number of patches, have delaminated areas of the plywood surface, etc. shall not be reused. Acceptability of re-used forms shall be as determined by The Engineer.

F. Avoidance of `Pillow-Effect' or Form-Bulge: Provide adequate forming, bracing and tying as required. In addition, vertical rate-of-placement shall be controlled by the Contractor to avoid excessive liquid heads on formed faces prior to setting of concrete.

G. Inserts, Attachments, Accessories to be Embedded in Concrete: Proper location, setting, spacing, anchorage and coordination with reinforcing and all related trades, are Contractor's responsibility.

3.04 REMOVAL OF FORMS:

A. Unless otherwise authorized, forms shall not be removed before the expiration of the minimum number of days implicit in the following table:

Walls* .....1 day
Columns*.....1 day

* Where such forms also support formwork for slab or beams, the removal times of the latter shall govern.

The times shown represent cumulative number of days, <u>not necessarily consecutive</u>, during which the temperature of the air surrounding the concrete is above 50° F.

B. Form removal shall be carried out in such a manner as to assure the complete safety and integrity of the formed surface of the structure. In no case shall any form or shoring be removed or disturbed until the concrete has thoroughly hardened and acquired sufficient strength to safely support its own weight and the live load upon it.

C. Sufficient shoring and reshoring shall be kept in place to properly support the concrete structure after the forms have been removed and until such time as it is no longer necessary. All forms shall be so designed as to permit this to be done. Reshoring of concrete beams and slabs shall take into account necessary spacing, dead and live loads, and the age and rate of gain of strength of concrete. Reshores shall remain in position at least 28 days. <u>Reshoring shall be planned in advance and shall be subject to review by The Engineer.</u>

3.05 REJECTED MATERIAL:

A. Materials, deliveries, completed work or job conditions condemned or rejected by

The Engineer as failing to meet Contract Specification quality shall be removed and replaced without delay, at Contractor's expense, as directed by The Engineer. The Engineer’s decisions shall be final and will be based solely on these Contract Specifications and engineering standards.

PART 4 - MEASUREMENT AND PAYMENT

4.01 FORMWORK FOR POUR-IN-PLACE CONCRETE :

A. Formwork for pour-in-place concrete will not be measured for payment.

B. Formwork will not be paid for directly, but will be considered incidental to the poured-in-place concrete item.

END OF SECTION

SECTION 03210

REINFORCING STEEL

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes labor, materials, equipment and services necessary for and reasonably incidental to the furnishing and installation, complete of all reinforcement for concrete structures.

B. Related Work Specified Elsewhere:

1. Cast-In-Place Concrete: SECTION 03300.

1.02 SUBMITTALS:

A. Submit shop drawings for approval, prior to fabrication, showing all fabrication dimensions, placement plans and bar lists with bar bending diagrams for all reinforcement. Shop drawings shall not be reprints of the Contract Drawings. Shop drawings shall conform to the standards listed above.

1.03 QUALITY ASSURANCE:

Details and placement of concrete reinforcement and accessories shall conform to the following publications. In the ACI publications referred to herein, the advisory provisions shall be considered mandatory, as though the word "shall" has been substituted for "should" wherever it appears.

A. American Concrete Institute (ACI)

1. ACI 301-05 - “Standard Specifications for Structural Concrete."

2. ACI SP-66-04 - "ACI Detailing Manual."

B. ASTM

1. ASTM A185 -06- “Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.”

2. ASTM A615 - 07 - “Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement."

C. Concrete Reinforcing Steel Institute (CRSI)

1. Manual of Standard Practice

2. Placing Reinforcing Bars

1.04 QUALITY CONTROL:

A. Furnish certified copy of mill tests on each heat, showing chemical and physical analysis.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Deformed Reinforcing Steel:
1. ASTM A615, Grade 60.

2. Epoxy-Coated (when indicated): ASTM A775/A77M.
a. SECTION 4-Materials. Add the following sentence to ASTM A775/A77M, NOTE 3: Steel reinforcing bars exhibiting any silver-like defects after the heating and coating process, will be rejected unless satisfactorily repaired."

b. SECTION 10 – Permissible Coating Damage and Repair of Damaged Coating. Add the following sentence to ASTM A775/A77M, subarticle10.2: "Repair by mechanical wire brush cleaning and painting with an approved epoxy paint using the paint manufacturer's approved procedure. Repair any bar with signs of rust. Do not cover more than 5% of the total bar surface area with patching material."

c. Coating Color: Apply in light color shades that will reveal rusted or undercoated areas of steel.

B. Accessories shall conform to the ACI Detailing Manual SP-66.

C. Welded wire fabric: ASTM A185.

D. Dowel Bar Splicer: Dowel bar splicer shall be capable of developing at least 125 percent of the specified yield strength of the bar and shall be as manufactured by Richmond Screw Anchor Co., Inc. or approved equal

2.02 FABRICATION:

A. Fabricate each unit of reinforcement in accordance with the approved shop drawings.

B. Reinforcement shall be bent as required in ACI 318. The use of heat to bend or

straighten reinforcing steel will not be permitted.

2.03 HANDLING AND STORAGE:

A. Reinforcement shall be shipped to the work site with bars of the same size and shape fastened in bundles, with metal identification tags giving size and mark securely wired on. The identification tag shall be labeled with the same designation as shown on the approved submittals.

B. Reinforcement shall be stored off the ground, protected from moisture, and kept free of dirt, oil, or injurious contaminants.

PART 3 - EXECUTION

3.01 PLACING AND FASTENING:

A. The lap length shall be as shown on the drawings. All hooks shall be detailed as ACI standard hooks unless otherwise indicated.

B. Secure the reinforcement in such a manner that its displacement does not exceed the limits noted in ACI-301. The ends of all tie wires shall be bent away from forms.

C. Reinforcement supported from an earth surface shall utilize precast concrete blocks in accordance with ACI-301. Masonry supports are not acceptable.

D. Prior to placement of concrete, reinforcement shall be free of mud, oil, ice or other material that may adversely affect or reduce the bond. Rust, seams, surface irregularities or mill scale shall not be cause for rejection provided the weight, dimensions, cross sectional area, and tensile properties of a cleaned test specimen are not less than the requirements of the applicable ASTM specifications.

3.02 CLEAR COVER:

A. All reinforcement shall have a clear cover from the outside of the bar to the concrete surface as noted on the Contract Drawings.

3.03 SPLICING:

A. Splices shall be used only where indicated on the Contract Drawings. When splicing bars of different diameters, the minimum lap length is governed by the smaller diameter bar. Overlap welded wire fabric a minimum of 1’-0”.

PART 4 - MEASUREMENT AND PAYMENT

4.01 REINFORCING STEEL :

A. Reinforcing steel will not be measured for payment.

B. Reinforcing steel will not be paid for directly, but will be considered incidental to the pour-in-place concrete item.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The work specified in this Section includes labor, materials, equipment and services necessary for and reasonably incidental to furnishing and installation, complete, of all cast-in-place concrete.

1.02 SUBMITTALS:

A. Design Mix: At least 31 days prior to start of placing concrete, submit design mix for concrete, indicating that the concrete ingredients and proportions will result in a concrete mix meeting requirements specified.

B. Hot and Cold Weather Concreting: Submit proposed methods for compliance with cold and hot weather mixing and delivery recommendation of ACI 305R and ACI 306R.

C. Certificates:

1. Submit with each mix design, laboratory test reports and manufacturer's certificates attesting to conformance of ingredients with specifications. Include 28 day compressive strength test results certifying compliance with the requirements herein.

2. In case the source, brand or characteristic properties of the ingredients need to be varied during the term of the Contract, submit revised design mix and manufacturer's certificates.

3. Submit certificate stating that each admixture used is identical in composition to the sample used for acceptance testing and is compatible with all other materials in the design mix.

4. Submit certificate stating that the concrete vibrator operators have the required experience in operating the equipment.

D. Batch Tickets: Submit a delivery ticket from the concrete supplier with each batch delivered to the site setting forth the following information:

1. Name of supplier;
2. Name of batching plant and location;
3. Serial number of ticket;
4. Date;
5. Truck number and batch number;

6. Specific job designation;
7. Volume of concrete (cubic yards);
8. Specific class of concrete;
9. Time loaded and amount of water added;
10. Type and brand of cement;
11. Weight of cement;
12. Maximum size of aggregates;
13. Weights of coarse and fine aggregates, respectively;
14. Type and amount of admixtures; and
15. Mix design designation.

E. Manufacturer's Data: Submit manufacturer's data with installation instructions for all materials, including but not limited to, admixtures, curing compound and materials, coatings, vapor barrier and joint materials.

F. All submittals shall state the location(s) and application(s) for each material.

1.03 QUALITY ASSURANCE:

Concrete work shall conform to the requirements and provisions of the following publications. In the ACI publications referred to herein, the advisory provisions shall be considered mandatory, as though the word "shall" has been substituted for "should" wherever it appears.

A. American Concrete Institute (ACI)

1. ACI 301- 05 - "Specification for Structural Concrete".

2. ACI 302.1R- 04 - "Guide for Concrete Floor and Slab Construction".

3. ACI 304R- 00 - "Guide for Measuring, Mixing, Transporting and Placing Concrete".

4. ACI 305R- 99 - "Hot Weather Concreting".

5. ACI 306R- 88 - "Cold Weather Concreting".

6. ACI 309R- 01 - "Guide for Consolidation of Concrete".

7. ACI 318- 08 - "Building Code Requirements for Structural Concrete and Commentary".

B. ASTM

1. ASTM C31- 06 - "Test Methods of Making and Curing Concrete Test Specimens in the Field".

2. ASTM C33 – 03 - "Specification for Concrete Aggregate".

3. ASTM C94- 97 - "Specification for Ready-Mixed Concrete".

4. ASTM C143- 05qa - "Test Method for Slump of Portland Cement Concrete".

5. ASTM C150- 05 - "Specification for Portland Cement".

6. ASTM C171- 03 - "Specification for Sheet Materials for Curing".

7. ASTM C172- 04 - "Method for Sampling Freshly Mixed Concrete".

8. ASTM C231- 04 - "Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method".

9. ASTM C260- 06 - "Specification for Air-Entrained Admixtures for Concrete".

10. ASTM C308- 00(2005) - "Test Methods for Working and Setting Times of Chemical Resistant Resin Mortars".

11. ASTM C309- 06 - "Specification for Liquid Membrane-Forming Compounds for Curing Concrete".

12. ASTM C494- 05a - "Specification for Chemical Admixtures for Concrete".

13. ASTM C989- 06 - " Specification for Ground Granulated Blast Furnace Slag for Use in Concrete or Mortars".

14. ASTM D1752- 04a - "Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction".

15. ASTM E96– 05 - "Standard Test Methods for Water Vapor Transmission of Materials".

16. ASTM E1643– 05 - "Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs".

17. ASTM E1745– 04 - "Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs".

1.04 FIELD QUALITY CONTROL AND CONCRETE TESTING:

A. Independent Testing Laboratory: The Contractor shall employ at his own expense an independent testing laboratory, approved by the Engineer, to perform the inspection and testing services specified in ACI 301, Section 1, Paragraph 1.6, "Quality Assurance". This Testing Agency shall be considered as the 'Owner's

testing agency' as described in ACI 301 and shall be responsible for all the testing that is to be performed by the 'owner's testing agency'.

B. Test Specimens: In addition to the above, the Contractor shall supply all concrete, compression test molds, tamping rods, trowel, metal or glass covers, slump cone, storage box and sand necessary for making test specimens as outlined herein. The Contractor shall make, cure, and remove from molds and transport to the testing laboratory, three specimens for each sample in accordance with ASTM C172 and C31.

C. Extent of Tests: Prepare one sample for strength testing for each 100 cu. Yds. or fraction thereof, for each mixture design of concrete placed in any one day.

D. Test Reports: Contractor shall fill in data on concrete test sample form and forward the same with test specimens to the testing laboratory. When tests have been conducted, the contractor shall furnish the results of the tests with all pertinent data to the Engineer.

E. Deficiencies and Remedial Action: In the event that concrete strength test results do not meet the acceptance criteria specified in ACI 301, additional tests of concrete in place as specified in ACI 301 shall be performed at the sole expense of the Contractor. In the event that tests of concrete in place do not meet the acceptance criteria specified in ACI 301, those portions of the structure affected, as determined by the Engineer, shall be removed and replaced in a manner acceptable to the Engineer and at no additional expense to the Owner.

F. Slump Tests: The Contractor shall also check the consistency of concrete by means of slump tests conducted in accordance with ASTM C143. The slump tests shall be made at the same time that the compression test specimens are made or as directed by the Engineer.

G. Air Content Test: The Contractor shall also test the air content in accordance with ASTM C231. The air content test shall be made at the same time that the compression test specimens are made or as directed by the Engineer.

H. Supervision of Tests: The making of all concrete specimens, slump, and air content tests shall be witnessed by the Engineer.

1.05 GENERAL REQUIREMENTS:

Concrete work shall conform to the applicable requirements of ACI 301, except as modified herein.

PART 2 - PRODUCTS

2.01 CONCRETE:

A. Normal Weight Concretes:

Location	28 Day Compressive Strength (psi)	Aggregate Size Number	Minimum Cement Content (lbs/cy)
All Concrete	4,000	57	611

All concrete fill shall have a minimum compressive strength of 4000 psi at 28 days and shall be placed only where noted on the contract drawings.

B. Provide air-entrained concrete with air content of 6 percent plus or minus 1 percent for concrete exposed to weather.

C. Maximum water cement ratio of 0.45.

D. Maintain the slump range for concrete at the point of delivery within the following limits:

1. Concrete flatwork and incidental construction 2-3 inches
2. All Other 2-4 inches

2.02 MATERIALS:

A. Cementitious Compounds

1. Cement: ASTM C150, Type I/II or Type II. For exposed concrete use one manufacturer of cement.

2. Ground Granulated Blast-Furnace Slag: ASTM C989.

   When Ground Granulated Blast-Furnace Slag is used, its proportion by weight shall be no more than 40 percent of total cementitious material.

B. Aggregates: Concrete aggregates: ASTM C33. Aggregate may be crushed stone, natural or manufactured sand. Uniformity of grading and moisture content shall be obtained by methods recommended in ACI 304.

C. Admixtures and Additives:

1. Air Entraining Admixtures: ASTM C260.

2. Water Reducing and Retarding Admixtures: ASTM C494, Type D.

3. Water Reducing Admixture: ASTM C494, Type A.

4. The use of anti-freeze compounds, salts, chemicals or other foreign materials, for the purpose of lowering the freezing point of the concrete is prohibited. No calcium chloride or ingredients containing chloride shall be mixed in any concrete.

5. Admixtures used in concrete to receive surface hardener shall be compatible and approved for use by the surface hardener manufacturer.

D. Water used in mixing concrete shall be clean and free form injurious amount of oil, acids, alkalis, organic materials or other deleterious substances.

E. Curing or Curing and Hardening Compounds: ASTM C309, Type I-D.

F. Sheet Materials for Curing Concrete: ASTM C171.

G. Flexible Joint Sealant: Two-component waterproof material that bonds securely to clean concrete surfaces. SikaFlex-2C NS/SL as manufactured by Sika Corporation or FX-570 and FX-571 as manufactured by Fox Industries.

H. Expansion Joint Filler: Expansion joint filler ASTM D1752, Type III preformed.

I. Non-Shrink Grout: Non-shrink, non-metallic conforming to the requirements of U.S. Corps of Engineers specification CRD-C621. Mix and place according to the manufacturer's recommendations.

J. Nonslip Surface Finish: See section 09960 High Performance Finishes.

K. Bonding Compound: A three-component, water-based, epoxy-resin Portland cement bonding compound shall be applied to the existing cleaned concrete prior to pouring new concrete. The bonding system shall be Sikadur Armatec 110 as manufactured by Sika Chemical Corporation or approved equal.

L. Vapor Barrier: ASTM E1745, meeting or exceeding Class C, minimum thickness of barrier (plastic) shall be10 mil. Minimum Permeance as measured by ASTM E-96 shall be 0.04 Perms. The seal tape for vapor barrier shall be minimum 4-inch wide High-Density Polyethylene Tape with Pressure-sensitive adhesive.

PART 3 - EXECUTION

3.01 PREPARATION OF EQUIPMENT AND PLACE OF DEPOSIT:

A. Before placing concrete, all equipment for mixing and transporting the concrete shall be cleaned; all debris and ice shall be removed from places to be occupied by the concrete; forms shall be thoroughly oiled and the reinforcement shall be thoroughly cleaned of ice or other non-specified coatings.

B. Excess water shall be removed from place of deposit before concrete is placed, unless otherwise permitted by the Engineer.

C. Before placing any concrete, the Contractor shall install all reinforcement, sleeves, anchors, fittings, pipes, conduits, etc., called for or required by the provisions of other sections of these specifications or noted on the drawings. Vapor barrier shall be installed in accordance with manufacturer's instructions and ASTM E 1643. All penetrations including pipes shall be sealed using pipe boots made from the vapor barrier material and sealing tape. Any damaged areas of vapor barrier shall be repaired by using patches of vapor barrier material, overlapping the damaged area a minimum of 6 inches and taping all sides. No concrete shall be placed until this work has been approved by the Engineer.

D. The Contractor shall ascertain that all material to be installed in the concrete by other trades has been placed prior to pouring any concrete.

3.02 READY-MIXED CONCRETE:

A. Ready-mixed concrete shall be in conformance with ASTM C94.

B. The volume of any batch mixed shall not exceed the manufacturer's rated capacity of the mixer used.

C. Mixing time shall be as specified in ASTM C94, but during hot weather or other conditions contributing to quick stiffening of concrete, the Engineer may require the Contractor to limit the discharge time to LESS than one hour or 300 revolutions of the mixer, whichever comes first.

D. No materials for a batch of concrete shall be placed in the drum of a mixer until all the previous batch has been discharged. Mixers shall be kept free and clean of accumulations of hardened concrete and any incrustations of inert materials.

E. The effective moisture contained in the aggregate shall be included in the total amount of mixing water used. In the absence of a field determination of the moisture content of the aggregates, the following shall be assumed: fine aggregate, 1/2 gallon per cubic foot and coarse aggregate 1/4 gallon per cubic foot. The quantity of mixing water to be used shall include the moisture in the aggregates above the state of saturated and surface dry.

F. Water shall not be added to the mix after departure from the batching plant without the Engineer's permission. In no case shall the maximum water cement ratio be exceeded.

G. If it becomes necessary to mix a small portion of concrete by hand, permission shall be obtained from the Engineer. In that case, if allowed, the total quantity of such batches shall not exceed 1/2 cubic yard. The materials shall be accurately measured and shall be mixed dry in a watertight, metal mortar box in order to prevent loss of cement. Mixing on the bare ground or on floors of buildings will not be permitted under any circumstances. The mass shall be thoroughly turned over at least 6 times, water being added after the third time.

3.03 CONVEYING:

A. Handle concrete from the mixer to the place of final deposit as rapidly as practicable by methods that will prevent segregation, undue drying or temperature rise, or loss of ingredients, and in a manner that will maintain the required quality of concrete.

B. Use conveying equipment of size and design to maintain a continuous flow of concrete at the delivery end, and as approved by the Engineer. Do not use conveying equipment with aluminum parts, such as chutes, hoppers, or scrapers, that could come in contact with and contaminate the concrete during conveying.

C. Use belt conveyors which are horizontal or at a slope which will cause neither segregation nor loss. Use an approved arrangement at the discharge end to prevent separation. Discharge long runs without separation into hopper. Do not allow concrete to adhere to the return belt.

D. Use chutes which are metal or metal lined, and have a slope not exceeding one vertical to two horizontal and not less than one vertical to three horizontal. Chutes more than 20 feet long, and chutes not satisfying slope requirements, may be used if the chutes discharge into an approved hopper before distribution.

E. Use pumping and pneumatic conveying equipment of a suitable kind with adequate pumping capacity. Clean equipment at the end of each operation. Control pneumatic placement so that separation is not apparent in the discharged concrete.

3.04 PLACEMENT:

A. General:

1. Placing on Ground or Subcourse: Subgrade or base course shall be free from injurious material, well drained, and moist at time of concreting. Prior to placing concrete, thoroughly clean and dampen as necessary leaving no free water standing on base course or subgrade and no soft or muddy spots in subgrade.

2. Deposit concrete into the forms as nearly as practical to its final position, and in a manner not to cause or permit segregation. Do not use vibrators for extensive shifting of the mass of fresh concrete. The free drop of any concrete shall not exceed three feet without the use of adjustable length pipes. Place concrete for columns by means of pipes adjustable in length and not less than six inches in diameter.

3. Layers of concrete shall not be tapered off in wedge shaped slopes but shall be built with squared ends and level tops. Deposit concrete continuously or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section

cannot be placed continuously, locate construction joints at points as indicated or as approved. Place concrete at such a rate that all concrete being integrated with fresh concrete is plastic.

4. Align slab top surfaces to screed contours by strikeoff, or if the nature of the finished surface so requires, by approved vibrating screeds or roller pipe screeds.

5. Do not place concrete in supported elements until concrete previously placed in supporting columns and walls is no longer plastic, or where so indicated, until initial shrinkage has occurred in such supporting concrete members (2 hours minimum).

B. Consolidation: Consolidate concrete in accordance with ACI 309R. Consolidate concrete by means of approved internal vibrators. The vibrator operators shall be experienced in operating the equipment for a minimum of three years.

1. Employ a sufficient number of vibrators to consolidate the incoming concrete to a proper degree within 15 minutes after depositing in forms. In all cases, maintain at least one spare vibrator available at the site of any structure during concrete placement. Do not vibrate the forms or the reinforcing steel.

2. The location, manner and duration of the application of vibrators shall be such as to secure maximum consolidation of the concrete without causing segregation of mortar and coarse aggregate and without causing water or cement paste to flush to the surface. The thickness of the layers shall be not greater than can be satisfactorily consolidated by vibrators. Vibrators shall vertically penetrate a few inches into the previous lift at regular intervals.

3. The use of approved external vibrators for consolidating concrete will be permitted when concrete is inaccessible for adequate consolidation, providing the forms are constructed sufficiently rigid to resist displacements and damage from external vibration.

3.05 FINISHING CONCRETE:

A. Immediately following removal of forms, cavities produced by form ties and other surface defects shall be repaired in accordance with Section 5 of ACI 301 and as specified hereinafter.

B. Finish of formed surfaces shall be in accordance with Section 5, Paragraph 5.3.3 of ACI 301 and as follows:

1. All concrete surfaces below grade and unexposed to view shall be given a rough form finish.

2. All exposed concrete surfaces shall be given a smooth rubbed finish. Abrupt irregularities like fins or offsets shall not be acceptable.

C. Finish of flatwork shall be in accordance with Section 5, Paragraph 5.3.4 of ACI 301 and as follows:

Flatwork shall be given a floated finish, except that flatwork which will be the final walking surface and is exposed to weather shall be given a broom or belt finish

3.06 CURING AND PROTECTION:

A. General Requirements:

1. Protect freshly placed concrete from excessively hot or cold temperatures. Maintain without drying for the period of time necessary for the hydration of the cement and the proper hardening of the concrete.

2. Keep concrete continuously under cure until the accumulated time during which the temperature of the air in direct contact with the concrete has been warmer than 55° for at least five (5) days.

B. Normal Curing: Use any one of the methods described below.

1. Ponding: Keep the surface submerged at all times for the required curing period. Water temperature shall be within 20° of the concrete temperature.

2. Continuous Application of Water: Accomplished by sprinkling with a nozzle which so atomizes the flow that a mist and not a spray is formed, until the concrete is set.

3. Covering: Cover the entire area to be cured with double thickness burlap sheet, laid directly on the concrete, and keep continuously wet.

4. Covering with Waterproof Sheeting: Keep the entire area to be cured continuously wet by sprinkling, as specified in paragraph 2 above, for at least 18 hours and then immediately cover with waterproof curing sheet, free of holes or tears.

C. Curing Compound Method:

1. Curing and hardening compound shall be applied to exposed slabs which do not receive any other surface treatment. Curing compounds shall be applied on all other surfaces.

2. Do not apply the curing compound to the surface of construction joints, to reinforcing steel, or to surfaces which receive cementitious toppings. Do not apply the curing compound to surfaces which receive specialty coatings, including but not limited to surface hardeners, nonslip finishes

and waterproofing compounds, unless written approval of such usage is first obtained from the specialty coating manufacturer.

3. Keep surfaces to be cured moist or wet until the curing compound is applied. Do not apply the curing compound until all patching and surface finishing has been completed.

4. Apply curing compound uniformly over the surface at the rate and thickness recommended by the manufacturer, or if not stipulated, at 200 SF per gallon. Curing compound which becomes chilled to such an extent that it is too viscous for satisfactory application shall be warmed in accordance with the manufacturer's recommendations.

5. Should the film of compound be damaged from any cause before the expiration of the curing period, immediately repair the damaged portions with additional compound.

D. Inclement Weather Protection:

1. When the mean daily temperature of the atmosphere is less than 40° F, maintain the temperature of the concrete between 50 and 70° F when placed and for the required curing period.

2. When necessary, make arrangements for heating, cooling, insulating or housing in advance of placement, adequate to maintain the required temperature and moisture conditions without injury due to concentration of heat.

3. Do not place concrete on frozen ground nor in contact with ice within the forms. Protect concrete from freezing for a period of five days after placing.

4. Stop placing concrete when the quantity of rain falling on the surface is sufficient to wash the concrete surface.

5. Concrete shall have a maximum placing temperature such that it will not cause difficulty from loss of slump, flash set, or cold joints.

6. The temperature of concrete as placed shall not exceed 90° F except that the temperature of concrete placed in walls and slabs three feet or greater in thickness shall not exceed 85° F. When the temperature of the steel is greater than 120° F, embedded items shall be sprayed with water immediately prior to placing concrete.

7. Details and methods of placing and handling concrete during inclement weather shall be in accordance with ACI 305R or ACI 306R as applicable.

8. Bleed through the sand before the next pass. Cover completely with sand before the binder becomes tack-free. Estimate oven-dried sand quantity

required to broadcast to excess at 2 lbs./sq. ft. Remove excess aggregate when the broadcast overlay has reached sufficient cure as to not be damaged.

3.07 CONSTRUCTION JOINTS:

A. Construction joints shall be as indicated on the Contract Drawings. If not indicated, the locations of construction joints shall be determined by the Contractor. In such instances, the maximum horizontal distance between joints shall be 35 feet and maximum vertical distance shall be 12 feet. Joints not indicated shall be made and located so as not to impair the strength of the structure, shall not impair appearance when subject to public view, and shall be approved in writing by the engineer prior to their use.

B. Provide vertical keys at all joints in walls unless otherwise indicated. Other construction joints shall be made without keys unless indicated otherwise. Where keys are indicated, keyways shall be formed to dimensions indicated on the Drawings. If not indicated keys shall be 2" nominal depth and the width shall be equal to or less than one-third the concrete thickness in nominal 2" increments.

C. Where keys are not indicated, and where expansion joint filler or bond breaking compound are not required, provide a roughened concrete surface by exposing at least 3/8 inches depth of clean coarse aggregate by one of the following methods:

1. Use an approved chemical retarder, which delays but does not prevent setting of the surface mortar. Remove retarded mortar within 24 hours after placing to produce a clean exposed coarse aggregate.

2. Clean hardened concrete surfaces by abrasive blast method to expose clean coarse aggregate after the curing period or immediately before placing concrete.

3. Surfaces of concrete which have been in place less than eight hours may be cleaned with air and water jets if surface laitance is removed and clean coarse aggregate is exposed to required depth.

D. Before placement of fresh concrete, clean reinforcing steel and the surfaces of horizontal and vertical construction joints of surface laitance, curing compound, and other materials foreign to the concrete. Moisten surfaces on which concrete is to be placed with water immediately before placing concrete.

E. Surfaces of horizontal construction joints, where expansion joint filler or bond breaking compound is to be placed as indicated, shall be cleaned of dirt, sawdust, and other loose material.

F. When it is necessary to make a construction joint because of an emergency, furnish and place additional reinforcing steel across the joint as required at no additional expense to the Owner.

G. Concrete slabs and walls shall be poured between indicated joints allowing a minimum period of 3 days to elapse between adjacent pours.

3.08 EXPANSION AND CONTRACTION JOINTS:

A. No reinforcement or other fixed metal items shall be run continuous through expansion and contraction joints.

B. Construct open joints at the locations indicated, by means of a wood strip, metal plate, or other approved material to be subsequently removed.

C. Provide expansion joint filler for full depth of expansion joint.

D. Install flexible joint sealant in accordance with the manufacturer's recommendations and the following:

1. Sealant shall not be placed until 28 days after concrete is placed.

2. Wire brush and waterblast clean joints prior to applying primer and sealant.

3. Apply primer to walls of joint.

4. Tool sealant into joint to have a slightly concave surface. Maximum depth of sealant shall be 1/2 inch. Eliminate voids or bubbles, and create a clean and neat appearance.

5. Allow 3-day cure before subjecting sealant to total water immersion.

3.09 PROTECTION FROM AND REMOVAL OF STAINS:

A. Protect the concrete structure from rust staining by structural steel members and from other substances during the work.

B. If staining does occur, remove stains and restore the concrete to its original color.

3.10 DEFECTIVE CONCRETE WORK:

A. Porous areas, open or porous construction joints and honeycombed concrete will be considered to indicate that the requirements for mixing, placing and handling have not been complied with and will be sufficient cause for rejection of the members of the structure thus affected.

B. Defective work exposed upon removal of forms shall be entirely removed or repaired within forty-eight hours after forms have been removed.

C. Defective concrete areas not repaired within forty-eight hours after removal of forms shall be patched with polymer-modified mortars and shall be completed by an approved applicator.

D. Repaired areas will not be accepted if:

1. The structural requirements have been impaired by reducing the net section of compression members;

2. The bond between the steel and concrete has been reduced; and

3. The area is not finished to conform to in every respect to the texture, contour and color of the surrounding concrete.

E. If the above requirements are not satisfied, the Engineer may require that the members or unit involved be entirely removed and satisfactorily replaced at no additional expense to the owner.

3.11 REPAIR OF DEFECTIVE CONCRETE:

A. General: The Engineer will determine the extent and manner of action to be taken for the correction of defective concrete as may be revealed by surface defects or otherwise. Contractor shall submit the repair materials and methods for Engineer's review and approval.

B. Repair of Formed Surfaces:

1. As soon as possible after stripping forms, thoroughly clean and fill holes left by form ties, and other temporary inserts and perform corrective work.

2. Repair and patch defective areas with cement mortar of mix proportions and materials identical to those used in the surrounding concrete; and produce a finish on the patch that is indistinguishable from the finish of the surrounding concrete, immediately after removing forms, in a manner and by a method accepted by the Engineer in writing prior to start of repair operation.

3. Cut-out honeycomb, rock pockets and voids having a diameter more than 1/2 inch to solid concrete but not shallower than one inch. Make edges of cuts perpendicular to concrete surface. Before placing cement mortar, thoroughly clean, dampen and brush coat areas to be patched with neat cement grout. Proprietary patching compounds may be used if accepted by the Engineer in writing prior to start of repair operation.

4. Remove imperfect texture, laitance, fins and roughness by rubbing affected areas with concrete block or carborundum stone until smooth and uniform.

C. Repair of Unformed Surfaces:

1. Test unformed surfaces for smoothness and to verify conformance of surface plans to tolerances specified. Correct low and high areas.

2. Test unformed sloped surfaces for trueness of slope and smoothness, using a template having required slope. Correct high and low areas as specified.

3. Repair finished unformed surfaces which contain defects which adversely affect durability of concrete.

4. Grind high areas in unformed surfaces after concrete has cured sufficiently to permit repairs without damaging adjacent areas.

5. Cut-out low areas in unformed surfaces after completion of surface finishing operations, and replace with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used if acceptable to the Engineer.

6. Cut-out defective areas, except random cracks and single holes not exceeding one inch diameter and replace with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and brush with neat cement grout coating or use concrete bonding agent. Place patching concrete before grout takes initial set. Mix patching concrete of same materials and in same proportions as adjacent concrete. Place, compact and finish as required to blend with adjacent concrete. Cure in same manner as adjacent concrete.

7. Repair isolated random cracks and single holes not over an inch in diameter by the dry-pack method. Groove tops of cracks, cut-out holes to sound concrete and remove dust, dirt and loose particles. Dampen cleaned concrete surfaces and brush with neat cement grout coating. Mix dry-pack, consisting of one part portland cement to 2-1/2 parts fine aggregate passing No. 16 sieve, using only enough water for handling and patching. Place dry-pack before grout takes initial set. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched areas continuously moist for not less than 72 hours.

8. Obtain approval of the Engineer before performing repair work other than the removal of imperfect texture, filling of pin holes, holes larger than 3/4 inch wide and insert holes. The Engineer will determine whether the defective area is sufficiently imperfect to warrant rejection of the structural unit.

9. Repair methods not specified above may be used, subject to acceptance by the Engineer in writing.

D. Repairs required to the structural components due to the failure of watertightness tests may require specialized material and procedures. These repairs shall be performed by the personnel or contractor qualified in performing those repairs.

3.12 GROUTING:

A. Proportion mixing water in accordance with grout manufacturer's recommendations for shrinkage compensating grout.

B. Clean off all loose and foreign material, which would prevent bond between the grout and the concrete surfaces contacting the grout.

C. Thoroughly moisten concrete surfaces to be grouted or dry-packed prior to starting work.

D. Completely fill all recesses and assure that the grout material is in complete contact with all steel and concrete surfaces.

E. Cure all exposed grout.

3.13 BONDING COMPOUND:

A. Prepare surfaces to receive bonding compound in accordance with the manufacturer's recommendations. All dust, disintegrated materials and foreign particles shall be removed from the existing concrete surfaces. The existing surfaces shall be sound and clean for bonding.

B. The bonding adhesive shall be mixed and applied in strict accordance with the manufacturer's recommendations. The Contractor shall schedule his operations so that the bonding adhesive may be applied and the new concrete placed within 24 hours using Sika Armatec 110. Should this bonding agent be installed over 24 hours before the new concrete is placed, concreting operations shall immediately stop and the affected area shall be recoated with the bonding material.

PART 4 – MEASUREMENT AND PAYMENT

4.01 CAST-IN-PLACE CONCRETE:

A. Cast-In-Place Concrete will be measured per cubic yard complete in place and accepted.

B. Cast-In-Place Concrete will be paid for at the contract unit price bid per cubic yard in place and accepted, which price shall include all formwork, reinforcing steel, and all the required labor and equipment to furnish and place the concrete as shown on the Drawings.

C. Measurement and payment for Cast-In-Place Concrete shall not be applied to cast-in-place concrete work that is included in another pay item as specified elsewhere in these Specifications.

END OF SECTION

SECTION 03400

PRECAST CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This Section includes specifications for precast concrete work for architectural units, drainage structures, and other miscellaneous items as indicated, and the fabrication of test units where indicated.

B. Related Work Specified Elsewhere:

1. Section 03200 - Concrete Reinforcement

2. Section 03300 - Cast-In-Place Concrete

3. Section 01600 - Products

1.02 SUBMITTALS:

A. Shop Drawings:

1. Submit shop drawings showing unit dimensions and section details, finishes, reinforcement and connection details, lifting and erection inserts, all other embedded items including related mechanical and electrical work, and layout diagrams identifying installation locations and member identification marks.

B. Data:

1. Submit reports of compressive strength tests on concrete.

2. Test the design mix.

C. Installation Schedule:

1. Accompany delivered units with a schedule indicating sequence of installation, joints, supports and bracing and attachment systems.

D. Maintain uniformity in color, texture, and finish wherever indicated.

1.03 DELIVERY, HANDLING AND STORAGE:

A. Deliver, handle and store precast concrete units in accordance with Section 01600 and as specified herein.

B. Lift and support units only at designated lifting and supporting points.

C. Transport units in a manner, which will not result in damage during delivery, handling and storage.

D. Do not place units directly on earth. Provide non-staining resilient spacers of uniform thickness between units.

E. Place stored units so that identification marks are discernible.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Portland Cement Concrete

Normal Weight Concretes:

Location	28 Day Compressive Strength (psi)	Aggregate Size Number	Minimum Cement Content (lbs/cy)
All Concrete	4,000	57	611

All concrete fill shall have a minimum compressive strength of 4000 psi at 28 days and shall be placed only where noted on the contract drawings.

Provide air-entrained concrete with air content of 6 percent plus or minus 1 percent for concrete exposed to weather.

Maximum water cement ratio of 0.45.

Maintain the slump range for concrete at the point of delivery within the following limits:

Concrete flatwork and incidental construction	2-3 inches
All Other	2-4 inches

B. Formwork: Section 03300, using continuous materials to produce units without visible joints.

C. Reinforcing Steel: Section 03200, of the size and type indicated.

D. Gaskets: ASTM C509, preformed, expanded closed-cell neoprene acid resistant, non-staining, changes, sized to provide constant compression in the joint and in pieces as long as practicable to minimize field splices. Gasket cement: As recommended by the gasket manufacturer.

E. Anchors, dowels and accessories embedded in precast units: Hot-dipped galvanized steel or non-corrosive metal.

F. Joint connections: Stainless steel, ASTM A167, Type 304.

G. Coloring Agent: sunlight and alkali-fast natural mineral oxide.

H. Form Release Agent:

1. Synthetic resin or organic compounds containing no wax, oil, silicates or varnish.

2. Compatible with specific coatings, sealants and adhesives to be applied to wall panels.

PART 3 - EXECUTION

3.01 FABRICATION OF TEST UNITS:

A. Where indicated, cast two full size test units, using the forms and concrete mix proportions, admixtures, colors, textures, and methods proposed for production work.

B. Cast test units to simulate a production run, incorporating reinforcing and embedded items as indicated.

C. Maintain a complete record of proportions, mixing and consolidation and curing procedures during casing.

D. Prepare a set of four test cylinders during the casing of each test unit for compressive tests.

E. Precast concrete elements may be cured by an accelerated method such as steam treatment subject to approval of the Engineer.

F. If the strength, texture, finish or workmanship of the test units does not meet the requirements as determined by the Engineer, cast additional units until units meeting the approval of the Engineer are obtained.

3.02 FABRICATION OF PRODUCTION UNITS:

A. When the test units are approved, proceed with the fabrication of production units using the forms, mix proportions and concrete ingredient, casting, consolidation, and curing methods, used in the preparation of the test units.

B. Approved test units may be furnished for installation.

C. Make patches of the same color and texture as the unit being patched.

3.03 ERECTION:

A. Fit and align precast concrete units straight, plumb, level, and square.

B. Noncumulative erection tolerances:

1. Joint dimensions: Nominal 3/8 inch; to vary not more than plus 3/16 inch or minus 1/4 inch.
2. Edge alignment and offset: Not to exceed 1/4 inch.

C. Adjust differential camber between units to within tolerance before final connection is made.

D. Set units dry, without mortar, attaining specified joint dimension with lead or plastic spacers.

E. Fasten precast units in place by bolting or welding.

F. Tighten bolted connections with equal torque.

G. Provide temporary erection anchors for welded attachment systems.

H. Clean field welds and protect with coat of rust inhibiting paint.

I. Install closures between stems of flanged units.

J. Level differential elevation of horizontal joints with grout to slope not steeper than 1:12.

3.04 CLEANING:

A. Clean precast units with fresh water and mild detergent or by steam cleaning.

B. The use of commercial cleaners or acid shall be subject to the approval of the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 PRECAST CONCRETE UNITS:

A. Precast Concrete Units will be measured per each for each type and size incorporated in the completed work.

B. Precast Concrete Units will be paid per unit, complete in place, accepted, which price will be full compensation for all material, equipment, tools, labor, test units and all work incidental to complete the item as specified.

END OF SECTION

SECTION 03510

MODULAR CONCRETE FENCING

PART 1: GENERAL

1.01 DESCRIPTION:

A. This work shall consist of furnishing and installing modular concrete fencing, with noise abatement characteristics, and all related components along the limits specified in the Contract Documents and/or as directed by the Engineer.

1.02 REFERENCES:

A. ASTM A615, Grade 60 for Reinforcing Steel.

B. ASTM A615, Grade 40 for ties and stirrups.

1.03 SUBMITTALS:

A. The manufacturer shall supply a modular concrete fencing system that includes all material and finishes defined herein and as specified in the Contract Documents.

1. Product Data: Manufacturer's catalog cuts including material compliance and specified options.

2. Samples: Color selections for concrete. If requested, samples of materials.

1.04 DELIVERY:

A. Deliver modular concrete fence panels, posts, caps, and accessories to project site. Upon receipt at the job site, all materials shall be checked to ensure that no damages occurred during shipping. Materials shall be handled and stored properly to protect against damage and theft.

PART 2: PRODUCTS

2.01 MANUFACTURER:

A. Products from manufacturers having a minimum of five (5) years experience manufacturing modular pre-cast concrete fencing will be acceptable as equal if approved in writing and can demonstrate that they

are capable of satisfying all design, material, fabrication, and specifications as described herein.

B. Approved Manufacturer:

1. Artisan Precast
2. ArtUSA – Noise Control Products, Inc.
3. Superior Concrete Products
4. Other with comparable product line.

C. The final Modular Concrete Fencing shall provide a minimum of be approved by the Engineer, prior to the Contractor placing the order.

D. The final Modular Concrete Fencing selection shall be approved by the Engineer, prior to the Contractor placing the order.

2.02 MATERIAL:

A. All materials and components for the modular concrete fencing shall be obtained from one manufacturer for a complete fencing system.

B. Precast concrete shall have a minimum compression strength of 5,000 psi at 28 days.

C. Concrete for line post footings shall be normal weight concrete having sand and gravel or crushed stone aggregates mixed with ASTM-C150, Type I or Type III Portland Cement and shall have a minimum compression strength of 2,500 psi @ 28 days.

D. Panels and Panel Caps:

1. Panels shall have typical dimensions of 56 1/2" long by 12" high by 2" wide at its maximum dimension and no less than 1 3/4" wide at its minimum dimension.
2. Panels shall have an interlock construction.
3. Panel caps shall have typical dimensions of 56 1/2 " long by 2" high by 4" wide.
4. Panel caps shall be reinforced with 1 - #4 rebar positioned in mold with rebar clip.

E. Color shall be selected from the manufacturer's standard colors. All materials shall be wood-grain textured/colored, to be approved by the Engineer.

PART 3: EXECUTION

3.01 PREPARATION:

A. Verify areas to receive fencing are completed to final grades, elevations and materials.

B. Ensure property lines, utility routing and legal boundaries of work are clearly established.

C. Coordinate fence installation with landscaping and other work in the area.

3.02 INSTALLATION:

A. Install fence in accordance with manufacturer's instructions.

B. Wind loading will be applied to the panels, columns, and components in accordance with the local building code requirements.

C. Posts:

1. Post shall have a typical cross sectional dimension of 5" as measured from face-to-face.

2. Post shall be spaced 5' on-center.

3. The posts are aligned, leveled, and anchored in concrete footings.

D. Posts Footing:

1. Diameter shall be 12" minimum.

2. Depth shall be 30" minimum.

3. Footing depths will vary with soil conditions.

4. No reinforcement is required unless required by local code requirements for high wind loads.

E. Panels shall have an interlock construction. Keep the bottom panel at least 2" above the ground to reduce chances of decay and for easier maintenance at the base of the fence.

F. Insert precast panels into and down the tracks in the posts in one foot increments.

G. The finished modular concrete fencing height shall be 10-feet.

H. Install panel caps.

3.03 CLEANING:

A. The contractor shall remove unused material, level uneven areas due to excavations created by fencing installation.

3.04 NOISE ABATEMENT:

A. The completed modular concrete fencing shall meet characteristics to maintain a maximum 66 dB total noise level from the operation of the proposed facility.

PART 4: MEASUREMENT AND PAYMENT

4.01 MODULAR CONCRETE FENCING:

A. Modular Concrete Fencing will be measured per linear foot and shall include furnishing and installing materials, hardware, posts, and accessories.

B. Modular Concrete Fencing will be paid for at the contract unit price bid per linear foot which will be full compensation for all material, equipment, tools, labor and all work incidentals to complete the item as specified.

END OF SECTION

APPENDIX A
LIST OF CONTRACT DRAWINGS

CONTRACT NO. T-1038-0140

WALDORF PARK AND RIDE
FACILITY DESIGN

APPENDIX A

CONTRACT NO. T-1038-0140

LIST OF CONTRACT DRAWINGS

GENERAL

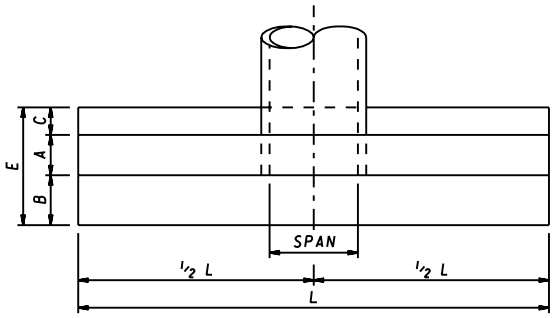
SHEET NUMBER	DRAWING NUMBER	TITLE
1	C-01	TITLE SHEET
2	C-02	INDEX OF DRAWINGS
3	C-03	CIVIL ABBREVIATIONS, SYMBOLS & NOTES
4	C-04	GENERAL NOTES AND ADA SUMMARY
5	C-05	HORIZONTAL AND VERTICAL CONTROL
6	C-06	EXISTING CONDITIONS
7	U-01	UTILITY PLAN
8	P-01	PAVING PLAN
9	P-02	ITEM QUANTITIES
10	P-03	GEOMETRY PLAN
11	P-04	GEOMETRY PLAN
12	P-05	GEOMETRY PLAN
13	P-06	GEOMETRY PLAN
14	P-07	GEOMETRY PLAN
15	P-08	ROADWAY PROFILES
16	P-09	TYPICAL SECTIONS
17	P-10	TYPICAL SECTIONS
18	P-11	PAVEMENT DETAILS
19	P-12	PAVEMENT DETAILS
20	P-13	PAVEMENT DETAILS
21	P-14	SIDEWALK RAMP DETAILS
22	P-15	SIDEWALK RAMP DETAILS
23	P-16	CONCRETE PAVEMENT JOINT LAYOUT
24	P-17	DRAINAGE AND GRADING PLAN
25	P-18	STORM DRAIN PROFILES
26	P-19	STORM DRAIN PROFILES
27	P-20	SIGNING AND PAVEMENT MARKING PLAN
28	P-21	SIGNING AND PAVEMENT MARKING DETAILS
29	SWM-01	STORMWATER MANAGEMENT PLAN
30	SWM-02	STORMWATER MANAGEMENT PLAN
31	SWM-03	STORMWATER MANAGEMENT PLAN
32	SWM-04	STORMWATER MANAGEMENT
33	SG-01	SUBGRADE GRADING PLAN
34	ES-01	EROSION AND SEDIMENT CONTROL NOTES
35	ES-02	EROSION AND SEDIMENT CONTROL NOTES
36	ES-03	EROSION AND SEDIMENT CONTROL DETAILS
37	ES-04	EROSION AND SEDIMENT CONTROL PLAN

38	ES-05	EROSION AND SEDIMENT CONTROL PLAN
39	MT-01	MAINTENANCE OF TRAFFIC PLAN
40	E-01	LIGHTING AND CONDUIT PLAN
41	E-02	LIGHTING AND CONDUIT DETAILS
42	LS-01	LANDSCAPING PLAN
43	LS-02	LANDSCAPE DETAILS
44	XS-01	CROSS SECTIONS - MD 925
45	XS-02	CROSS SECTIONS - MD 925
46	XS-03	CROSS SECTIONS - MD 925
47	XS-04	CROSS SECTIONS - MD 925
48	XS-05	CROSS SECTIONS - MD 925
49	XS-06	CROSS SECTIONS - MD 925
50	XS-07	CROSS SECTIONS - BUS LOOP
51	XS-08	CROSS SECTIONS - BUS LOOP
52	XS-09	CROSS SECTIONS - PARKING LOT
53	XS-10	CROSS SECTIONS - PARKING LOT
54	XS-11	CROSS SECTIONS - PARKING LOT
55	XS-12	CROSS SECTIONS - PARKING LOT
56	XS-13	CROSS SECTIONS - PARKING LOT
57	TSP-01	TRAFFIC SIGNAL PLAN
58	TSP-02	TRAFFIC SIGNAL PLAN
59	TSP-03	GENERAL INFORMATION SHEET

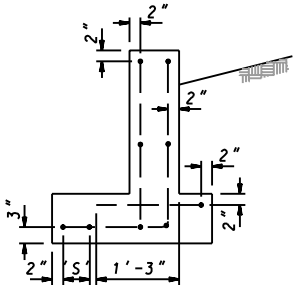
APPENDIX B
SPECIAL DETAILS

CONTRACT NO. T-1038-0140

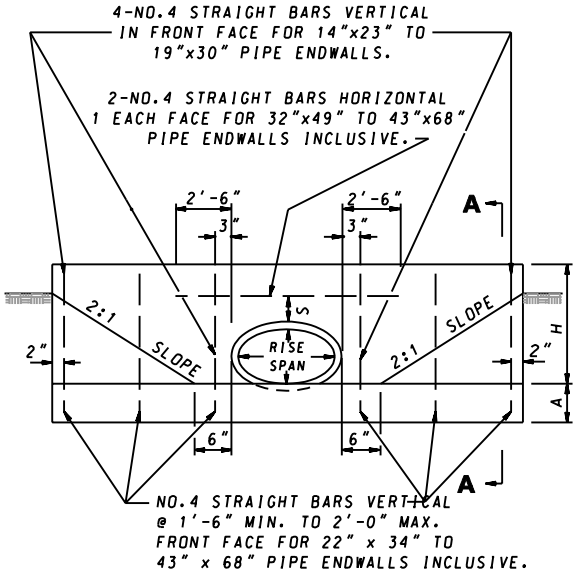
WALDORF PARK AND RIDE
FACILITY DESIGN



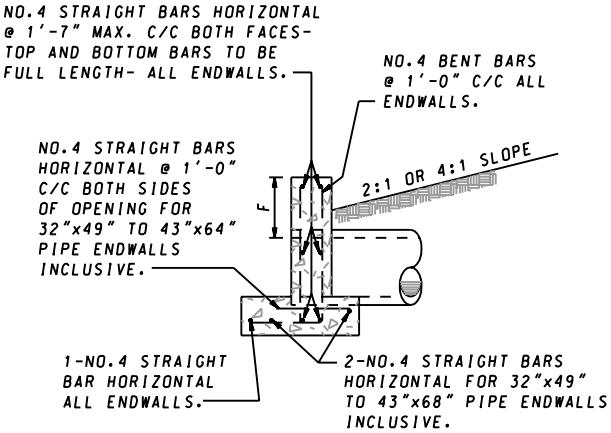
PLAN



DISPOSITION OF BARS DETAIL



ELEVATION



SECTION A-A

QUANTITIES FOR ESTIMATING PURPOSES ONLY

OPENING		DIMENSIONS							QUANTITIES	
D RISE x SPAN INCHES	AREA SQ.FT.	A	B	C	E	F	H	L	CONC. C.Y.	STEEL LBS.
14X23	1.8	9"	8"	6"	1'-11"	12"	2'-2"	8'-7"	0.88	56
19X30	3.3	9"	8"	6"	1'-11"	12"	2'-6"	10'-6"	1.15	63
22X34	4.1	9"	14"	6"	2'-5"	13"	2'-11"	12'-6"	1.74	100
24X38	5.1	9"	14"	6"	2'-5"	13"	3'-1"	13'-6"	1.92	116
27X42	6.3	9"	14"	6"	2'-5"	13"	3'-4"	14'-10"	2.19	124
29X45	7.4	9"	14"	10"	2'-9"	14"	3'-7"	16'-0"	2.61	141
32X49	8.8	12"	16"	10"	3'-2"	14"	3'-10"	17'-0"	4.08	202
34X53	10.2	12"	16"	10"	3'-2"	14"	4'-0"	18'-0"	4.40	210
38X60	12.9	12"	16"	10"	3'-2"	15"	4'-5"	20'-4"	5.23	266
43X68	16.6	12"	20"	12"	3'-8"	15"	4'-10"	22'-8"	6.52	307

'S' DISTANCES

6" FOR 14" x 23" TO 27" x 42" INCLUSIVE.
8" FOR 29" x 45" TO 43" x 68" INCLUSIVE.

GENERAL NOTES

SPECIFICATIONS: LATEST S.H.A.
CONCRETE: SEE S.H.A. SPECIFICATIONS
REINFORCEMENT: DEFORMED STEEL BARS NO.4
CHAMFER: ALL EXPOSED EDGES 1"x1" OR AS DIRECTED.

SPECIFICATION 305	CATEGORY CODE ITEMS
APPROVED	Kirk G. McCallum — DIRECTOR – OFFICE OF HIGHWAY DEVELOPMENT

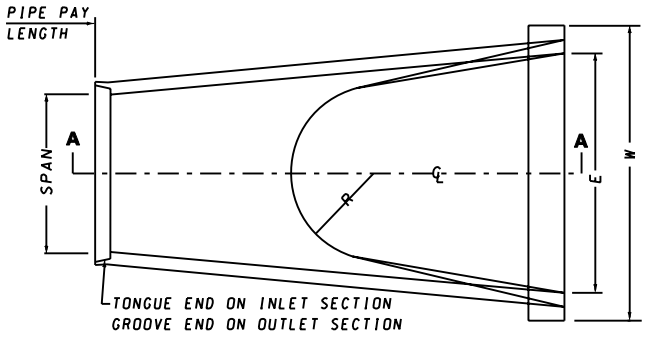
APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL	10-1-01	APPROVAL	9-27-01
REVISED	8-12-02	REVISED	
REVISED		REVISED	
REVISED		REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

STANDARD TYPE C ENDWALL HORIZONTAL ELLIPTICAL CONCRETE PIPE

STANDARD NO. MD 355.02



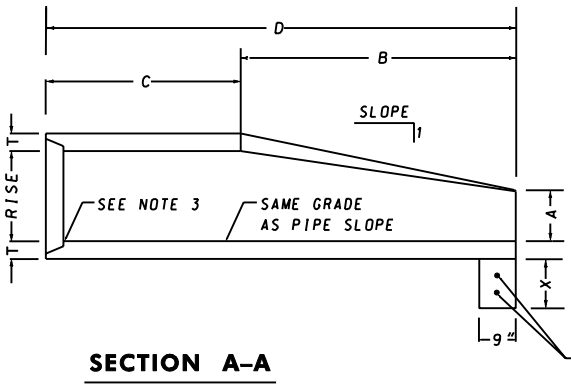
PLANS

NOTES:

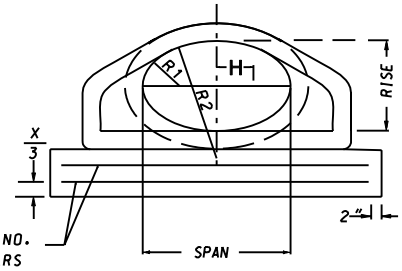
1. END SECTIONS SHALL BE REINFORCED TO CONFORM TO ASTM - CLASS IV REINFORCED CONCRETE PIPE.

2. CONCRETE FOOTER SHALL BE USED WHEN SPECIFIED ON THE PLANS. COST OF THE FOOTER TO BE INCLUDED IN PRICE OF THE END SECTION. THE CONCRETE SHALL BE MIX #2 AND THE REINFORCEMENT IS TO BE #3 BARS.

3. INVERT ELEVATION TO BE AT THE PIPE END OF THE STANDARD END SECTION. ELEVATIONS TO BE NOTED ON THE CONSTRUCTION PLANS.



SECTION A-A



END VIEW

QUANTITIES FOR ESTIMATING PURPOSES ONLY

HERCP			CONCRETE END SECTION											CONCRETE FOOTER			
RISE	SPAN	EQUIV. DIA.	APPR. SLOPE	WALL T	A	B	C	D	E	H	R	R1	R2	W	X	CONC. (CY)	REINF. (LBS.)
14"	23"	18"	3.1:1	2 3/4"	8"	2'-3"	3'-9"	6'-0"	3'-5"	5 3/8"	6"	6"	1'-8"	4'-5"	12"	0.12	3.07
19"	30"	24"	2.8:1	3 1/4"	8 1/2"	3'-3"	2'-9"	6'-0"	4'-6"	6 7/8"	7"	8 1/4"	2'-2 1/4"	5'-6"	15"	0.19	3.86
22"	34"	27"	2.9:1	3 1/2"	9"	4'-0"	2'-0"	6'-0"	5'-1"	7 3/4"	8"	9 1/4"	2'-5 1/4"	6'-1"	15"	0.21	4.32
24"	38"	30"	2.9:1	3 3/4"	9 1/2"	4'-6"	1'-6"	6'-0"	5'-8"	8 5/8"	9"	10 1/4"	2'-8 3/4"	6'-8"	15"	0.23	4.76
29"	45"	36"	2.7:1	4 1/2"	11 1/4"	5'-0"	3'-0"	8'-0"	6'-9"	10 1/2"	12"	12 1/4"	3'-3 1/4"	8'-0"	15"	0.28	5.76

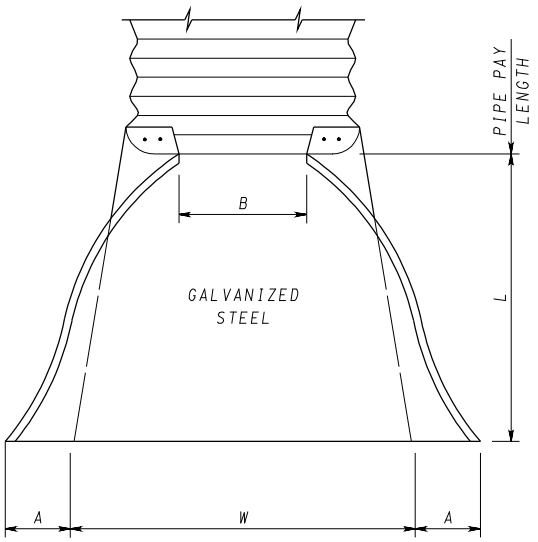
SPECIFICATION 305	CATEGORY CODE ITEMS
APPROVED	Kirk G. McClelland — DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL	7-14-08	APPROVAL	01-09-08
REVISED	7-1-09	REVISED	7-27-09
REVISED		REVISED	
REVISED		REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

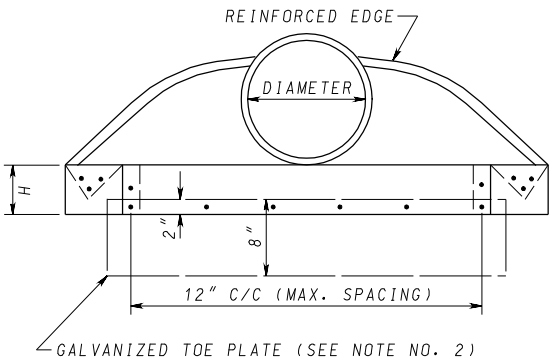
STANDARD CONCRETE END SECTION HORIZONTAL ELLIPTICAL PIPE

STANDARD NO. MD 369.00

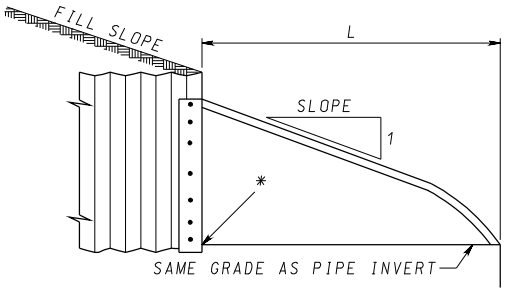


PLAN

DIMENSIONS								
PIPE DIA.	GA.	A 1″±	B MAX.	H 1″±	L 1½″±	W 2″±	APPROX. SLOPE	UNIT
12″	16	6″	6″	6″	21″	24″	2½	1 PC.
15″	16	7″	8″	6″	26″	30″	2½	1 PC.
18″	16	8″	10″	6″	31″	36″	2½	1 PC.
21″	16	9″	12″	6″	36″	42″	2½	1 PC.
24″	16	10″	13″	6″	41″	48″	2½	1 PC.
30″	14	12″	16″	8″	51″	60″	2½	1 PC.
36″	14	14″	19″	9″	60″	72″	2½	2 PC.



END VIEW



SIDE VIEW

* INVERT ELEVATION TO BE AT THE PIPE END OF THE STANDARD END SECTION. ELEVATIONS TO BE NOTED ON THE CONSTRUCTION PLANS.

NOTES

1. METAL END SECTIONS SHALL BE GAGE 16 FOR PIPES RANGING FROM 15″ THRU 24″, AND GAGE 14 FOR PIPES RANGING FROM 30″ THRU 36″ . MULTIPLE PANEL UNITS TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY ⅜″ DIAMETER GALVANIZED RIVETS OR BOLTS.
2. TOE PLATES SHALL BE USED WHEN SPECIFIED ON THE PLANS. THICKNESS OF END PLATE TO BE SAME AS END SECTION. COST OF TOE PLATE TO BE INCIDENTAL TO THE BID PRICE PER EACH OF METAL END SECTION.

SPECIFICATION 303	CATEGORY CODE ITEMS
APPROVED	Kirk G. McClelland DIRECTOR – OFFICE OF HIGHWAY DEVELOPMENT

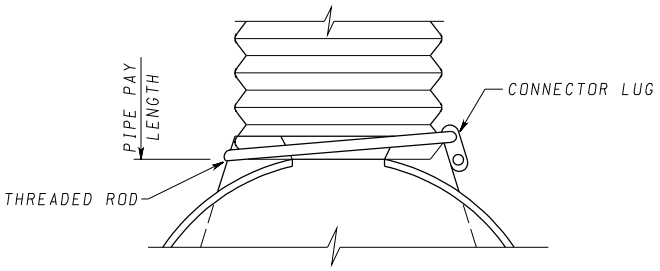
APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL	8-28-86	APPROVAL	12-12-86
REVISED	10-1-01	REVISED	7-27-09
REVISED	7-1-09	REVISED	
REVISED		REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION

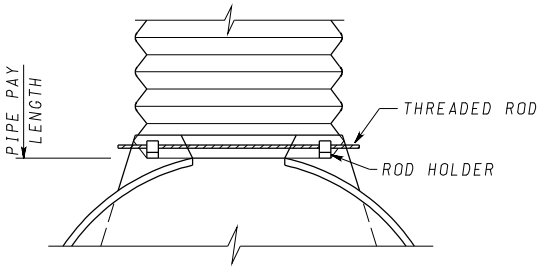
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

STANDARD METAL END SECTION ROUND METAL PIPE

STANDARD NO. MD 370.01



TYPE 1
(FOR 12" THRU 24" ONLY)

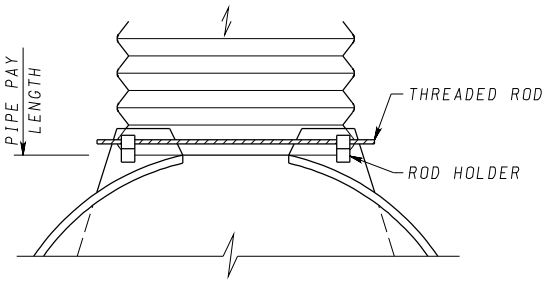


TYPE 2
(FOR 30" THRU 36" ONLY)

CONNECTIONS FOR ROUND PIPE

NOTE:

PIPES AND CONNECTION BANDS SHALL CONFORM TO APPLICABLE SECTION OF THE STANDARD SPECIFICATIONS AND TO AASHTO REQUIREMENTS.



TYPE 2
(FOR 17"x13" THRU 42"x29")

CONNECTIONS FOR PIPE ARCH

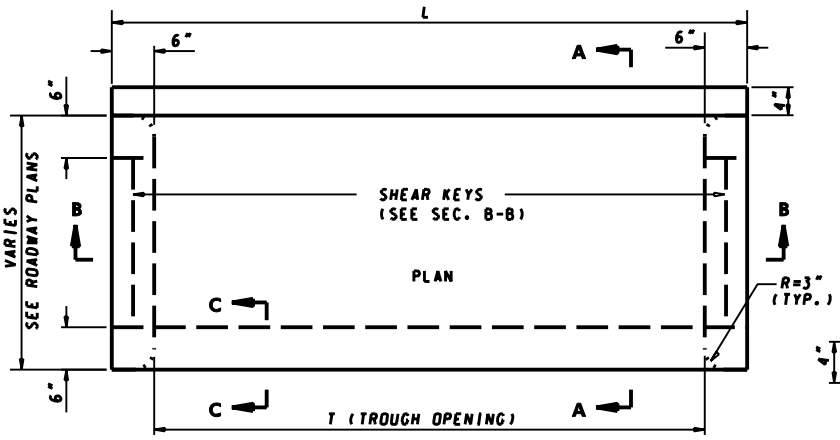
SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	Kirk G. McClelland DIRECTOR – OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL	8-28-86	APPROVAL	12-12-86
REVISED	10-1-01	REVISED	7-27-09
REVISED	7-1-09	REVISED	
REVISED		REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

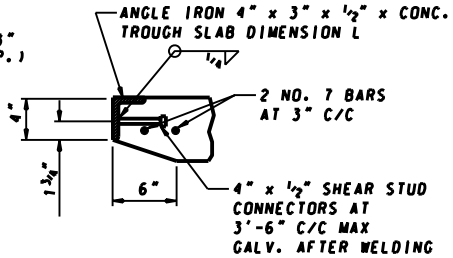
STANDARD CONNECTIONS
METAL END SECTIONS

STANDARD NO. MD 370.11



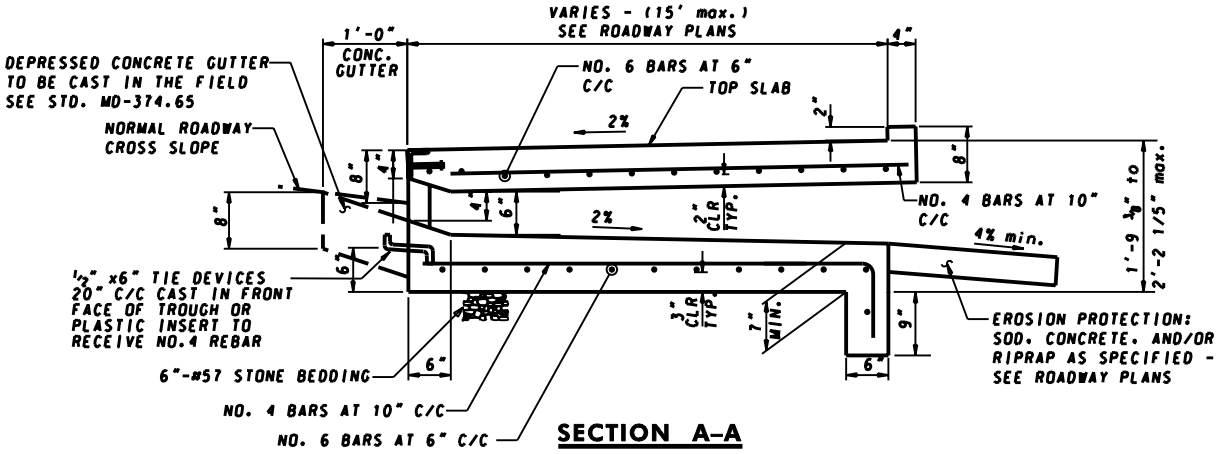
PRECAST CONCRETE TOP SLAB

SLAB TYPE	L	T
I	6'-0"	5'-0"
II	11'-0"	10'-0"

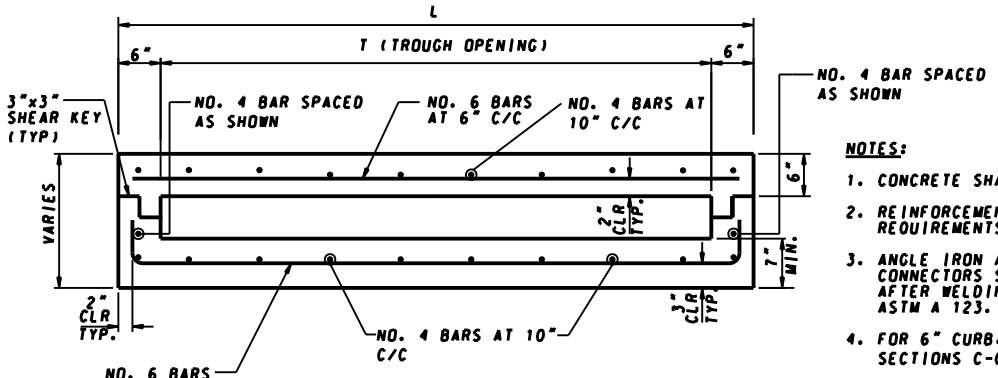


NOTE: FOR 6" CURB. SEE NOTE 4 BELOW.

SECTION C-C



SECTION A-A



SECTION B-B

NOTES:

1. CONCRETE SHALL BE MIX # 6 (4500 PSI).
2. REINFORCEMENT STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615, GRADE 60.
3. ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123.
4. FOR 6" CURB, REFER TO MD 374.55-01, SECTIONS C-C AND D-D.
5. EROSION PROTECTION TO BE PAID FOR SEPARATELY.

SPECIFICATION 305	CATEGORY CODE ITEMS
APPROVED	Kirk G. McClelland DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

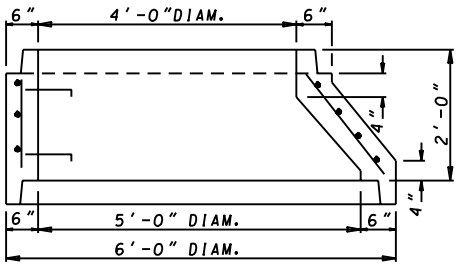
APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL	12-19-01	APPROVAL	7-15-02
REVISED	1-9-08	REVISED	11-26-07
REVISED		REVISED	
REVISED		REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION

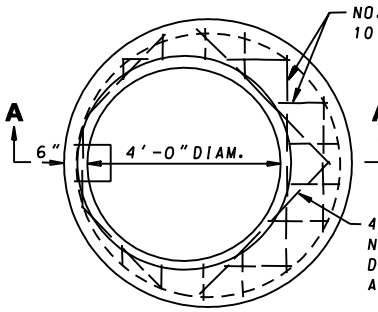
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

PRECAST OR CAST-IN-PLACE COG /COS OPENING FOR 8" CURB 5' OR 10' ONLY

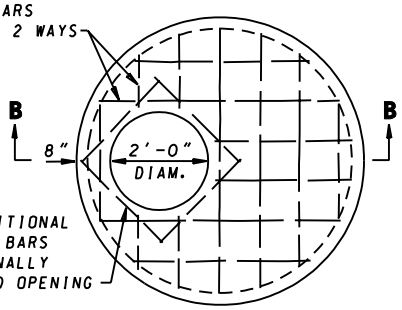
STANDARD NO. MD 374.68



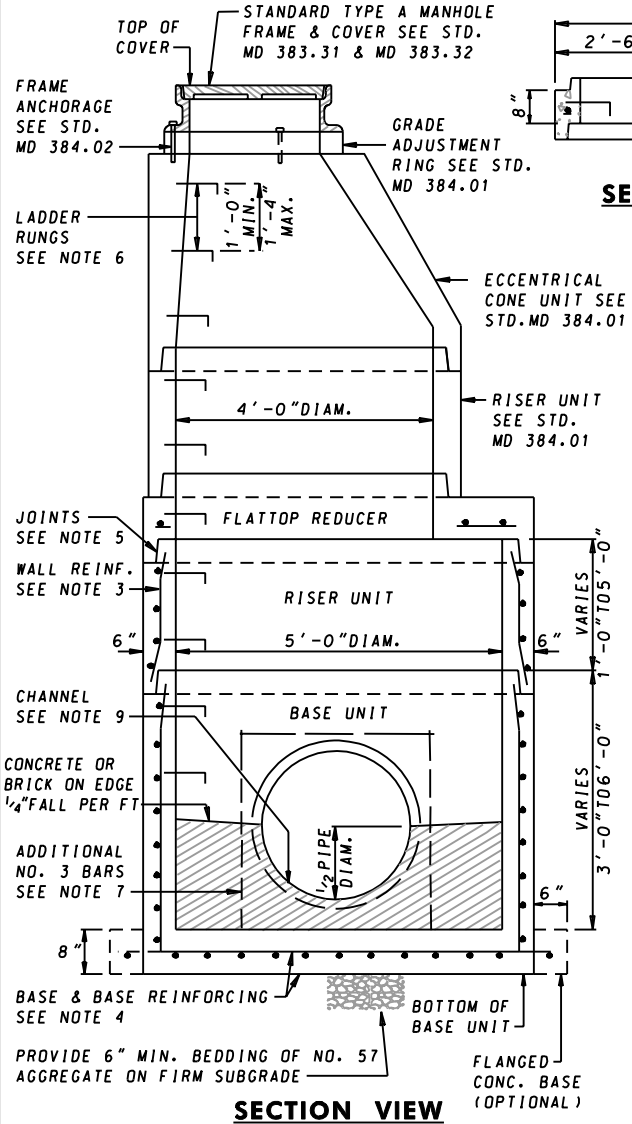
ECCENTRICAL CONE REDUCER
(ALTERNATE FOR FLATTOP REDUCER)



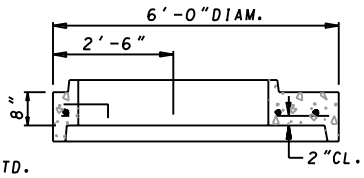
FLATTOP REDUCER



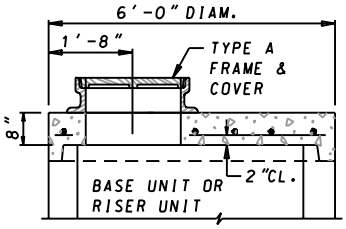
FLAT SLAB TOP
(SHOWN WITHOUT FRAME & COVER)



SECTION VIEW



SECTION A–A



SECTION B–B

NOTES

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
2. CONCRETE SHALL BE MIX NO.6 (4500PSI).
3. WALL REINFORCMENT FOR BASE UNITS, RISER UNITS AND ECCENTRICAL CONE UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.15 IN. ^{2}/FT FOR THE 60" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A 82. REINFORCEMENT BARS SHALL MEET ASTM A 615, GRADE 60.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.17 IN. ^{2}/FT. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING (WHERE APPLICABLE) MORTAR, RUBBER O-RING GASKETS MEETING ASTM C 361 AND C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-4" MAXIMUM C/C. RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARDS MD 383.91 OR 383.92. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MUTIPLE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THAN 6" ADDITIONAL NO.3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIX NO.2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STD. MD 384.13 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 9'-0" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 9'-0". THE COST OF THE DRIP STONE LANDING, NO.57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.

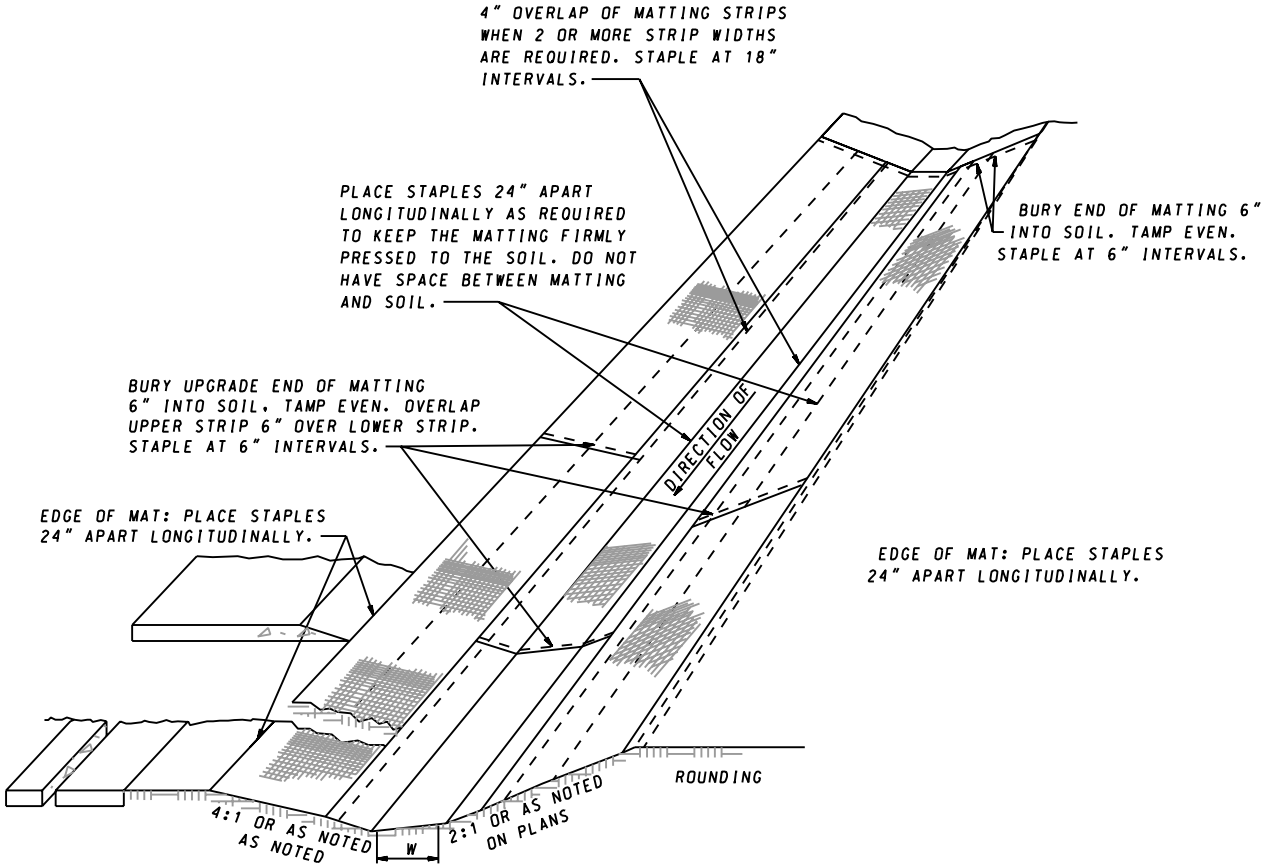
SPECIFICATION 305	CATEGORY CODE ITEMS
APPROVED	Kirk G. McCallum DIRECTOR – OFFICE OF HIGHWAY DEVELOPMENT

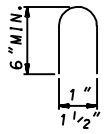
APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL	2-22-91	APPROVAL	1-2-91
REVISED	10-1-01	REVISED	
REVISED		REVISED	
REVISED		REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

60" DIAMETER PRECAST MANHOLE FOR 27" TO 36" PIPES

STANDARD NO. MD 384.03





11 GAUGE WIRE OR HEAVIER LATERAL SPACING OF STAPLES TO BE AT EDGE OF MAT. AT OVERLAP OF MATS AND AT BREAK IN GROUND OR MIDPOINT OF MAT WHERE NO BREAKS OCCUR FOR THAT MAT.

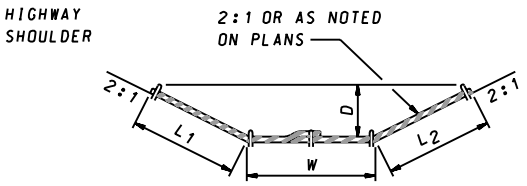
NOTE: MAT WIDTH IS 48" ± 1"
SEE SPECIFICATIONS FOR "SOIL STABILIZATION MATTING" FOR DETAILS OF MAT.
USE SEED MIX SPECIFIED.
MULCH IS NOT REQUIRED.
WHEN TOPSOIL IS SPECIFIED IN THE AREA ADJACENT TO THAT WHERE SOIL STABILIZATION MATTING IS TO BE CONSTRUCTED. IT SHALL ALSO BE PLACED AT THE SAME DEPTH IN THE AREA WHERE SOIL STABILIZATION MATTING IS REQUIRED. PRIOR TO THE INSTALLATION OF THE MATTING.

SPECIFICATION 709	CATEGORY CODE ITEMS	
APPROVED	Kirk G. McCallum DIRECTOR – OFFICE OF HIGHWAY DEVELOPMENT	
	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 6-22-61	APPROVAL 9-28-61
	REVISED 10-1-01	REVISED 6-27-85
	REVISED	REVISED
	REVISED	REVISED

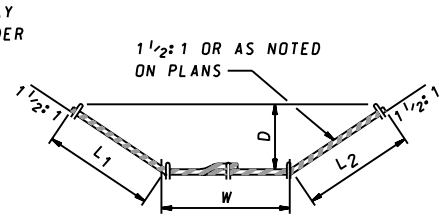
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

SOIL STABILIZATION MATTING DRAINAGE DITCHES

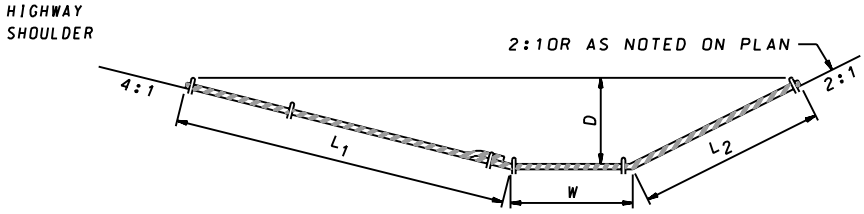
STANDARD NO. MD 389.06



W	MATS	D	L_1	L_2
12"	1	8.0"	18"	18"
18"	1	6.7"	15"	15"
24"	2	15.2"	34"	34"
36"	2	12.5"	28"	28"

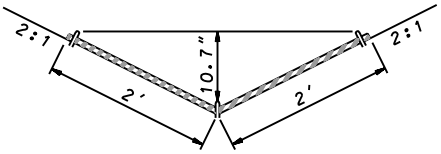


W	MATS	D	L_1	L_2
12"	1	10.0"	18"	18"
18"	1	8.3"	15"	15"
24"	1	6.7"	12"	12"
36"	2	15.5"	28"	28"

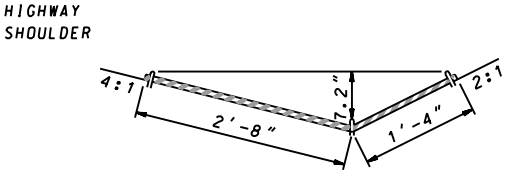


NOTE: ADDITIONAL MAT WIDTHS MAY BE USED AS NOTED ON THE PLANS. STAPLES TO BE PLACED AS NOTED BY SYMBOL (∩).

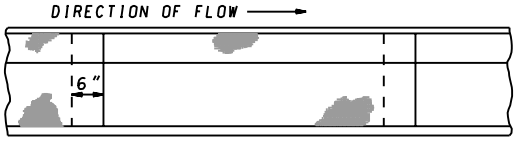
W	MATS	D	L_1	L_2
12"	2	12.5"	52"	28"
18"	2	11.6"	48"	26"
24"	2	10.6"	44"	24"
36"	2	8.7"	36"	20"



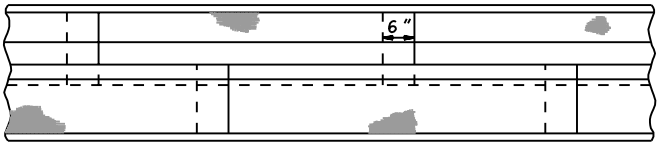
FLUME



FLUME



V-DITCH USING ONE MAT



SIDE DITCH USING TWO OR MORE MATS

SPECIFICATION 709	CATEGORY CODE ITEMS
APPROVED	Kirk G. McCallum DIRECTOR – OFFICE OF HIGHWAY DEVELOPMENT

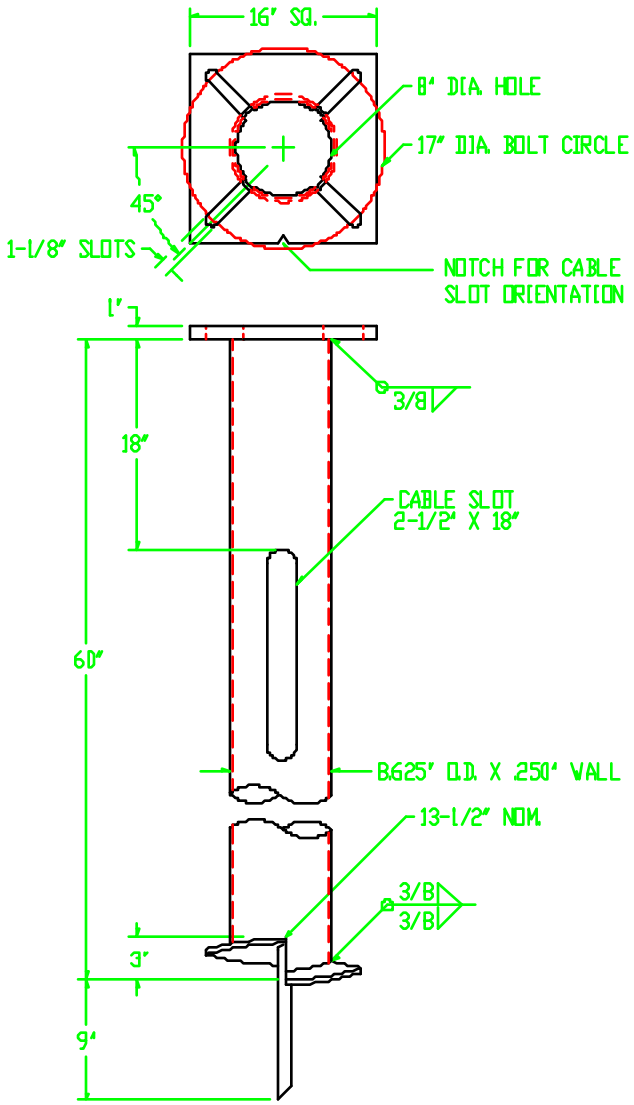
APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL	6-22-61	APPROVAL	9-28-61
REVISED	10-1-01	REVISED	4-25-88
REVISED		REVISED	
REVISED		REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

SOIL STABILIZATION MATTING DRAINAGE DITCHES

STANDARD NO. MD 389.07

OUT. SALES: -
IN. SALES: TERN PIRE
PROJECT: -
DATE: 14AUG03
COMMENTS: -



ITEM NO.	DESCRIPTION	PART NO.	DWG. NO.	QUANTITY A	QUANTITY B	QUANTITY C
1	TOP PLATE, 1" X 16" X 16" X 8" - VBC	306228	M-1245	1	1	
2	PIPE SHAFT, 8" SCH 20 X 60"	306316	M-1600	1	1	
3	HELIX, SLR, 3/8" X 13" X 1 1/4"	301113	M-0636	1	1	
4	STINGER, RBAR, 1 1/4" X 12"	306021	M-064B	1	1	
5	BOLT, CARRIAGE, 1" X 4"	337011	- - -	4	4	
6	NUT, HEX, 1"	337523	- - -	4	4	
7	WASHER, PLAIN, 1"	337609	- - -	4	4	

NOTES
1. HOT DIP GALV PER ASTM A 153, AFTER FABRICATION.
2. ANCHOR SHALL BE SHIPPED WITH HARDWARE BAGGED AND SECURED TO PIPE SHAFT.
3. ANCHOR IS DESIGNED TO WITHSTAND 10,000 FT-LBS OF INSTALLATION TORQUE.
4. ALL HARDWARE SHALL BE ASTM A325 STEEL OR EQUIV.

CATALOG NO.	PART
D-1202-0053	A
N-1202-0053	B

ALL UNTOLERANCED DIMENSIONS ARE FOR REFERENCE PURPOSES AND HAVE BEEN PREVIOUSLY DIMENSIONED AND TOLERANCED ON LOWER LEVEL DRAWINGS.

REV.	CHANGED FROM	DATE
A	ADDED CAT. NO. N-1202-0053	13AUG03

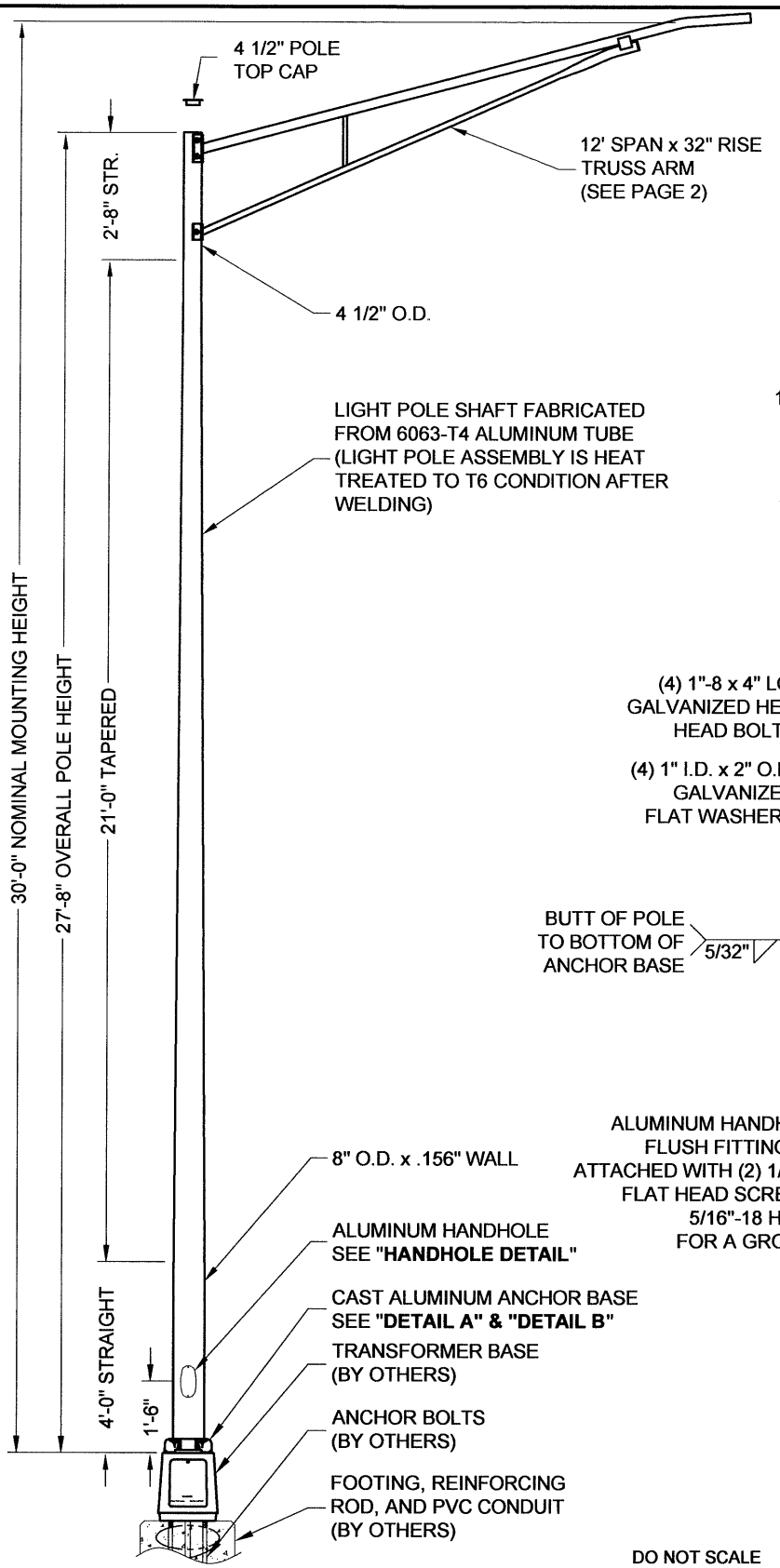
ALL INFORMATION CONTAINED IN THIS DISCLOSURE WHETHER PATENTABLE OR OTHERWISE COMPRISES PROPRIETARY INFORMATION OF DIXIE ELECTRICAL MANUFACTURING CO. AND ITS UNAUTHORIZED USE OR PUBLICATION WITHOUT THE EXPRESS CONSENT OF DIXIE ELECTRICAL MANUFACTURING CO. IS STRICTLY PROHIBITED.

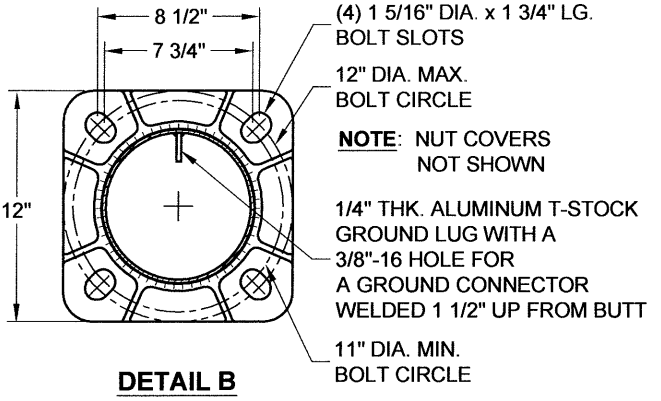
DIXIE ELECTRICAL MANUFACTURING COMPANY
P.O. BOX 170040
BIRMINGHAM, ALABAMA 35217-0040

NAME: FOUNDATION ANCHOR, 8 X 60

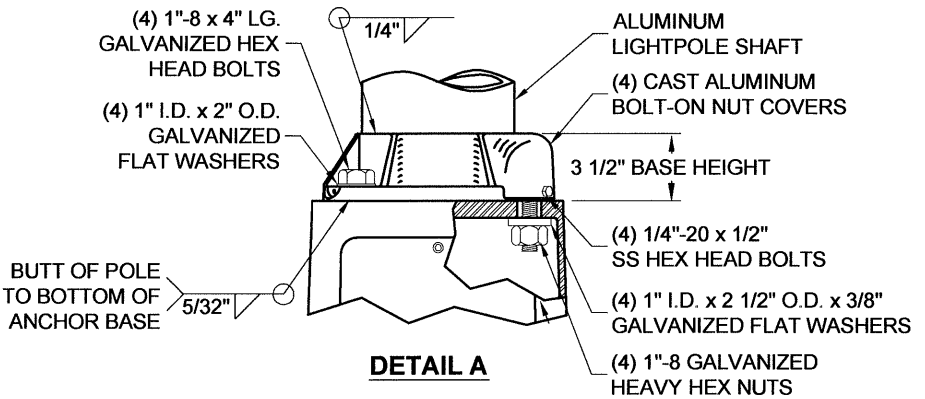
DRAWN A.REID	SCALE NONE
CHECKED SCG	DATE
APPROVED S.BARTON	DATE 08/12/97

DX NO. A-1374 REV. A



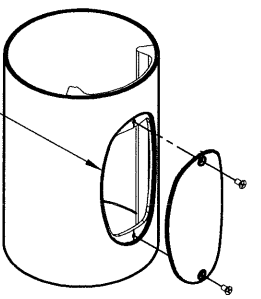


DETAIL B



DETAIL A

ALUMINUM HANDHOLE WITH A 4" x 6" FLUSH FITTING ALUMINUM DOOR ATTACHED WITH (2) 1/4"-20 x 1/2" LG. S.S. FLAT HEAD SCREWS. WITH TAPPED 5/16"-18 HOLE IN EXTRUSION FOR A GROUND CONNECTOR.



HANDHOLE DETAIL

DO NOT SCALE

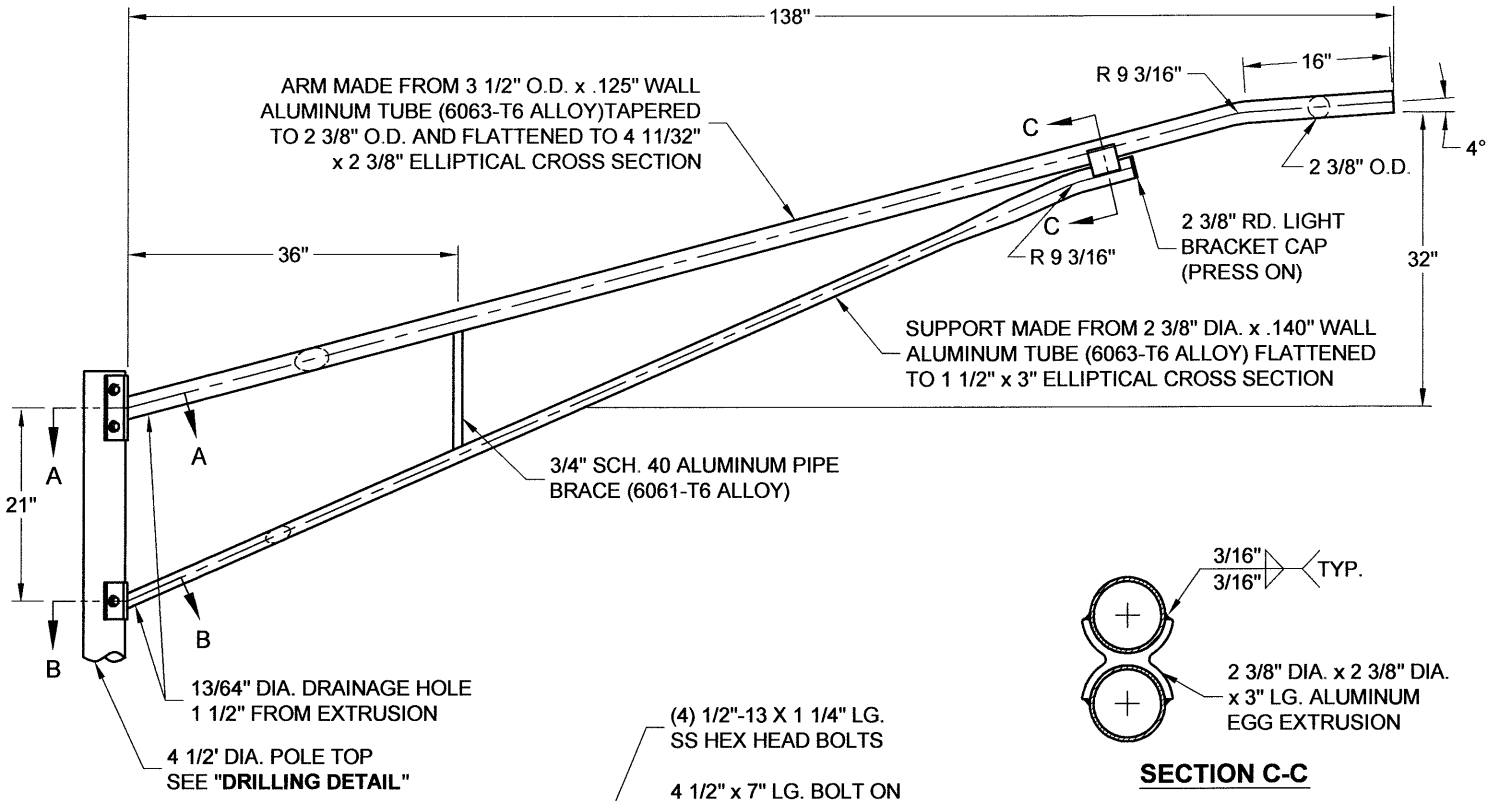
valmont

Valmont Industries, Inc. Structures Division
20805 Eaton Ave Farmington, Minnesota 55024-0228
Phone: (651) 463-8990 (800) 899-7932
Fax: (651) 463-3349

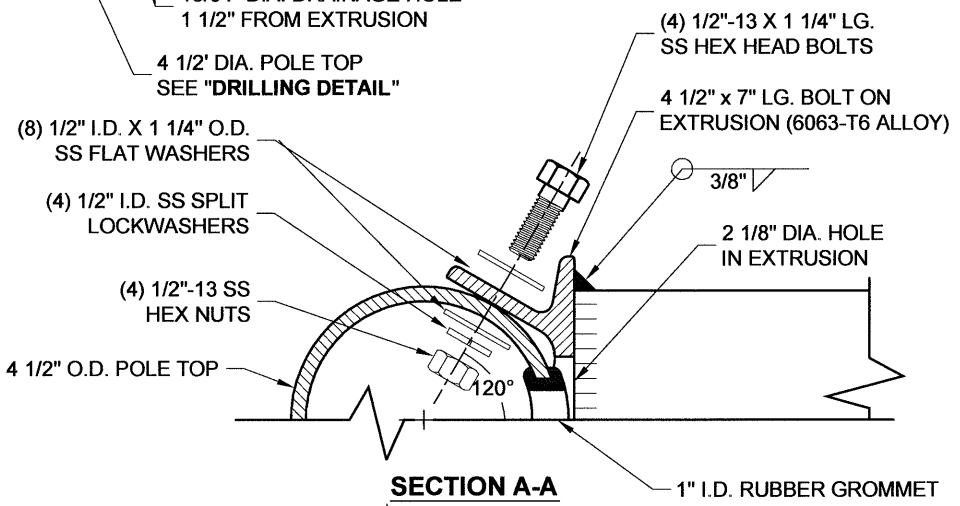
CONFIDENTIAL
The information contained in this drawing is privileged and confidential, and may be protected from disclosure. Please be aware that any use or dissemination of this drawing may be subject to legal restriction or sanction.

TITLE:	S ANCHOR BASE LIGHT POLE
MODEL NO.:	270845805T4
MATERIAL:	ALUMINUM ALLOY
FINISH:	100 GRIT SATIN POLISH
PROJECT:	SOUTHERN MARYLAND ELEC COOP
SOLD TO:	WESCO
SHIP TO:	
P.O. NO:	
REP:	LEKSON ASSOCIATES
QTY:	72
DWN BY:	DWJ
CHK'D BY:	
APPR BY:	JRB
DATE:	06-14-07
DWG NO:	QT59565
PAGE:	1 / 2

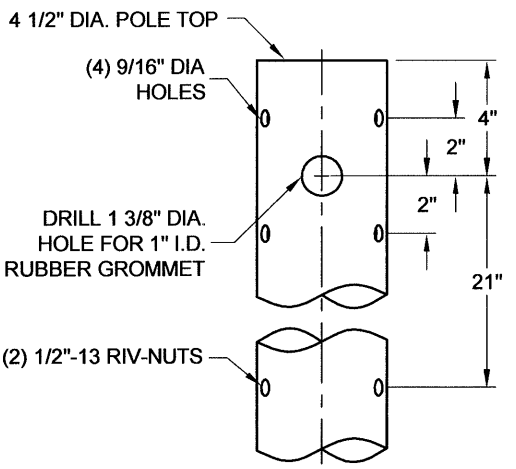
REV	DATE	REVISION DESCRIPTION	BY
△			
△			
△			



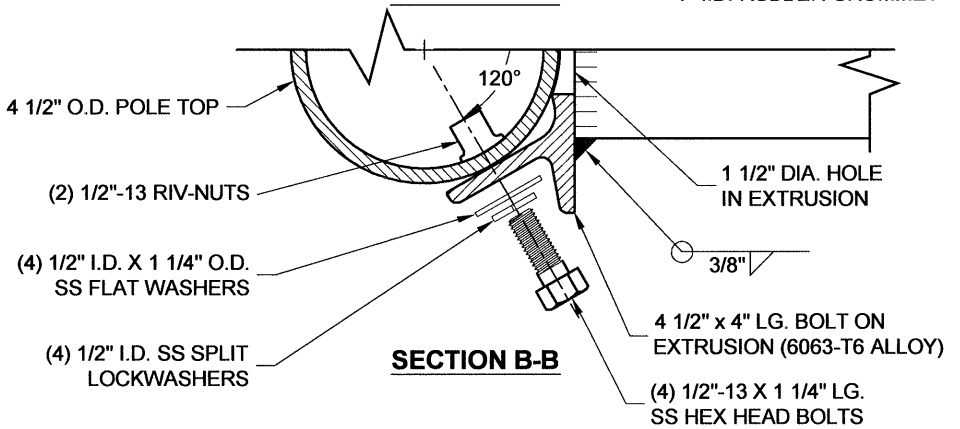
SECTION C-C



SECTION A-A



DRILLING DETAIL



SECTION B-B

NOTE:
1. WELDING WIRE (ER4043)
2. TRUSS ARM HEAT TREATED AFTER FABRICATION TO T6 CONDITION.
3. ALL HARDWARE IS 300 SERIES STAINLESS STEEL.

DO NOT SCALE

valmont

Valmont Industries, Inc. Structures Division
20805 Eaton Ave Farmington, Minnesota 55024-0228
Phone: (651) 463-8990 (800) 899-7932
Fax: (651) 463-3349

CONFIDENTIAL
The information contained in this drawing is privileged and confidential, and may be protected from disclosure. Please be aware that any use or dissemination of this drawing may be subject to legal restriction or sanction.

TITLE:	S TRUSS SGL ARM 12' x 32" x 3.5" x 4.5 B/O
MODEL NO.:	1TA1232B45
MATERIAL:	ALUMINUM ALLOY
FINISH:	ETCHED SATIN POLISH
PROJECT:	SOUTHERN MARYLAND ELEC COOP
SOLD TO:	WESCO
SHIP TO:	
P.O. NO:	
REP:	LEKSON ASSOCIATES
QTY:	72
DWN BY:	DWJ
CHK'D BY:	
APPR BY:	JRS
DATE:	06-14-07
DWG NO:	QT59565
PAGE:	2 / 2

REV	DATE	REVISION DESCRIPTION	BY

APPENDIX C
FEDERAL MINIMUM WAGE RATES

CONTRACT NO. T-1038-0140

WALDORF PARK AND RIDE
FACILITY DESIGN

APPENDIX C

FEDERAL WAGE RATES

This Appendix contains the minimum wage rates to be paid for workers employed under this Contract on the jobsites in accordance with the supplementary General Provisions and the Wage Rate Decisions as defined below.

1. Wage rates - Decision No. MD120061shall be used for all work at the Charles County sites as described in the Contract documents.

General Decision Number: MD120061 09/21/2012 MD61

Superseded General Decision Number: MD20100117

State: Maryland

Construction Type: Heavy

Counties: Calvert and Charles Counties in Maryland.

HEAVY CONSTRUCTION PROJECTS (including sewer/water construction).

Modification Number	Publication Date
0	01/06/2012
1	02/17/2012
2	02/24/2012
3	06/08/2012
4	06/15/2012
5	09/14/2012
6	09/21/2012

CARP0132-016 05/01/2011

	Rates	Fringes
CARPENTER (Including Form Work)	$ 26.74	7.45

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* ELEC0026-019 06/04/2012

	Rates	Fringes
ELECTRICIAN	$ 39.75	14.29+a

a.PAID HOLIDAYS: New Year's Day, Inauguration Day, Martin Luther King Jr.'s Birthday, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the day after Thanksgiving Day and Christmas Day.

ENGI0037-018 10/01/2009

CALVERT COUNTY

	Rates	Fringes
OPERATOR: Bulldozer	$ 23.95	11.05+a
OPERATOR: Crane	$ 24.95	11.05+a+b
OPERATOR: Drill	$ 23.95	11.05+a
OPERATOR: Excavator 120,000 lbs. and Under	$ 23.95	11.05+a
Long and Ultra High Reach Excavators; Excavators		

```
     Over 120,000 lbs............$ 24.95          11.05+a
     Mini-Excavators.............$ 23.05          11.05+a
OPERATOR:  Mechanic..............$ 23.95          11.05+a
OPERATOR:  Piledriver............$ 24.95        11.05+a+b
```

a. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.
b. On long boom cranes, including jibs, and on pile driving machines with leads, the operator shall receive the following additional pay: 130' to 169' ($0.40 per hour); 170' to 209' ($0.60 per hour); 210' to 249' ($0.80 per hour); 250' to 299' ($1.00 per hour); 300' and over ($1.25 per hour)

ENGI0077-016 05/01/2010

CHARLES COUNTY

```
                                  Rates          Fringes

OPERATOR:  Bulldozer.............$ 29.92           7.87+a
OPERATOR:  Crane
     35 ton Cranes and Above.....$ 31.09           7.87+a
     Cranes Below 35 tons........$ 30.63           7.87+a
     Tower and Climbing Cranes...$ 31.09           7.87+a
     Tower Cranes and Cranes
     100 tons and Over...........$ 32.09           7.87+a
OPERATOR:  Drill.................$ 31.09           7.87+a
OPERATOR:  Excavator.............$ 30.63           7.87+a
OPERATOR:  Mechanic..............$ 32.46           7.87+a
OPERATOR:  Piledriver............$ 30.63           7.87+a
```

a.PAID HOLIDAYS: New Year's Day, Inaugural Day, Decoration Day, Independence Day, Labor Day, Martin Luther King's Birthday, Veterans' Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.

b. PREMIUM PAY:
Tower crane and cranes 100-ton and over to receive $1.00 per hour premium.

IRON0201-006 05/01/2012

```
                                  Rates          Fringes

IRONWORKER, REINFORCING..........$ 26.50            16.68
```

LABO0710-003 04/01/2010

```
                                  Rates          Fringes

LABORER:  Common or General......$ 15.45             5.41
LABORER:  Mason Tender -
Cement/Concrete..................$ 16.61             5.41
```

PAIN0051-020 06/01/2012

	Rates	Fringes
PAINTER: Steel	$ 31.86	8.91

PLAS0891-006 05/01/2010

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 27.15	9.58

SUMD2010-076 07/08/2010

	Rates	Fringes
IRONWORKER, STRUCTURAL	$ 24.00	10.16
LABORER: Flagger	$ 15.71	8.58
LABORER: Grade Checker	$ 14.62	3.08
LABORER: Landscape	$ 17.72	8.58
LABORER: Mason Tender - Brick	$ 15.93	7.83
LABORER: Pipelayer	$ 15.50	0.00
OPERATOR: Backhoe	$ 19.23	4.18
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 16.41	5.15
OPERATOR: Gradall	$ 20.50	8.89
OPERATOR: Grader/Blade	$ 19.00	5.00
OPERATOR: Loader	$ 18.65	5.02
OPERATOR: Paver	$ 17.53	9.07
OPERATOR: Roller	$ 16.50	5.34
OPERATOR: Trackhoe	$ 18.98	7.32
PAINTER: Brush, Roller, Spray	$ 24.32	6.91
PIPEFITTER	$ 21.25	5.31

TEAM0311-005 06/01/2012

	Rates	Fringes

TRUCK DRIVER: Dump Truck.....$ 25.65 8.00+a+b+c
TRUCK DRIVER: Lowboy Truck.....$ 27.66 8.00+a+b+c

a. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

b. VACATION: Employees with 1 year of service - 1 week paid vacation; 2 years service - 2 weeks paid vacation; 10 years service - 3 weeks paid vacation.

c. HEALTH AND WELFARE: $881 per month

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rate.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

APPENDIX D
BUY AMERICA REQUIREMENTS

CONTRACT NO. T-1038-0140

WALDORF PARK AND RIDE
FACILITY DESIGN

Title 49 - Transportation

PART 661—BUY AMERICA REQUIREMENTS

Section Contents

§ 661.1 Applicability.
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§ 661.11 Rolling stock procurements.
§ 661.12 Certification requirement for procurement of buses, other rolling stock and associated equipment.
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§ 661.17 Failure to comply with certification.
§ 661.18 Intentional violations.
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§ 661.20 Rights of parties.
§ 661.21 State Buy America provisions.

Authority: 49 U.S.C. 5323(j) (formerly sec. 165 of the Surface Transportation Assistance Act of 1982 (Pub. L. 97–424); as amended by sec. 337, Pub. L. 100–17; sec. 1048, Pub. L. 102–240; sec. 3020(b), Pub. L. 105–178; and sec. 3023(i) and (k), Pub. L. 109–59); 49 CFR 1.51.

Source: 56 FR 932, Jan. 9, 1991, unless otherwise noted.

§ 661.1 Applicability.

Unless otherwise noted, this part applies to all federally assisted procurements using funds authorized by 49 U.S.C. 5323(j); 23 U.S.C. 103(e)(4); and section 14 of the National Capital Transportation Act of 1969, as amended.

[56 FR 932, Jan. 9, 1991, as amended at 72 FR 53696, Sept. 20, 2007]

§ 661.3 Definitions.

As used in this part:

Act means the Federal Public Transportation Law (49 U.S.C. Chapter 53).

Administrator means the Administrator of FTA, or designee.

Component means any article, material, or supply, whether manufactured or unmanufactured, that is directly incorporated into the end product at the final assembly location.

Contractor means a party to a third party contract other than the grantee.

End product means any vehicle, structure, product, article, material, supply, or system, which directly incorporates constituent components at the final assembly location, that is acquired for public use under a federally-funded third-party contract, and which is ready to provide its

intended end function or use without any further manufacturing or assembly change(s). A list of representative end products is included at Appendix A to this section.

FTA means the Federal Transit Administration.

Grantee means any entity that is a recipient of FTA funds.

Manufactured product means an item produced as a result of the manufacturing process.

Manufacturing process means the application of processes to alter the form or function of materials or of elements of the product in a manner adding value and transforming those materials or elements so that they represent a new end product functionally different from that which would result from mere assembly of the elements or materials.

Negotiated procurement means a contract awarded using other than sealed bidding procedures.

Rolling stock means transit vehicles such as buses, vans, cars, railcars, locomotives, trolley cars and buses, and ferry boats, as well as vehicles used for support services.

System means a machine, product, or device, or a combination of such equipment, consisting of individual components, whether separate or interconnected by piping, transmission devices, electrical cables or circuitry, or by other devices, which are intended to contribute together to a clearly defined function. Factors to consider in determining whether a system constitutes an end product include: Whether performance warranties apply to an integrated system (regardless of whether components are separately warranteed); whether products perform on an integrated basis with other products in a system, or are operated independently of associated products in the system; or whether transit agencies routinely procure a product separately (other than as replacement or spare parts).

United States means the several States, the Commonwealth of Puerto Rico, the District of Columbia, Guam, American Samoa, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands.

Appendix A to §661.3—End Products

The following is a list of representative end products that are subject to the requirements of Buy America. This list is representative, not exhaustive.

(1) *Rolling stock end products:* All individual items identified as rolling stock in §661.3 (*e.g.,* buses, vans, cars, railcars, locomotives, trolley cars and buses, ferry boats, as well as vehicles used for support services); train control, communication, and traction power equipment that meets the definition of end product at §661.3 (*e.g.,* a communication or traction power system, including manufactured bimetallic power rail).

(2) *Steel and iron end products:* Items made primarily of steel or iron such as structures, bridges, and track work, including running rail, contact rail, and turnouts.

(3) *Manufactured end products:* Infrastructure projects not made primarily of steel or iron, including structures (terminals, depots, garages, and bus shelters), ties and ballast; contact rail not made primarily of steel or iron; fare collection systems; computers; information systems; security systems; data processing systems; and mobile lifts, hoists, and elevators.

[72 FR 53696, Sept. 20, 2007, as amended at 74 FR 30239, June 25, 2009]

§ 661.5 General requirements.

(a) Except as provided in §661.7 and §661.11 of this part, no funds may be obligated by FTA for a grantee project unless all iron, steel, and manufactured products used in the project are produced in the United States.

(b) All steel and iron manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

(c) The steel and iron requirements apply to all construction materials made primarily of steel or iron and used in infrastructure projects such as transit or maintenance facilities, rail lines, and bridges. These items include, but are not limited to, structural steel or iron, steel or iron beams and columns, running rail and contact rail. These requirements do not apply to steel or iron used as components or subcomponents of other manufactured products or rolling stock, or to bimetallic power rail incorporating steel or iron components.

(d) For a manufactured product to be considered produced in the United States:

(1) All of the manufacturing processes for the product must take place in the United States; and

(2) All of the components of the product must be of U.S. origin. A component is considered of U.S. origin if it is manufactured in the United States, regardless of the origin of its subcomponents.

[61 FR 6302, Feb. 16, 1996, as amended at 74 FR 30239, June 25, 2009]

§ 661.6 Certification requirements for procurement of steel or manufactured products.

If steel, iron, or manufactured products (as defined in §§661.3 and 661.5 of this part) are being procured, the appropriate certificate as set forth below shall be completed and submitted by each bidder or offeror in accordance with the requirement contained in §661.13(b) of this part.

Certificate of Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(1), and the applicable regulations in 49 CFR part 661.

Date_____
Signature_____
Company_____
Name_____
Title_____

Certificate of Non-Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but it may qualify for an exception to the requirement pursuant to 49 U.S.C. 5323(j)(2), as amended, and the applicable regulations in 49 CFR 661.7.

Date_____
Signature_____
Company_____

Name_____
Title_____

[71 FR 14117, Mar. 21, 2006, as amended at 72 FR 53696, Sept. 20, 2007]

§ 661.7 Waivers.

(a) Section 5323(j)(2) of Title 49 United States Code provides that the general requirements of 49 U.S.C. 5323(j)(1) shall not apply in four specific instances. This section sets out the conditions for the three statutory waivers based on public interest, non-availability, and price-differential. Section 661.11 of this part sets out the conditions for the fourth statutory waiver governing the procurement of rolling stock and associated equipment.

(b) Under the provision of 49 U.S.C. 5323(j)(2)(A), the Administrator may waive the general requirements of 49 U.S.C. 5323(j)(1) if the Administrator finds that their application would be inconsistent with the public interest. In determining whether the conditions exist to grant this public interest waiver, the Administrator will consider all appropriate factors on a case-by-case basis, unless a general exception is specifically set out in this part. When granting a public interest waiver, the Administrator shall issue a detailed written statement justifying why the waiver is in the public interest. The Administrator shall publish this justification in the Federal Register providing the public with a reasonable time for notice and comment of not more than seven calendar days.

(c) Under the provision of 49 U.S.C. 5323(j)(2), the Administrator may waive the general requirements of 49 U.S.C. 5323(j) if the Administrator finds that the materials for which a waiver is requested are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.

(1) It will be presumed that the conditions exist to grant this non-availability waiver if no responsive and responsible bid is received offering an item produced in the United States.

(2) In the case of a sole source procurement, the Administrator will grant this non-availability waiver only if the grantee provides sufficient information which indicates that the item to be procured is only available from a single source or that the item to be procured is not produced in sufficient and reasonably available quantities of a satisfactory quality in the United States.

(3) After contract award, the Administrator may grant a non-availability waiver under this paragraph, in any case in which a bidder or Offeror originally certified compliance with the Buy America requirements in good faith, but can no longer comply with its certification. The Administrator will grant a non-availability waiver only if the grantee provides sufficient evidence that the original certification was made in good faith and that the item to be procured cannot now be obtained domestically due to commercial impossibility or impracticability. In determining whether the conditions exist to grant a post-award non-availability waiver, the Administrator will consider all appropriate factors on a case-by-case basis.

(d) Under the provision of section 165(b)(4) of the Act, the Administrator may waive the general requirements of section 165(a) if the Administrator finds that the inclusion of a domestic item or

domestic material will increase the cost of the contract between the grantee and its supplier of that item or material by more than 25 percent. The Administrator will grant this price-differential waiver if the amount of the lowest responsive and responsible bid offering the item or material that is not produced in the United States multiplied by 1.25 is less than the amount of the lowest responsive and responsible bid offering the item or material produced in the United States.

(e) The four statutory waivers of 49 U.S.C. 5323(j)(2) as set out in this part shall be treated as being separate and distinct from each other.

(f) The waivers described in paragraphs (b) and (c) of this section may be granted for a component or subcomponent in the case of the procurement of the items governed by 49 U.S.C. 5323(j)(2)(C) (requirements for rolling stock). If a waiver is granted for a component or a subcomponent, that component or subcomponent will be considered to be of domestic origin for the purposes of §661.11 of this part.

(g) The waivers described in paragraphs (b) and (c) of this section may be granted for a specific item or material that is used in the production of a manufactured product that is governed by the requirements of §661.5(d) of this part. If such a waiver is granted to such a specific item or material, that item or material will be treated as being of domestic origin.

(h) The provisions of this section shall not apply to products produced in a foreign country if the Secretary, in consultation with the United States Trade Representative, determines that:

(1) That foreign country is party to an agreement with the United States pursuant to which the head of an agency of the United States has waived the requirements of this section; and

(2) That foreign country has violated the terms of the agreement by discriminating against products covered by this section that are produced in the United States and are covered by the agreement.

Appendix A to §661.7—General Waivers

(a) All waivers published in 48 CFR 25.104 which establish excepted articles, materials, and supplies for the Buy American Act of 1933 (41 U.S.C. 10a–d), as the waivers may be amended from time to time, apply to this part under the provisions of §661.7 (b) and (c).

(b) Under the provisions of §661.7 (b) and (c) of this part, a general public interest waiver from the Buy America requirements applies to microprocessors, computers, microcomputers, or software, or other such devices, which are used solely for the purpose of processing or storing data. This general waiver does not extend to a product or device which merely contains a microprocessor or microcomputer and is not used solely for the purpose of processing or storing data.

(c) Under the provisions of §661.7(b) of this part, a general public interest waiver from the Buy America requirements for “small purchases” (as defined in the “common grant rule,” at 49 CFR 18.36(d)) made by FTA grantees with capital, planning, or operating assistance.

[56 FR 932, Jan. 9, 1991, as amended at 60 FR 37928, July 24, 1995, 61 FR 6302, Feb. 16, 1996; 71 FR 14117, Mar. 21, 2006; 72 FR 53697, Sept. 20, 2007; 74 FR 30239, June 25, 2009]

§ 661.9 Application for waivers.

(a) This section sets out the application procedures for obtaining all waivers, except those general exceptions set forth in this part for which individual applications are unnecessary and

those covered by 49 U.S.C. 5323(j)(2)(C). The procedures for obtaining an exception covered by 49 U.S.C. 5323(j)(2)(C) are set forth in §661.11 of this part.

(b) A bidder or Offeror who seeks to establish grounds for an exception must seek the exception, in a timely manner, through the grantee.

(c) Except as provided in paragraph (d) of this section, only a grantee may request a waiver. The request must be in writing, include facts and justification to support the waiver, and be submitted to the Administrator through the appropriate Regional Office.

(d) FTA will consider a request for a waiver from a potential bidder, Offeror, or supplier only if the waiver is being sought under §661.7 (f) or (g) of this part.

(e) The Administrator will issue a written determination setting forth the reasons for granting or denying the exception request. Each request for an exception, and FTA's action on the request, are available for public inspection under the provisions of 49 CFR part 601, subpart C.

[56 FR 932, Jan. 9, 1991, as amended at 71 FR 14117, Mar. 21, 2006; 72 FR 53697, Sept. 20, 2007]

§ 661.11 Rolling stock procurements.

(a) The provisions of §661.5 do not apply to the procurement of buses and other rolling stock (including train control, communication, and traction power equipment), if the cost of components produced in the United States is more than 60 percent of the cost of all components and final assembly takes place in the United States.

(b) The domestic content requirements in paragraph (a) of this section also apply to the domestic content requirements for components set forth in paragraphs (i), (j), and (l) of this section.

(c) A component is any article, material, or supply, whether manufactured or unmanufactured, that is directly incorporated into an end product at the final assembly location.

(d) A component may be manufactured at the final assembly location if the manufacturing process to produce the component is an activity separate and distinct from the final assembly of the end product.

(e) A component is considered to be manufactured if there are sufficient activities taking place to advance the value or improve the condition of the subcomponents of that component; that is, if the subcomponents have been substantially transformed or merged into a new and functionally different article.

(f) Except as provided in paragraph (k) of this section, a subcomponent is any article, material, or supply, whether manufactured or unmanufactured, that is one step removed from a component (as defined in paragraph (c) of this section) in the manufacturing process and that is incorporated directly into a component.

(g) For a component to be of domestic origin, more that 60 percent of the subcomponents of that component, by cost, must be of domestic origin, and the manufacture of the component must take place in the United States. If, under the terms of this part, a component is determined to be

of domestic origin, its entire cost may be used in calculating the cost of domestic content of an end product.

(h) A subcomponent is of domestic origin if it is manufactured in the United States.

(i) If a subcomponent manufactured in the United States is exported for inclusion in a component that is manufactured outside the United States and it receives tariff exemptions under the procedures set forth in 19 CFR 10.11 through 10.24, the subcomponent retains its domestic identity and can be included in the calculation of the domestic content of an end product even if such a subcomponent represents less than 60 percent of the cost of a particular component.

(j) If a subcomponent manufactured in the United States is exported for inclusion in a component manufactured outside the United States and it does not receive tariff exemption under the procedures set forth in 19 CFR 10.11 through 10.24, the subcomponent loses its domestic identity and cannot be included in the calculation of the domestic content of an end product.

(k) Raw materials produced in the United States and then exported for incorporation into a component are not considered to be a subcomponent for the purpose of calculating domestic content. The value of such raw materials is to be included in the cost of the foreign component.

(l) If a component is manufactured in the United States, but contains less than 60 percent domestic subcomponents, by cost, the cost of the domestic subcomponents and the cost of manufacturing the component may be included in the calculation of the domestic content of the end product.

(m) For purposes of this section, except as provided in paragraph (o) of this section:

(1) The cost of a component or a subcomponent is the price that a bidder or Offeror must pay to a subcontractor or supplier for that component or subcomponent. Transportation costs to the final assembly location must be included in calculating the cost of foreign components and subcomponents.

(2) If a component or subcomponent is manufactured by the bidder or Offeror, the cost of the component is the cost of labor and materials incorporated into the component or subcomponent, an allowance for profit, and the administrative and overhead costs attributable to that component or subcomponent under normal accounting principles.

(n) The cost of a component of foreign origin is set using the foreign exchange rate at the time the bidder or Offeror executes the appropriate Buy America certificate.

(o) The cost of a subcomponent that retains its domestic identity consistent with paragraph (j) of this section shall be the cost of the subcomponent when last purchased, f.o.b. United States port of exportation or point of border crossing as set out in the invoice and entry papers or, if no purchase was made, the value of the subcomponent at the time of its shipment for exportation, f.o.b. United States port of exportation or point of border crossing as set out in the invoice and entry papers.

(p) In accordance with 49 U.S.C. 5323(j), labor costs involved in final assembly shall not be included in calculating component costs.

(q) The actual cost, not the bid price, of a component is to be considered in calculating domestic content.

(r) Final assembly is the creation of the end product from individual elements brought together for that purpose through application of manufacturing processes. If a system is being procured as the end product by the grantee, the installation of the system qualifies as final assembly.

(s) [Reserved]

(t) Train control equipment includes, but is not limited to, the following equipment:

(1) Mimic board in central control

(2) Dispatcher's console

(3) Local control panels

(4) Station (way side) block control relay cabinets

(5) Terminal dispatcher machines

(6) Cable/cable trays

(7) Switch machines

(8) Way side signals

(9) Impedance bonds

(10) Relay rack bungalows

(11) Central computer control

(12) Brake equipment

(13) Brake systems

(14) Cab Signaling;

(15) ATO Equipment;

(16) ATP Equipment;

(17) Wayside Transponders;

(18) Trip Stop Equipment;

(19) Wayside Magnets;

(20) Speed Measuring Devices;

(21) Car Axle Counters;

(22) Communication Based Train Control (CBTC).

(u) Communication equipment includes, but is not limited to, the following equipment:

(1) Radios

(2) Space station transmitter and receivers

(3) Vehicular and hand-held radios

(4) PABX telephone switching equipment

(5) PABX telephone instruments

(6) Public address amplifiers

(7) Public address speakers

(8) Cable transmission system cable

(9) Cable transmission system multiplex equipment

(10) Communication console at central control

(11) Uninterruptible power supply inverters/rectifiers

(12) Uninterruptible power supply batteries

(13) Data transmission system central processors

(14) Data transmission system remote terminals

(15) Line printers for data transmission system

(16) Communication system monitor test panel

(17) Security console at central control

(18) Antennas;

(19) Wireless Telemetry Equipment;

(20) Passenger Information Displays;

(21) Communications Control Units;

(22) Communication Control Heads;

(23) Wireless Intercar Transceivers;

(24) Multiplexers;

(25) SCADA Systems;

(26) LED Arrays;

(27) Screen Displays such as LEDs and LCDs for communication systems;

(28) Fiber-optic transmission equipment;

(29) Fiber-optic transmission equipment;

(30) Frame or cell based multiplexing equipment; 13) Communication system network elements.

(v) Traction power equipment includes, but is not limited to the following:

(1) Primary AC switch gear

(2) Primary AC transformer rectifiers

(3) DC switch gear

(4) Traction power console and CRT display system at central control

(5) Bus ducts with buses (AC and DC)

(6) Batteries

(7) Traction power rectifier assemblies

(8) Distribution panels (AC and DC)

(9) Facility step-down transformers

(10) Motor control centers (facility use only)

(11) Battery chargers

(12) Supervisory control panel

(13) Annunciator panels

(14) Low voltage facility distribution switch board

(15) DC connect switches

(16) Negative bus boxes

(17) Power rail insulators

(18) Power cables (AC and DC)

(19) Cable trays

(20) Instrumentation for traction power equipment

(21) Connectors, tensioners, and insulators for overhead power wire systems

(22) Negative drainage boards

(23) Inverters

(24) Traction motors

(25) Propulsion gear boxes

(26) Third rail pick-up equipment

(27) Pantographs

(28) Propulsion Control Systems;

(29) Surge Arrestors;

(30) Protective Relaying.

(31) Bimetallic power rail.

(w) The power or third rail is not considered traction power equipment and is thus subject to the requirements of 49 U.S.C. 5323(j) and the requirements of §661.5.

(x) A bidder on a contract for an item covered by 49 U.S.C. 5323(j) who will comply with section 165(b)(3) and regulations in this section is not required to follow the application for waiver procedures set out in §661.9. In lieu of these procedures, the bidder must submit the appropriate certificate required by §661.12.

Appendix A to §661.11—General Waivers

(a) The provisions of §661.11 of this part do not apply when foreign sourced spare parts for buses and other rolling stock (including train control, communication, and traction power equipment) whose total cost is 10 percent or less of the overall project contract cost are being procured as part of the same contract for the major capital item.

(b) [Reserved]

Appendix B to §661.11—Typical Components of Buses

The following is a list of items that typically would be considered components of a bus. This list is not all-inclusive.

Car body shells, engines, transmissions, front axle assemblies, rear axle assemblies, drive shaft assemblies, front suspension assemblies, rear suspension assemblies, air compressor and pneumatic systems, generator/alternator and electrical systems, steering system assemblies, front and rear air brake assemblies, air conditioning compressor assemblies, air conditioning evaporator/condenser assemblies, heating systems. passenger seats, driver's seat assemblies, window assemblies, entrance and exit door assemblies, door control systems, destination sign assemblies, interior lighting assemblies, front and rear end cap assemblies, front and rear bumper assemblies, specialty steel (structural steel tubing, etc.) aluminum extrusions, aluminum, steel or fiberglass exterior panels, and interior trim, flooring, and floor coverings.

Appendix C to §661.11—Typical Components of Rail Rolling Stock

The following is a list of items that typically would be considered components of rail rolling stock. This list is not all inclusive.

Car shells, engines, main transformer, pantographs, traction motors, propulsion gear boxes, interior linings, acceleration and braking resistors, propulsion controls, low voltage auxiliary power supplies, air conditioning equipment, air brake compressors, brake controls, foundation brake equipment, articulation assemblies, train control systems, window assemblies, communication equipment, lighting, seating, doors, door actuators and controls, wheelchair lifts and ramps to make the vehicle accessible to persons with disabilities, couplers and draft gear, trucks, journal bearings, axles, diagnostic equipment, and third rail pick-up equipment.

Appendix D to §661.11—Minimum Requirements for Final Assembly

(a) Rail Cars: In the case of the manufacture of a new rail car, final assembly would typically include, as a minimum, the following operations: installation and interconnection of propulsion control equipment, propulsion cooling equipment, brake equipment, energy sources for auxiliaries and controls, heating and air conditioning, communications equipment, motors, wheels and axles, suspensions and frames; the inspection and verification of all installation and interconnection work; and the in-plant testing of the stationary product to verify all functions.

(b) Buses: In the case of a new bus, final assembly would typically include, at a minimum, the installation and interconnection of the engine, transmission, axles, including the cooling and braking systems; the installation and interconnection of the heating and air conditioning equipment; the installation of pneumatic and electrical systems, door systems, passenger seats, passenger grab rails, destination signs, wheelchair lifts; and road testing, final inspection, repairs and preparation of the vehicles for delivery.

(c) If a manufacturer's final assembly processes do not include all the activities that are typically considered the minimum requirements, it can request a Federal Transit Administration (FTA) determination of compliance. FTA will review these requests on a case-by-case basis to determine compliance with Buy America.

[61 FR 6302, Feb. 16, 1996, as amended at 62 FR 40954, July 31, 1997; 72 FR 53697, Sept. 20, 2007; 72 FR 55103, Sept. 28, 2007; 74 FR 30239, June 25, 2009]

§ 661.12 Certification requirement for procurement of buses, other rolling stock and associated equipment.

If buses or other rolling stock (including train control, communication, and traction power equipment) are being procured, the appropriate certificate as set forth below shall be completed and submitted by each bidder in accordance with the requirement contained in §661.13(b) of this part.

Certificate of Compliance with Buy America Rolling Stock Requirements

The bidder or Offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j), and the applicable regulations of 49 CFR 661.11.

Date_____
Signature_____
Company_____
Name_____
Title_____

Certificate of Non-Compliance with Buy America Rolling Stock Requirements

The bidder or Offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but may qualify for an exception to the requirement consistent with 49 U.S.C. 5323(j)(2)(C), and the applicable regulations in 49 CFR 661.7.

Date_____
Signature_____
Company_____
Name_____
Title_____

[71 FR 14117, Mar. 21, 2006, as amended at 72 FR 53698, Sept. 20, 2007; 74 FR 30239, June 25, 2009]

§ 661.13 Grantee responsibility.

(a) The grantee shall adhere to the Buy America clause set forth in its grant contract with FTA.

(b) The grantee shall include in its bid or request for proposal (RFP) specification for procurement within the scope of this part an appropriate notice of the Buy America provision. Such specifications shall require, as a condition of responsiveness, that the bidder or Offeror submit with the bid or offer a completed Buy America certificate in accordance with §§661.6 or 661.12 of this part, as appropriate.

(1) A bidder or Offeror who has submitted an incomplete Buy America certificate or an incorrect certificate of noncompliance through inadvertent or clerical error (but not including failure to sign the certificate, submission of certificates of both compliance and non-compliance, or failure to submit any certification), may submit to the FTA Chief Counsel within ten (10) days of bid opening of submission or a final offer, a written explanation of the circumstances surrounding the submission of the incomplete or incorrect certification in

accordance with 28 U.S.C. 1746, sworn under penalty of perjury, stating that the submission resulted from inadvertent or clerical error. The bidder or Offeror will also submit evidence of intent, such as information about the origin of the product, invoices, or other working documents. The bidder or Offeror will simultaneously send a copy of this information to the FTA grantee.

(i) The FTA Chief Counsel may request additional information from the bidder or Offeror, if necessary. The grantee may not make a contract award until the FTA Chief Counsel issues his/her determination, except as provided in §661.15(m).

(ii) [Reserved]

(2) For negotiated procurements, compliance with the Buy America requirements shall be determined on the basis of the certification submitted with the final offer or final revised proposal. However, where a grantee awards on the basis of initial proposals without discussion, the certification submitted with the initial proposal shall control.

(3) Certification based on ignorance of the proper application of the Buy America requirements is not an inadvertent or clerical error.

(c) Whether or not a bidder or Offeror certifies that it will comply with the applicable requirement, such bidder or Offeror is bound by its original certification (in the case of a sealed bidding procurement) or its certification submitted with its final offer (in the case of a negotiated procurement) and is not permitted to change its certification after bid opening or submission of a final offer. Where a bidder or Offeror certifies that it will comply with the applicable Buy America requirements, the bidder, Offeror, or grantee is not eligible for a waiver of those requirements.

[56 FR 932, Jan. 9, 1991, as amended at 68 FR 9799, Feb. 28, 2003; 71 FR 14117, Mar. 21, 2006]

§ 661.15 Investigation procedures.

(a) It is presumed that a bidder or Offeror who has submitted the required Buy America certificate is complying with the Buy America provision. A false certification is a criminal act in violation of 18 U.S.C. 1001.

(b) Any party may petition FTA to investigate the compliance of a successful bidder or Offeror with the bidder's or Offeror's certification. That party ("the petitioner") must include in the petition a statement of the grounds of the petition and any supporting documentation. If FTA determines that the information presented in the petition indicates that the presumption in paragraph (a) of this section has been overcome, FTA will initiate an investigation.

(c) In appropriate circumstances, FTA may determine on its own to initiate an investigation without receiving a petition from a third party.

(d) When FTA determines under paragraph (b) or (c) of this section to conduct an investigation, it requests that the grantee require the successful bidder or Offeror to document its compliance with its Buy America certificate. The successful bidder or Offeror has the burden of proof to establish that it is in compliance. Documentation of compliance is based on the specific

circumstances of each investigation, and FTA will specify the documentation required in each case.

(e) The grantee shall reply to the request under paragraph (d) of this section within 15 working days of the request. The investigated party may correspond directly with FTA during the course of investigation, if it informs the grantee that it intends to do so, and if the grantee agrees to such action in writing. The grantee must inform FTA, in writing that the investigated party will respond directly to FTA. An investigated party may provide confidential or proprietary information (see paragraph (l) of this section) directly to FTA while providing other information required to be submitted as part of the investigation through the grantee.

(f) Any additional information requested or required by FTA must be submitted within 5 working days after the receipt of such request unless specifically exempted by FTA.

(g) The grantee's reply (or that of the bidder or Offeror) will be transmitted to the petitioner. The petitioner may submit comments on the reply to FTA within 10 working days after receipt of the reply. The grantee and the low bidder or Offeror will be furnished with a copy of the petitioner's comments, and their comments must be received by FTA within 5 working days after receipt of the petitioner's comments.

(h) The failure of a party to comply with the time limits stated in this section may result in resolution of the investigation without consideration of untimely filed comments.

(i) During the course of an investigation, with appropriate notification to affected parties, FTA may conduct site visits of manufacturing facilities and final assembly locations as it considers appropriate.

(j) FTA will, upon request, make available to any interested party information bearing on the substance of the investigation which has been submitted by the petitioner, interested parties or grantees, except to the extent that withholding of information is permitted or required by law or regulation.

(k) If a party submitting information considers that the information submitted contains proprietary material which should be withheld, a statement advising FTA of this fact may be included, and the alleged proprietary information must be identified wherever it appears. Any comments on the information provided shall be submitted within a maximum of ten days.

(l) For purposes of paragraph (j) of this section, confidential or proprietary material is any material or data whose disclosure could reasonably be expected to cause substantial competitive harm to the party claiming that the material is confidential or proprietary.

(m) When a petition for investigation has been filed before award, the grantee will not make an award before the resolution of the investigation, unless the grantee determines that:

(1) The items to be procured are urgently required;

(2) Delivery of performance will be unduly delayed by failure to make the award promptly; or

(3) Failure to make prompt award will otherwise cause undue harm to the grantee or the Federal Government.

(n) In the event that the grantee determines that the award is to be made during the pendency of an investigation, the grantee will notify FTA before to making such award. FTA reserves the right not to participate in the funding of any contract awarded during the pendency of an investigation.

(o) Initial decisions by FTA will be in written form. Reconsideration of an initial decision of FTA may be requested by any party involved in an investigation. FTA will only reconsider a decision only if the party requesting reconsideration submits new matters of fact or points of law that were not known or available to the party during the investigation. A request for reconsideration of a decision of FTA shall be filed not later than ten (10) working days after the initial written decision. A request for reconsideration will be subject to the procedures in this section consistent with the need for prompt resolution of the matter.

[56 FR 932, Jan. 9, 1991, as amended at 71 FR 14118, Mar. 21, 2006]

§ 661.17 Failure to comply with certification.

If a successful bidder or Offeror fails to demonstrate that it is in compliance with its certification, it will be required to take the necessary steps in order to achieve compliance. If a bidder or Offeror takes these necessary steps, it will not be allowed to change its original bid price or the price of its final offer. If a bidder or Offeror does not take the necessary steps, it will not be awarded the contract if the contract has not yet been awarded, and it is in breach of contract if a contract has been awarded.

[71 FR 14118, Mar. 21, 2006]

§ 661.18 Intentional violations.

A person shall be ineligible to receive any contract or subcontract made with funds authorized under the Federal Public Transportation Act of 2005 pursuant to part 29 of this title if it has been determined by a court or Federal agency that the person intentionally—

(a) Affixed a label bearing a “Made in America” inscription, or an inscription with the same meaning, to a product not made in the United States, but sold in or shipped to the United States and used in projects to which this section applies, or

(b) Otherwise represented that any such product was produced in the United States.

[61 FR 6303, Feb. 16, 1996, as amended at 72 FR 53698, Sept. 20, 2007]

§ 661.19 Sanctions.

A willful refusal to comply with a certification by a successful bidder or Offeror may lead to the initiation of debarment or suspension proceedings under part 29 of this title.

[71 FR 14118, Mar. 21, 2006]

§ 661.20 Rights of parties.

(a) A party adversely affected by an FTA action under this subsection shall have the right to seek review under the Administrative Procedure Act (APA), 5 U.S.C. 702 *et seq.*

(b) Except as provided in paragraph (a) of this section, the sole right of any third party under the Buy America provision is to petition FTA under the provisions of §661.15 of this part. No third party has any additional right, at law or equity, for any remedy including, but not limited to, injunctions, damages, or cancellation of the Federal grant or contracts of the grantee.

[71 FR 14118, Mar. 21, 2006]

§ 661.21 State Buy America provisions.

(a) Except as provided in paragraph (b) of this section, any State may impose more stringent Buy America or buy national requirements than contained in section 165 of the Act and the regulations in this part.

(b) FTA will not participate in contracts governed by the following:

(1) State Buy America or Buy National preference provisions which are not as strict as the Federal requirements.

(2) State and local Buy National or Buy America preference provisions which are not explicitly set out under State law. For example, administrative interpretations of non-specific State legislation will not control.

(3) State and local Buy Local preference provisions.

PART 663—PRE-AWARD AND POST-DELIVERY AUDITS OF ROLLING STOCK PURCHASES

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Subpart D—Certification of Compliance With or Inapplicability of Federal Motor Vehicle Safety Standards
§ 663.41 Certification of compliance with Federal motor vehicle safety standards.
§ 663.43 Certification that Federal motor vehicle standards do not apply.

Authority: 49 U.S.C. 1608(j); 23 U.S.C. 103(e)(f); Pub. L. 96–184, 93 Stat. 1320; Pub. L. 101–551, 104 Stat. 2733; sec. 3023(m), Pub. L. 109–59; 49 CFR 1.51.
Source: 56 FR 48395, Sept. 24, 1991, unless otherwise noted.

Subpart A—General

§ 663.1 Purpose.

This part implements section 12(j) of the Federal Mass Transit Act of 1964, as amended, which was added by section 319 of the 1987 Surface Transportation and Uniform Relocation Assistance Act (Pub. L. 100–17). Section 12(j) requires the Federal Transit Administration, by delegation from the Secretary of Transportation, to issue regulations requiring pre-award and post-delivery audits when a recipient of Federal financial assistance purchases rolling stock with funds made available under the Federal Mass Transit Act, as amended.

§ 663.3 Scope.

This part applies to a recipient purchasing rolling stock to carry passengers in revenue service with funds made available under sections 3, 9, 18, and 16(b)(2) of the Federal Mass Transit Act, as amended; 23 U.S.C. 103(e)(4); and section 14 of the National Capital Transportation Act of 1969, as amended.

§ 663.5 Definitions.

As used in this part—

(a) *Pre-award* means that period in the procurement process before the recipient enters into a formal contract with the supplier.

(b) *Post-delivery* means the time period in the procurement process from when the rolling stock is delivered to the recipient until title to the rolling stock is transferred to the recipient or the rolling stock is put into revenue service, whichever is first.

(c) *Recipient* means a recipient of Federal financial assistance from FTA.

(d) *Revenue service* means operation of rolling stock for transportation of fare-paying passengers as anticipated by the recipient.

(e) *Rolling stock* means buses, vans, cars, railcars, locomotives, trolley cars and buses, ferry boats, and vehicles used for guide ways and incline planes.

(f) *Audit* means a review resulting in a report containing the necessary certifications of compliance with Buy America standards, purchaser's requirements specifications, and, where appropriate, a manufacturer's certification of compliance with or inapplicability of the Federal Motor Vehicle Safety Standards, required by section 319 of STURAA and this part.

(g) *FTA* means the Federal Transit Administration.

§ 663.7 Certification of compliance to FTA.

A recipient purchasing revenue service rolling stock with funds obligated by FTA on or after October 24, 1991, must certify to FTA that it will conduct or cause to be conducted pre-award and post-delivery audits as prescribed in this part. In addition, such a recipient must maintain on file the certifications required under subparts B, C, and D of this part.

§ 663.9 Audit limitations.

(a) An audit under this part is limited to verifying compliance with

(1) Applicable Buy America requirements [section 165 of the Surface Transportation Assistance Act of 1982, as amended,]; and

(2) Solicitation specification requirements of the recipient.

(b) An audit under this part includes, where appropriate, a copy of a manufacturer's self certification information that the vehicle complies with Federal Motor Vehicle Safety Standards or a certification that such standards are inapplicable.

(c) An audit conducted under this part is separate from the single annual audit requirement established by Office of Management and Budget Circular A–128, “Audits of State and Local Governments,” dated May 16, 1985.

§ 663.11 Audit financing.

A recipient purchasing revenue rolling stock with FTA funds may charge the cost of activities required by this part to the grant which FTA made for such purchase.

§ 663.13 Buy America requirements.

A Buy America certification under this part shall be issued in addition to any certification which may be required by part 661 of this title. Nothing in this part precludes FTA from conducting a Buy America investigation under part 661 of this title.

§ 663.15 Compliance.

A recipient subject to this part shall comply with all applicable requirements of this part. Such compliance is a condition of receiving Federal financial assistance from FTA. A recipient determined not to be in compliance with this part will be subject to the immediate suspension, withholding, or repayment of Federal financial assistance from FTA or other appropriate actions unless and until it comes into compliance with this part.

Subpart B—Pre-Award Audits

§ 663.21 Pre-award audit requirements.

A recipient purchasing revenue service rolling stock with FTA funds must ensure that a pre-award audit under this part is complete before the recipient enters into a formal contract for the purchase of such rolling stock.

§ 663.23 Description of pre-award audit.

A pre-award audit under this part includes—

(a) A Buy America certification as described in §663.25 of this part;

(b) A purchaser's requirements certification as described in §663.27 of this part; and

(c) Where appropriate, a manufacturer's Federal Motor Vehicle Safety certification information as described in §663.41 or §663.43 of this part.

§ 663.25 Pre-award Buy America certification.

For purposes of this part, a pre-award Buy America certification is a certification that the recipient keeps on file that—

(a) There is a letter from FTA which grants a waiver to the rolling stock to be purchased from the Buy America requirements under section 165(b)(1), (b)(2), or (b)(4) of the Surface Transportation Assistance Act of 1982, as amended; or

(b) The recipient is satisfied that the rolling stock to be purchased meets the requirements of section 165(a) or (b)(3) of the Surface Transportation Assistance Act of 1982, as amended, after having reviewed itself or through an audit prepared by someone other than the manufacturer or its agent documentation provided by the manufacturer which lists—

(1) Component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and

(2) The location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

§ 663.27 Pre-award purchaser's requirements certification.

For purposes of this part, a pre-award purchaser's requirements certification is a certification a recipient keeps on file that—

(a) The rolling stock the recipient is contracting for is the same product described in the purchaser's solicitation specification; and

(b) The proposed manufacturer is a responsible manufacturer with the capability to produce a vehicle that meets the recipient's specification set forth in the recipient's solicitation.

Subpart C—Post-Delivery Audits

§ 663.31 Post-delivery audit requirements.

A recipient purchasing revenue service rolling stock with FTA funds must ensure that a post-delivery audit under this part is complete before title to the rolling stock is transferred to the recipient.

§ 663.33 Description of post-delivery audit.

A post-delivery audit under this part includes—

(a) A post-delivery Buy America certification as described in §663.35 of this part;

(b) A post-delivery purchaser's requirements certification as described in §663.37 of this part; and

(c) When appropriate, a manufacturer's Federal Motor Vehicle Safety Standard self-certification information as described in §663.41 or §663.43 of this part.

§ 663.35 Post-delivery Buy America certification.

For purposes of this part, a post-delivery Buy America certification is a certification that the recipient keeps on file that—

(a) There is a letter from FTA which grants a waiver to the rolling stock received from the Buy America requirements under sections 165 (b)(1), or (b)(4) of the Surface Transportation Assistance Act of 1982, as amended; or

(b) The recipient is satisfied that the rolling stock received meets the requirements of section 165 (a) or (b)(3) of the Surface Transportation Assistance Act of 1982, as amended, after having reviewed itself or by means of an audit prepared by someone other than the manufacturer or its agent documentation provided by the manufacturer which lists—

(1) Components and subcomponent parts of the rolling stock identified by manufacturer of the parts, their country of origin and costs; and

(2) The actual location of the final assembly point for the rolling stock including a description of the activities which took place at the final assembly point and the cost of the final assembly.

§ 663.37 Post-delivery purchaser's requirements certification.

For purposes of this part, a post-delivery purchaser's requirements certification is a certification that the recipient keeps on file that—

(a) Except for procurements covered under paragraph (c) in this section, a resident inspector (other than an agent or employee of the manufacturer) was at the manufacturing site throughout the period of manufacture of the rolling stock to be purchased and monitored and completed a report on the manufacture of such rolling stock. Such a report, at a minimum, shall—

(1) Provide accurate records of all vehicle construction activities; and

(2) Address how the construction and operation of the vehicles fulfills the contract specifications.

(b) After reviewing the report required under paragraph (a) of this section, and visually inspecting and road testing the delivered vehicles, the vehicles meet the contract specifications.

(c) For procurements of:

(1) Ten or fewer buses; or

(2) Procurements of twenty vehicles or fewer serving rural (other than urbanized) areas, or urbanized areas of 200,000 people or fewer; or

(3) Any number of primary manufacturer standard production and unmodified vans, after visually inspecting and road testing the vehicles, the vehicles meet the contract specifications.

[56 FR 48395, Sept. 24, 1991, as amended at 71 FR 14118, Mar. 21, 2006]

§ 663.39 Post-delivery audit review.

(a) If a recipient cannot complete a post-delivery audit because the recipient or its agent cannot certify Buy America compliance or that the rolling stock meets the purchaser's requirements specified in the contract, the rolling stock may be rejected and final acceptance by the recipient will not be required. The recipient may exercise any legal rights it has under the contract or at law.

(b) This provision does not preclude the recipient and manufacturer from agreeing to a conditional acceptance of rolling stock pending manufacturer's correction of deviations within a reasonable period of time.

Subpart D—Certification of Compliance with or Inapplicability of Federal Motor Vehicle Safety Standards

§ 663.41 Certification of compliance with Federal motor vehicle safety standards.

If a vehicle purchased under this part is subject to the Federal Motor Vehicle Safety Standards issued by the National Highway Traffic Safety Administration in part 571 of this title, a recipient shall keep on file its certification that it received, both at the pre-award and post-delivery stage, a copy of the manufacturer's self-certification information that the vehicle complies with relevant Federal Motor Vehicle Safety Standards.

§ 663.43 Certification that Federal motor vehicle standards do not apply.

(a) Except for rolling stock subject to paragraph (b) of this section, if a vehicle purchased under this part is not subject to the Federal Motor Vehicle Safety Standards issued by the National Highway Traffic Safety Administration in part 571 of this title, the recipient shall keep on file its certification that it received a statement to that effect from the manufacturer.

(b) This subpart shall not apply to rolling stock that is not a motor vehicle.

APPENDIX E
PERMITS AND WAIVERS

CONTRACT NO. T-1038-0140

WALDORF PARK AND RIDE
FACILITY DESIGN

RESERVED FOR

THE FOLLOWING PERMITS:

STORMWATER MANAGEMENT/EROSION AND SEDIMENT CONTROL

MARYLAND STATE HIGHWAY ADMINISTRATION ACCESS PERMIT

CHARLES COUNTY UTILITY AGREEMENT /
PUBLIC WORKS AGREEMENT

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Joseph P. Gill, Deputy Secretary

RECEIVED
APR 1 0 2012
WHITMAN, REQUARDT & ASSOCIATES, LLP

April 10, 2012

Michael McQuade — Environmental Scientist
Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, MD 21231
Tel: 443.224.1708 (Direct)
410-235-3450 (Office)
Fax) 410.243.5716

Dear Mr. McQuade,

Waldorf Park and Ride Final FCP Approval Sticker — FCP# S05-04

Per our telephone conversation yesterday (Monday 9th), please find enclosed the 'approval stamp' cited in my approval letter. It was inadvertently omitted.

Please attach a copy of the enclosed approval stamp to the original Mylar for this project and send one copy of the approved plan to my office. A copy of the stamped plan should be available at the construction site prior to or at our first inspection. This inspection shall occur before any construction activity begins, to determine whether forest protection measures have been installed and conservation areas are clearly marked on site (COMAR 08.19.04.14)

Please refer to FCP # S05-04 in all future correspondence pertaining to this project. If you have any questions or concerns, please do not hesitate to contact me.

The Department of Natural Resources considers all documents submitted as part of a forest conservation plan public information under the Maryland Public Information Act. An applicant seeking to exempt documents submitted to the Department from public inspection must submit written request to the Department detailing how the document or documents qualify for an exemption under thee Annotated Code of Maryland, State Government Article Section 10-618.

Sincerely,

Horace Henry
Southern Region Urban & Community Forestry Coordinator

Register all newly planted trees today!
www.trees.maryland.gov

8023 Long Hill Road, Pasadena, MD 21122
Tel: 410-360-9774 • www.dnr.maryland.gov • TTY users call via Maryland Relay • Fax: 410-360-9875
hhenry@dnr.state.md.us

APPENDIX F
CONTRACT DATA REQUIREMENT LIST (CDRL)

CONTRACT NO. T-1038-0140

WALDORF PARK AND RIDE
FACILITY DESIGN

Waldorf Park and Ride Facility Design T-1038-0140

CONTRACT DATA REQUIREMENT LIST

This CDRL is a summary listing for Contractor's information. All submittal requirement provisions of the Contract Documents supersede this listing, and the Contractor shall verify that all items and required submittals have been included in the CDRL before commencing work or procuring items. Any discrepancy or ommissions should be brought to the immediate attention of the Engineer.

ITEM NO.	ITEM DESCRIPTIONS	Specification Reference	Product Literature/ Specification (A)	Shop Drawings (B)	Certifications (C)	Other Documentation (D)	Factory Test Procedures (E)	Factory Test Reports (F)	Samples (G)	Installation Drawings (H)	Field Test Procedures (I)	Field Test Reports (J)	Installation, Maintenance & Operations Manuals (K)	As-Built Drawings (L)
	CONSTRUCTION PROCEDURES													
01130-01	CQC Plans	01130	N/A	N/A	N/A	01130-01-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01130-02	Construction Layout Drawings and Survey	01130	N/A	N/A	N/A	01130-02-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SUBMITTALS													
01300-01	Scheduling Representative Qualifications	01300	N/A	N/A	N/A	01300-01-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01300-02	Project CPM Detailed Schedule #1	01300	N/A	N/A	N/A	01300-02-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01300-03	Project CPM Detailed Schedule #2	01300	N/A	N/A	N/A	01300-03-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01300-04	Major Products List	01300	01300-04-A	N/A	N/A	01300-04-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01300-05	Progress Photographs	01300	N/A	N/A	N/A	01300-05-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	QUALITY CONTROL													
01450-01	Interim CQC Plan	01450	N/A	N/A	N/A	01450-01-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01450-02	Detailed CQC Plan	01450	N/A	N/A	N/A	01450-02-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01450-03	CQC Plan Staff Qualifications	01450	N/A	N/A	N/A	01450-03-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01450-04	Equipment Calibration Certifications	01450	N/A	N/A	01450-04-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01450-05	QC Testing Personnel Qualifications and Scope of Services	01450	N/A	N/A	N/A	01450-05-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01450-06	Monthly Record of All Control Testing	01450	N/A	N/A	N/A	01450-06-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01450-07	Periodic Internal Audit Reports	01450	N/A	N/A	N/A	01450-07-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01450-08	Test Procedures for All Tests Listed in the CQC Plan	01450	N/A	N/A	N/A	01450-08-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01450-09	Test Schedules Keyed to Work Activities	01450	N/A	N/A	N/A	01450-09-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TEMPORARY FACILITIES & CONTROLS													
01500-01	Employee Noise Protection Equipment	01500	N/A	N/A	01500-01-C	N/A	N/A	N/A	01500-01-G	N/A	N/A	N/A	N/A	N/A
	MAINTENANCE OF TRAFFIC													
01550-01	Traffic Control Plan	01550	N/A	N/A	N/A	01550-01-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01550-02	Temporary Traffic Signs Plan	01550	N/A	N/A	N/A	01550-02-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01550-03	Temporary Lighting System Plan	01550	N/A	N/A	N/A	01550-03-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	ENVIRONMENTAL PROTECTION													
01570-01	Equipment Compliance Certification	01570	N/A	N/A	01570-01-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01570-02	Disposal Procedures For Chemical Waste	01570	N/A	N/A	01570-02-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01570-03	Tree Protection Plan	01570	N/A	N/A	N/A	01570-03-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
01570-04	Disposal Site(s) for Waste Materials	01570	N/A	N/A	N/A	01570-04-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Waldorf Park and Ride Facility Design T-1038-0140

CONTRACT DATA REQUIREMENT LIST

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	CONTRACT CLOSEOUT													
01780-01	Record Documents	01780	01780-01-A	01780-01-B	01780-01-C	N/A	N/A	N/A	N/A	N/A	01780-01-I	01780-01-J	01780-01-K	01780-01-L
	SITE DEMOLITION													
02220-01	Demolition Procedures & Schedule	02220	N/A	N/A	N/A	02220-01-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02220-02	Disconnect Electric Services	02220	N/A	N/A	02220-02-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02220-03	Disposal Site Permit	02220	N/A	N/A	02220-03-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02220-04	Remove Gravel	02220	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02220-04-L
02220-05	Remove Concrete Sidewalk	02220	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02220-05-L
02220-06	Remove Concrete Curb & Gutter	02220	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02220-06-L
	SITE CLEARING													
02230-01	Disposal Site Permits	02230	N/A	N/A	02230-01-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	EXACAVTION													
02315-01	Sheeting, Shoring and Form Details	02315	02315-01-A	02315-01-B	02315-01-C	02315-01-D	N/A	N/A	N/A	02315-01-H	N/A	N/A	N/A	N/A
02315-02	Fill Material Samples	02315	N/A	N/A	02315-02-C	N/A	N/A	N/A	02315-02-G	N/A	N/A	N/A	N/A	N/A
02315-03	Disposal Site Permits	02315	N/A	N/A	02315-03-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02315-04	Graded Aggregate Subbase	02315	N/A	N/A	02315-04-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02315-05	Subfoundation Concrete	02315	N/A	N/A	02315-05-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02315-06	Truck Weigh Tickets	02315	N/A	N/A	02315-06-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02315-07	Borrow Pit Plan	02315	N/A	N/A	02315-07-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	EMBANKMENT AND SUBGRADE													
02330-01	Test Rolling	02330	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02330-01-I	N/A	N/A	N/A
	EROSION AND SEDIMENT CONTROL													
02370-01	Geotextile Fabric	02370	02370-01-A	N/A	02370-01-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-02	Corrugated PVC Pipe	02370	02370-02-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-03	Corrugated Steel Pipe	02370	02370-03-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-04	Structural Steel Plate	02370	02370-04-A	N/A	02370-04-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-05	Chain Link Fence for Super Silt Fence	02370	02370-05-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-06	Filter Log, 18 Inch	02370	02370-06-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-07	Water Diversion Block	02370	02370-07-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-08	No. 57 Aggregate	02370	N/A	N/A	N/A	02370-08-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-09	4" to 7" Stone	02370	N/A	N/A	N/A	02370-09-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02370-10	Rip Rap	02370	N/A	N/A	N/A	02370-10-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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	SOIL STABILIZATION MATTING													
02372-01	Soil Stabilization Matting	02372	02372-01-A	02372-01-B	02372-01-C	N/A	N/A	N/A	02372-01-G	02372-01-H	N/A	N/A	N/A	N/A
	BOLLARDS													
02460-01	Hot-dipped Galvanized Steel Bollards	02460	02460-01-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	UNDERGROUND DUCTS AND UTILITY STRUCTURES													
02584-01	Handholes and Hardware	02584	02584-01-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02584-01-L
02584-02	Conduit and Ducts	02584	02584-02-A	02584-02-B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02584-02-L
02584-03	Duct Bank	02584	02584-03-A	N/A	N/A	02584-03-D	N/A	N/A	N/A	02584-03-H	N/A	N/A	N/A	02584-03-L
02584-04	Warning Tape	02584	02584-04-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	STORM DRAINAGE													
02630-01	Concrete Mixes	02630	02630-01-A	N/A	N/A	N/A	N/A	02630-01-F	N/A	N/A	N/A	N/A	N/A	N/A
02630-02	Grout	02630	02630-02-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-03	Precast Concrete Structure	02630	02630-03-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02630-03-L
02630-04	Reinforced Concrete Pipe and Fittings	02630	02630-04-A	N/A	02630-04-C	N/A	N/A	02630-04-F	N/A	N/A	N/A	N/A	N/A	02630-04-L
02630-05	Roofing Paper	02630	02630-05-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-06	Asphalt Sealer	02630	02630-06-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-07	CPP, Type S, Pipe and Fittings	02630	02630-07-A	N/A	02630-07-C	N/A	N/A	02630-07-F	N/A	N/A	N/A	N/A	N/A	02630-07-L
02630-08	Corrugated Metal Pipe	02630	02630-08-A	N/A	02630-08-C	N/A	N/A	02630-08-F	N/A	N/A	N/A	N/A	N/A	02630-08-L
02630-09	Ductile Iron Pipe	02630	02630-09-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-10	Bricks	02630	02630-10-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-11	Mortar Mix	02630	02630-11-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-12	Frames and Covers	02630	N/A	02630-12-B	02630-12-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-13	Gratings	02630	N/A	02630-13-B	02630-13-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-14	Cement	02630	N/A	N/A	02630-14-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-15	No. 57 Aggregate	02630	N/A	N/A	02630-15-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-16	No. 2 Aggregate	02630	N/A	N/A	02630-16-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02630-17	Geotextile, Class SE	02630	N/A	N/A	02630-17-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	STOMRWATER MICRO-BIORETENTION FACILITIES													
02660-01	Bioretention Soil Mix	02660	N/A	02660-01-B	N/A	N/A	N/A	02660-01-F	N/A	N/A	N/A	N/A	N/A	N/A
	PERVIOUS CONCRETE PAVEMENT													

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02680-01	Pervious Concrete Pavement Contactor Qualifications	02680	02680-01-A	N/A	N/A	02680-01-D	N/A	02680-01-F	N/A	N/A	N/A	N/A	N/A	N/A
02680-02	Pervious Concrete Mix	02680	02680-02-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02680-03	Test Panels	02680	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02680-03-I	02680-03-J	N/A	N/A
	AGGREGATE BASE COURSE													
02720-01	Materials	02720	N/A	N/A	N/A	02720-01-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02720-02	Production Plants	02720	N/A	N/A	N/A	02720-02-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02720-03	Production and On-Site Equipment	02720	N/A	N/A	N/A	02720-03-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02720-04	Compaction	02720	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02720-04-I	02720-04-J	N/A	N/A
	HOT MIX ASPHALT PAVEMENT													
02745-01	Mix Design	02745	02745-01-A	N/A	02745-01-C	N/A	N/A	02745-01-F	N/A	N/A	N/A	N/A	N/A	N/A
02745-02	Paving Plan	02745	N/A	N/A	N/A	02745-02-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02745-03	Production Plant	02745	N/A	N/A	N/A	02745-03-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02745-04	Production and Paving Equipment	02745	N/A	N/A	N/A	02745-04-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02745-05	Materials	02745	N/A	N/A	N/A	02745-05-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02745-06	Field Quality Control	02745	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02745-06-I	02745-06-J	N/A	N/A
	REINFORCED CONCRETE PAVEMENT													
02750-01	Joint Layout	02750	N/A	02750-01-B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02750-02	Concrete Mix	02750	02750-02-A	N/A	N/A	N/A	N/A	02750-02-F	N/A	N/A	N/A	N/A	N/A	N/A
02750-03	Materials	02750	N/A	N/A	02750-03-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	PAVEMENT MARKINGS													
02765-01	Quality Control Plan	02765	N/A	N/A	N/A	02765-01-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02765-02	Technicians	02765	N/A	N/A	02765-02-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02765-03	Inspection	02765	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	02765-03-J	N/A	N/A
	CURB AND CURB AND GUTTER													
02770-01	Curing Materials	02770	02770-01-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02770-02	Form Release Compound	02770	02770-02-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02770-03	Concrete Mix	02770	02770-03-A	N/A	02770-03-C	N/A	N/A	02770-03-F	N/A	N/A	N/A	N/A	N/A	N/A
02770-04	Admixtures	02770	N/A	N/A	02770-04-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02770-05	Joint Filler	02770	02770-05-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02770-06	Preformed Joint Filler	02770	02770-06-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	CONCRETE SIDEWALK													

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02775-01	Joint Layout	02775	N/A	02775-01-B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02775-02	Concrete Mixes	02775	02775-02-A	N/A	N/A	N/A	N/A	02775-02-F	N/A	N/A	N/A	N/A	N/A	N/A
02775-03	Materials	02775	N/A	N/A	02775-03-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02775-04	Detectable Warning Surface Pavers	02775	02775-04-A	N/A	N/A	02775-04-D	N/A	N/A	02775-04-G	N/A	N/A	N/A	N/A	N/A
	WOOD FENCING													
02830-01	Materials	02830	02830-01-A	N/A	02830-01-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	BIKE RACK													
02871-01	Bike Rack Details	02871	N/A	02871-01-B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02871-02	Materials	02871	02871-02-A	N/A	N/A	N/A	N/A	N/A	02871-02-G	N/A	N/A	N/A	N/A	N/A
	SIGNS													
02890-01	Retroreflective Sheeting	02890	02890-01-A	N/A	02890-01-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02890-02	Tubular Steel Sign Post & Anchor Base	02890	N/A	N/A	02890-02-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	BUS SHELTER													
02891-01	Catalog Cuts	02891	02891-01-A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02891-02	Specifications	02891	02891-01-B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TRAFFIC SIGNALS													
02895-01	Traffic Signal	02895	Refer to the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials											
	TURF ESTABLISHMENT													
02920-01	Topsoil	02920	N/A	N/A	02920-01-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02920-02	Grass Seed	02920	N/A	N/A	02920-02-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02920-03	Bioretention Seed Mix	02920	02920-03-A	N/A	N/A	N/A	N/A	N/A	02920-03-G	N/A	N/A	N/A	N/A	N/A
02920-04	Straw Mulch	02920	02920-04-A	N/A	N/A	N/A	N/A	N/A	02920-04-G	N/A	N/A	N/A	N/A	N/A
02920-05	Wood Cellulose Fiber	02920	02920-05-A	N/A	N/A	N/A	N/A	N/A	02920-05-G	N/A	N/A	N/A	N/A	N/A
02920-06	Sod	02920	N/A	N/A	02920-06-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02920-07	Fertilizer	02920	02920-07-A	N/A	N/A	N/A	N/A	N/A	02920-07-G	N/A	N/A	N/A	N/A	N/A
02920-08	Lime	02920	02920-08-A	N/A	N/A	N/A	N/A	N/A	02920-08-G	N/A	N/A	N/A	N/A	N/A
02920-09	Water	02920	02920-09-A	N/A	N/A	N/A	N/A	N/A	02920-09-G	N/A	N/A	N/A	N/A	N/A
02920-10	Schedule of Turf Establishment Procedures	02920	N/A	N/A	N/A	02920-10-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02920-11	Schedule of Seed Mix Establishment Procedures	02920	N/A	N/A	N/A	02920-11-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TREES, SHRUBS AND GROUND COVER													

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02930-01	Plant Sources	02930	N/A	N/A	N/A	02930-01-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02930-02	Plant Materials	02930	02930-02-A	N/A	N/A	N/A	N/A	N/A	02930-02-G	N/A	N/A	N/A	N/A	N/A
02930-03	Organic Compost	02930	02930-03-A	N/A	N/A	N/A	N/A	N/A	02930-03-G	N/A	N/A	N/A	N/A	N/A
02930-04	Ureaform Fertilizer	02930	02930-04-A	N/A	N/A	N/A	N/A	N/A	02930-04-G	N/A	N/A	N/A	N/A	N/A
02930-05	Supplemental Fertilizer	02930	02930-05-A	N/A	N/A	N/A	N/A	N/A	02930-05-G	N/A	N/A	N/A	N/A	N/A
02930-06	Muching Material	02930	02930-06-A	N/A	N/A	N/A	N/A	N/A	02930-06-G	N/A	N/A	N/A	N/A	N/A
02930-07	Planiting Accessories	02930	02930-07-A	N/A	N/A	N/A	N/A	N/A	02930-07-G	N/A	N/A	N/A	N/A	N/A
02930-08	Furnished Topsoil	02930	02930-08-A	N/A	02930-08-C	N/A	N/A	N/A	02930-08-G	N/A	N/A	N/A	N/A	N/A
	FORMWORK													
03150-01	Form Ties	03150	03150-01-A	N/A	N/A	N/A	N/A	N/A	03150-01-G	N/A	N/A	N/A	N/A	N/A
03150-02	Form Oils, Release Agents, Parting Compounds	03150	03150-02-A	N/A	N/A	N/A	N/A	N/A	03150-02-G	N/A	N/A	N/A	N/A	N/A
03150-03	Plywood and Fiberglass Forms	03150	03150-03-A	03150-03-B	N/A	N/A	N/A	N/A	03150-03-G	N/A	N/A	N/A	N/A	N/A
	REINFORCING STEEL													
03210-01	Materials	03210	N/A	N/A	N/A	N/A	N/A	03210-01-F	N/A	N/A	N/A	N/A	N/A	N/A
03210-02	Fabrication	03210	N/A	03210-02-B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03210-02-L
	CAST-IN-PLACE CONCRETE													
03300-01	Design Mix	03300	03300-01-A	N/A	03300-01-C	03300-01-D	03300-01-E	03300-01-F	N/A	N/A	N/A	N/A	N/A	N/A
03300-02	Admixtures	03300	N/A	N/A	03300-02-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03300-03	Hot & Cold Weather Concreting	03300	N/A	N/A	N/A	03300-03-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03300-04	Vibrator Operator Qualifications	03300	N/A	N/A	03300-04-C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03300-05	Delivery Tickets	03300	N/A	N/A	N/A	03300-05-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03300-06	Test Reports	03300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	03300-06-J	N/A	N/A
	PRECAST CONCRETE													
03400-01	Shop Drawings	03400	N/A	03400-01-B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03400-02	Data	03400	N/A	N/A	N/A	N/A	03400-02-E	03400-02-F	N/A	N/A	N/A	N/A	N/A	N/A
03400-03	Installation Schedule	03400	N/A	N/A	N/A	03400-03-D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03400-04	Fabrication of Test Units	03400	N/A	N/A	N/A	N/A	03400-04-E	03400-04-F	03400-04-G	N/A	N/A	N/A	N/A	N/A
	MODULAR CONCRETE FENCING													
03510-01	Modular Concrete Fencing System	03510	03510-01-A	N/A	N/A	N/A	N/A	N/A	03510-01-G	N/A	N/A	N/A	N/A	N/A

APPENDIX G
SOIL BORINGS

CONTRACT NO. T-1038-0140

WALDORF PARK AND RIDE
FACILITY DESIGN

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SB-32**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-16-11	6-16-11		205.9
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	8.2		8.4'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	204.9			S-1	24"	4-6-4-4	SS	20"	0" Topsoil
	203.9		Damp, medium dense, Light Brown SILTY Fine Sand (SM)	S-2	24"	6-3-2-3	SS	24"	
			Damp to wet, medium dense to very dense, Orangish Brown, SILTY Sand with some Gravel	S-3	24"	6-11-11-9	SS	18"	
6.5	197.9			S-4	24"	8-6-7-9	SS	12"	
	195.9		Saturated, dense SILTY medium to coarse Sand and Gravel (SM)	S-5	24"	6-7-8-9	SS	12"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SB-33**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-16-11	6-16-11		206.3
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	8.2		8.4'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	205.3			S-1	24"	2-2-3-5	SS	20"	3" Topsoil
	204.3		Damp, medium dense, Brown SILTY Sand (SM)	S-2	24"	5-6-7-10	SS	3"	
	202.3		Damp, stiff, Orange Clayey Fine Sandy SILT (ML)	S-3	24"	4-4-5-8	SS	18"	
6.5	198.8		Damp, dense, Orange SILTY Sand (SM)	S-4	24"	8-8-9-12	SS	24"	
	196.3		Saturated, dense, Brown Sand and Gravel (SM)	S-5	24"	7-6-10-10	SS	20"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-11**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-14-11	6-14-11		208.4
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	Dry		9.6'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	207.4			S-1	24"	1-1-1-3	SS	24"	3" Topsoil
	204.9		Damp, loose Brown Fine Sandy SILT with trace Clay	S-2	24"	2-2-2-3	SS	18"	
6.5	201.4		Moist, medium dense organish Brown SILTY Sand with trace Clay	S-3	24"	4-5-5-5	SS	24"	
	198.4		Wet to saturated organish Brown SILTY Sand and Gravel	S-4	24"	6-7-6-7	SS	24"	
				S-5	24"	4-5-7-11	SS	18"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-12**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-15-11	6-15-11		208.
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	Dry		9.6'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	207.0			S-1	24"	2-3-3-3	SS	24"	2.5" Topsoil
	204.5		Damp, loose Brown SILTY Fine Sand	S-2	24"	2-3-3-5	SS	24"	
	202.0		Damp, dense, organish Brown and Fine Sandy SILT with trace Clay	S-3	24"	5-8-10-12	SS	19"	
6.5	198.0		Moist to wet, organish Brown SILTY Sand with some Gravel	S-4	24"	6-3-4-5	SS	24"	
				S-5	24"	6-3-6-9	SS	18"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-13**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-15-11	6-15-11		208.1
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	Dry		9.6'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	207.1			S-1	24"	WOH 1-1-2	SS	24"	5" Topsoil
	206.1		Damp, loose, Tan SILTY Fine Sand						
			Damp, dense to very dense, Light Brown SILTY Sand	S-2	24"	3-5-11-17	SS	20"	
	202.1			S-3	24"	20-10-15-17	SS	20"	
6.5			Moist and wet, dense, Light Brown to Brown SITLY Sand and Gravel	S-4	24"	4-11-9-12	SS	16"	
	198.1			S-5	24"	4-5-6-8	SS	22"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-14**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-14-11	6-14-11		205.2
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	7.5'		7.9'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	204.2			S-1	24"	3-5-4-5	SS	18"	0"Topsoil
	202.7		Damp, stiff, organish, Brown Clayey SAND	S-2	24"	5-7-10-13	SS	22"	
	199.2		Damp, dense, organish Brown SILTY medium to fine Sand and Gravel	S-3	24"	5-8-7-8	SS	20"	
6.5			Wet to saturated Yellow Brown SILTY medium to coarse Sand and Gravel	S-4	24"	3-5-5-7	SS	18"	
	195.2			S-5	24"	4-4-4-5	SS	18"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-15**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-14-11	6-14-11		205.7
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	8.0'		8.0'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	203.7		Damp, dense, Light Brown SILTY Fine Sand	S-1	24"	3-4-5-1	SS	12"	0" Topsoil
	199.7		Damp, dense, organish Brown SILTY SAND with trace Clay	S-2	24"	5-6-7-6	SS	21"	
				S-3	24"	7-7-6-6	SS	19"	
6.5	197.7		Damp, dense, organish Brown SILTY medium to fine Sand and Gravel	S-4	24"	3-6-7-9	SS	18"	
	195.7		Wet to saturated dense, Brown, SILTY medium to coarse Sand and Gravel	S-5	24"	3-6-7-9	SS	20"	
13			Bottom of boring at 10 feet						
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-16**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-14-11	6-14-11		209.0
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	Dry		9.2'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	208.0			S-1	24"	2-2-2-3	SS	14"	3" Topsoil
	207.0		Damp, loose, Light Brown Fine Sandy SILT (ML)	S-2	24"	5-5-6-6	SS	18"	
	205.0		Damp, dense, Brown Fine SILTY Sand with trace Clay	S-3	24"	3-5-8-10	SS	24"	
	203.0		Damp, dense orange mottled, Light Gray Clayey Fine SILTY Sand	S-4	24"	5-5-6-5	SS	24"	
6.5			Moist to wet, dense to mild dense, Orange Brown, to Tan SILTY Fine Sand	S-5	24"	3-2-4-9	SS	24"	
	199.0		Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	SW-17

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-14-11	6-14-11		208.6
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	Dry		8.9'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	207.6			S-1	24"	2-3-4-6	SS	18"	3" Topsoil
	206.1		Damp, loose to medium dense, Tan SILTY Fine Sand	S-2	24"	5-6-7-7	SS	24"	
			Damp, dense t very dense Organgish Brown SILTY Fine Sand	S-3	24"	4-9-14-13	SS	22"	
6.5	200.6			S-4	24"	10-9-7-9	SS	24"	
	198.6		Moist to wet, dense Tan to Light Brown SILTY Sand and Gravel	S-5	24"	7-6-7-7	SS	24"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-18**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-15-11	6-15-11		206.6
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	Dry		8.9'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	205.6			S-1	24"	2-3-4-5	SS	14"	3" Topsoil
	204.1		Damp, medium dense, Tan Clayey Fine Sandy SILT	S-2	24"	9-9-8-8	SS	22"	
	202.1		Damp, dense, Orange SILTY Fine Sand	S-3	24"	6-8-8-7	SS	24"	
6.5			Moist, dense, Tan and organish Brown SILTY Sand	S-4	24"	8-7-6-9	SS	20"	
	196.6			S-5	24"	4-5-7-9	SS	20"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-19**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-15-11	6-15-11		205.8
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	8.2'		8.4'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	204.8			S-1	24"	3-5-6-7	SS	14"	3" Topsoil
	203.8		Damp, dense Brown, Fine Sandy SILT (ML)	S-2	24"	3-5-8-11	SS	24"	
	201.8		Damp, dense, Organish Brown, SILTY Fine Sand (SM)	S-3	24"	4-8-11-15	SS	20"	
6.5			Moist to saturated, organish Brown and Tan SILTY Sand and Gravel (SM)	S-4	24"	7-7-9-10	SS	18"	
	195.8			S-5	24"	2-4-5-7	SS	20"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-20**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-14-11	6-14-11		205.9
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	8.6'		8.7'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	204.9			S-1	24"	WOH-2-2-3	SS	16"	0" Topsoil
	203.9		Damp, loose, Fine SILTY Sand (SM)	S-2	24"	4-3-3-3	SS	24"	
	201.9		Damp, loose to very dense, orangish Brown SILTY Sand with trace Clay	S-3	24"	4-10-12-5	SS	20"	
6.5			Wet to saturated dense, Tan SILTY medium to coarse Sand and Gravel	S-4	24"	4-5-4-5	SS	24"	
	195.9			S-5	24"	4-4-6-9	SS	20"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-21**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-16-11	6-16-11		205.2
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	8.0'	7.4'		7.9'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	203.2			S-1	24"	3-2-3-3	SS	20"	3" Topsoil
	202.7		Damp, medium dense, light Brown Sandy SILT (ML)	S-2	24"	3-3-4-5	SS	19"	
			Damp to saturated, dense Light Brown SILTY Sand and Gravel	S-3	24"	4-7-10-10	SS	20"	
6.5				S-4	24"	3-6-8-8	SS	18"	
	195.2			S-5	24"	5-7-8-10	SS	16"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-22**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-16-11	6-16-11		205.3
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	8.4'			8.5'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	204.3			S-1	24"	12-2-2-4	SS	20"	3" Topsoil
	202.8		Damp, medium dense, Light Brown, Fine Sandy SILT (ML)	S-2	24"	4-3-5-7	SS	24"	
			Damp to saturated Light Brown to Brown, SILTY, Sand and Gravel (SM)	S-3	24"	5-8-8-12	SS	20"	
6.5				S-4	24"	5-8-10-12	SS	16"	
	195.3			S-5	24"	4-5-6-8	SS	16"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	SW-23

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-16-11	6-16-11		204.9
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	9.0'	8.5'	8.5'	8.6'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		B. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	203.9			S-1	24"	4-8-8-7	DS	16	2" Topsoil
	202.9		Damp, stiff, Brown Clayey Fine Sandy SILT (ML)	S-2	24"	4-8-8-7	DS	24"	
	200.9		Damp, dense, Brown, SILTY Sand (SM)	S-3	24"	5-6-7-9	DS	24"	
6.5			Damp to saturated dense, Light Brown to Brown SILTY Sand and Gravel (SM)	S-4	24"	5-4-7-9	DS	20"	
	194.9			S-5	24"	6-6-8-11	DS	18"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	SW-24

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-16-11	6-16-11		204.8
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	8.0'	7.7'		7.7'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	203.8			S-1	24"	5-6-7-6	DS	22"	3" Topsoil
	201.3		Damp, dense, Yellow, Brown, Clayey Fine Sandy SILT (ML)	S-2	24"	4-5-7-12	DS	18"	
6.5	194.8		Damp to saturated YelloW, Tan, SILTY Sand and Gravel (SM)	S-3	24"	4-8-8-10	DS	22"	
				S-4	24"	5-7-9-10	DS	20"	
				S-5	24"	5-6-7-9	DS	18"	
13			Bottom of boring at 10 feet						
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	SW-25

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-16-11	6-16-11		205.3
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	7.8'		8.1'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		R. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	204.3			S-1	24"	3-4-6-7	DS	24"	3" Topsoil
	203.0		Damp, stiff, Yellow Brown, SILTY Fine Sandy Clay (CL)	S-2	24"	4-5-6-5	DS	20"	
	201.3		Damp, dense, Reddish Orange mottled Yellow Clayey Fine SILTY Sand (SM-ML)	S-3	24"	5-8-15-20	DS	24"	
6.5			Damp, very dense, Organish Brown, SILTY Sand (SM)	S-4	24"	4-8-12-16	DS	19"	
	195.3			S-5	24"	2-5-6-8	DS	18"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Waldorf Park and Ride	11532-03	**SW-26**

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Waldorf, Maryland	6-16-11	6-16-11		205.3
COORDINATES	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
	None	8.1'		8.1'
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
E. Hill	140 lbs	30"		10
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
CME 550		B. Sanders		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0	204.3			S-1	24"	4-5-7-8	SS	0"	5" Topsoil
	203.3		Damp, dense, Gray, Tan, Fine Sandy SILT (ML)	S-2	24"	7-8-9-9	SS	24"	
	201.3		Damp, dense, Organish Brown, mottled Tan very Fine Sandy SILT with trace Clay (ML)	S-3	24"	8-9-10-10	SS	24"	
	199.3		Damp to moist, dense, Organish SILTY Sand (SM)	S-4	24"	4-7-8-10	SS	18"	
6.5	195.3		Wet to saturated, Tan an and Light Brown SILTY Sand and Gravel (SM)	S-5	24"	7-5-7-7	SS	18"	
			Bottom of boring at 10 feet						
13									
19.5									
26									
32.5									
39									
45.5									

APPENDIX H
CONTRACT NO. T-1038-0140
WALDORF PARK AND RIDE
FACILITY DESIGN

NOT IN USE

APPENDIX I
TEST HOLE DATA

CONTRACT NO. T-1038-0140

WALDORF PARK AND RIDE
FACILITY DESIGN

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
100 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

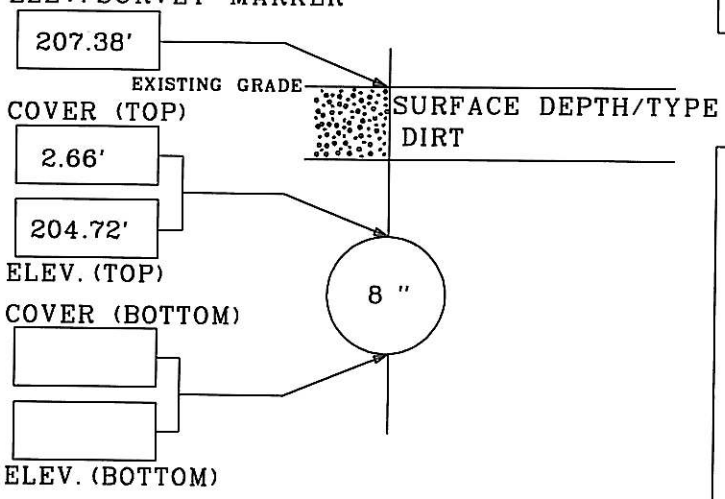
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-1 DATE DUG: 02/24/09

ANTICIPATED UTILITY: SEWER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 8" PLASTIC SEWER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: DIRT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

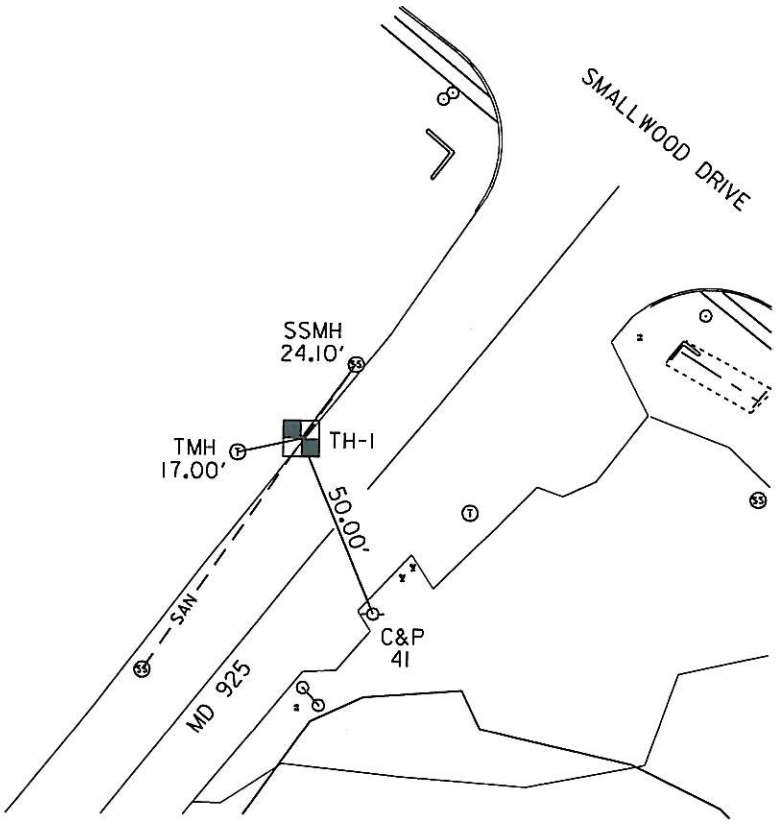
NORTHING: 343388.77

EASTING: 1334106.38

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.



SKETCH
NOT TO SCALE:

NAVD 88
NAD 83/91

AB CONSULTANTS, INC.
1500 S. EDGEWOOD STREET, SUITE 1600
BALTIMORE, MARYLAND 21227
Tel - (443)-524-2891
Fax- (443)-524-2897

STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
100 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

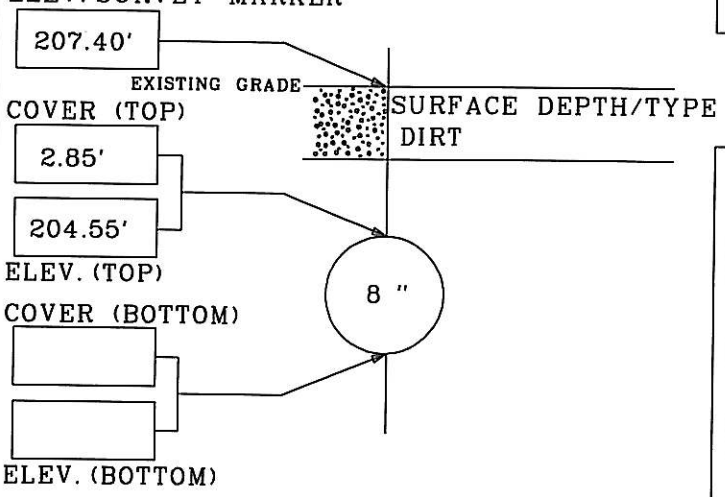
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-2 DATE DUG: 02/24/09

ANTICIPATED UTILITY: SEWER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 8" PLASTIC SEWER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: DIRT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

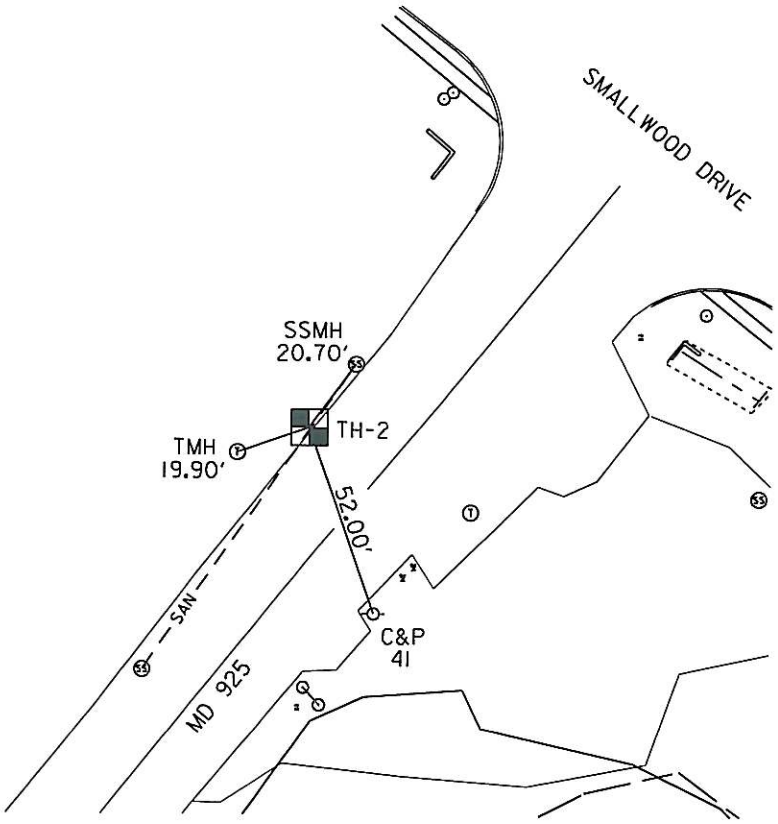
NORTHING: 343391.61

EASTING: 1334108.40

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.



SKETCH
NOT TO SCALE:

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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
100 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

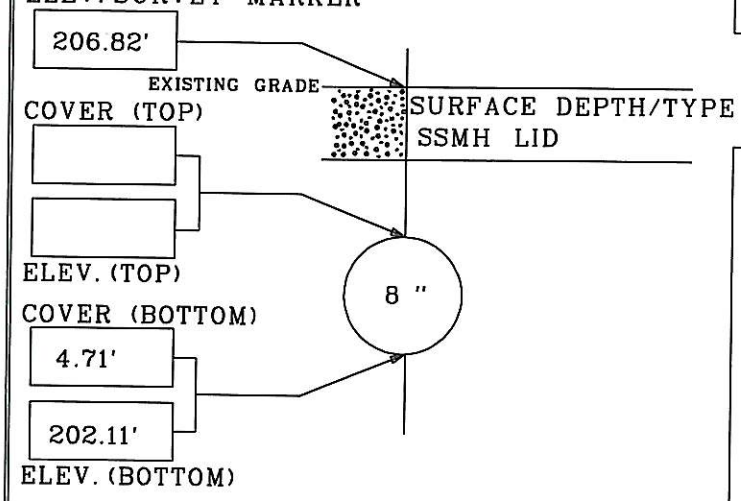
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-3 DATE DUG: 02/20/09

ANTICIPATED UTILITY: SEWER INVERT

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 8" PLASTIC SEWER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: TOP SSMH LID

AT EXISTING GRADE OF:

SURVEY PARTY CHIEF:

TEST PIT SURVEY INFORMATION

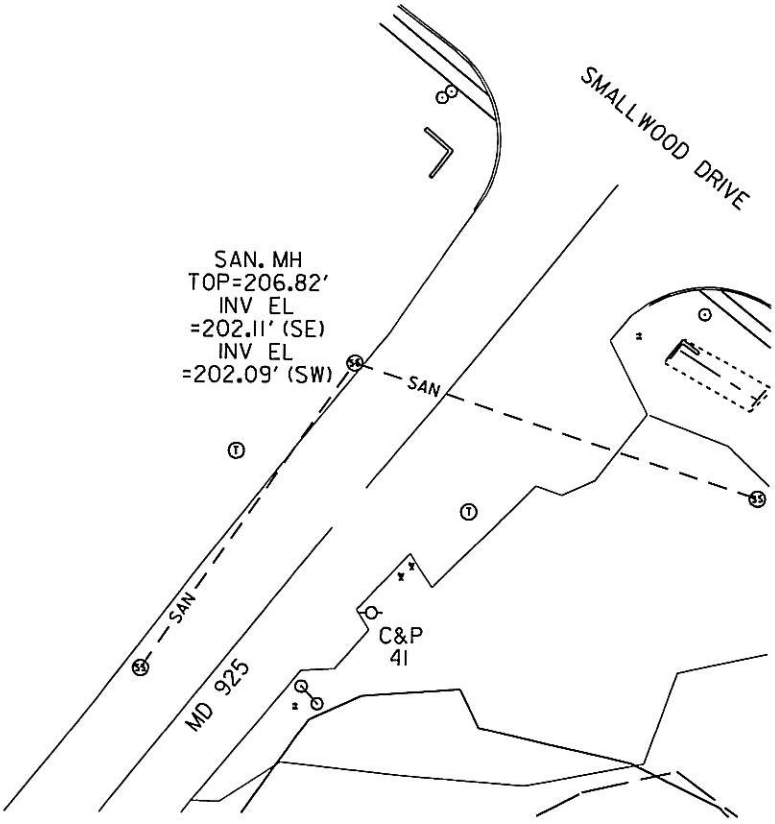
NORTHING:

EASTING:

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: ELEVATION CHECK ON SSMH LID AND INVERT.



SKETCH
NOT TO SCALE:

NAVD 88
NAD 83/91

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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925 AT SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

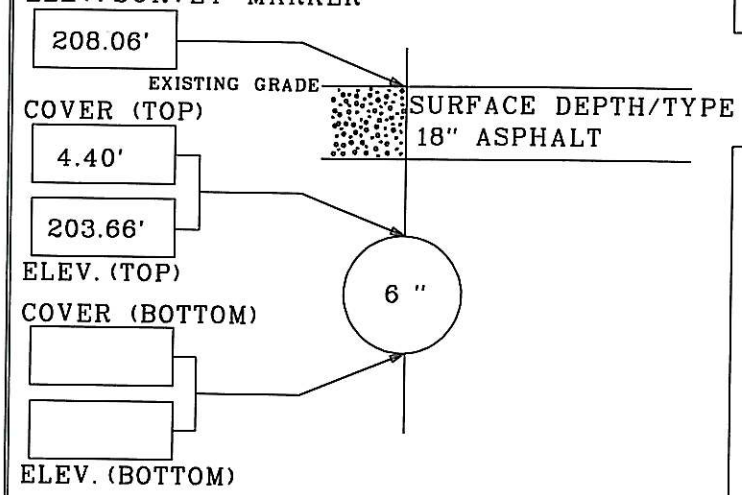
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-4 DATE DUG: 02/24/09

ANTICIPATED UTILITY: WATER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 6" C/I WATER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

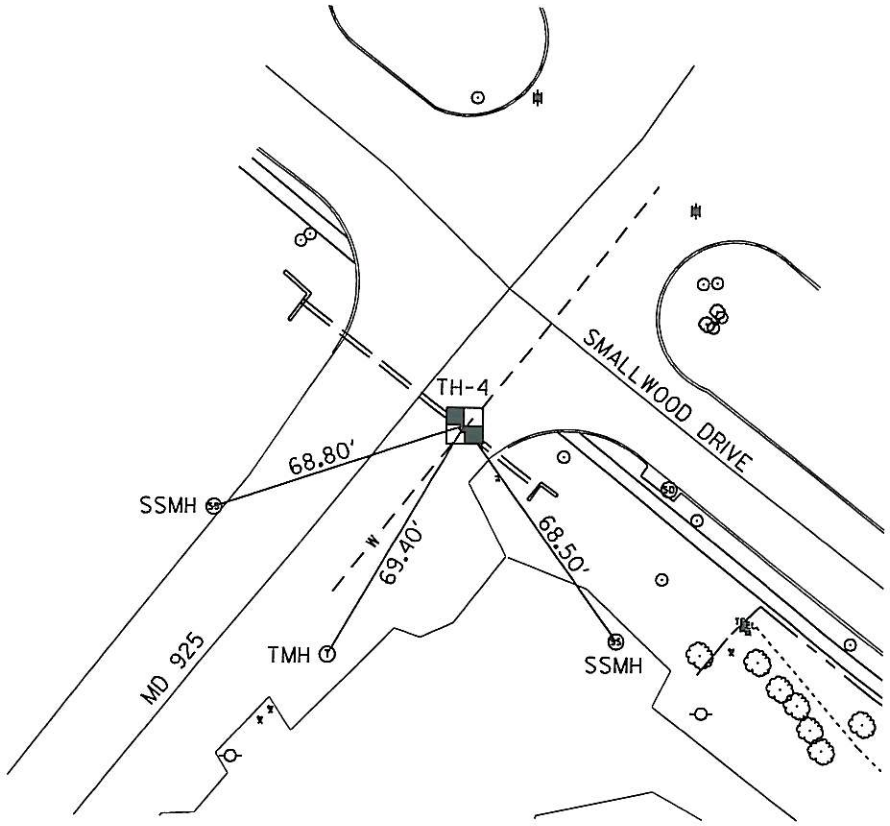
NORTHING: 343429.67

EASTING: 1334185.41

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.



SKETCH
NOT TO SCALE:

NAVD 88
NAD 83/91

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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925 AT SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

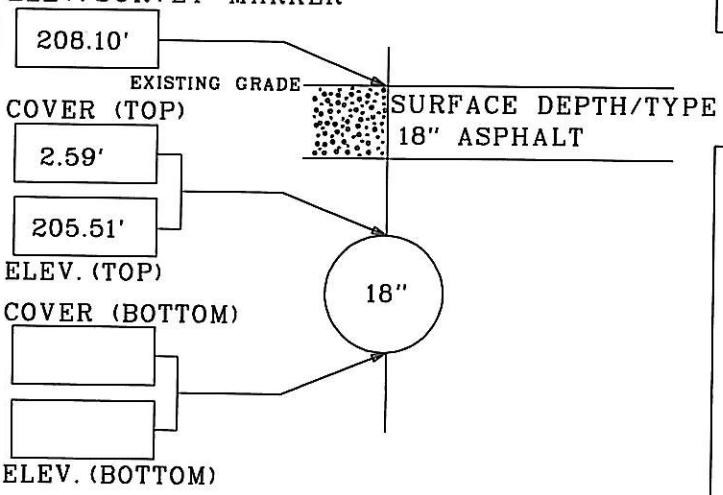
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-4A DATE DUG: 02/24/09

ANTICIPATED UTILITY: STORM PIPE

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
SHA 18" CMP STORM PIPE

ELEV. SURVEY MARKER



TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

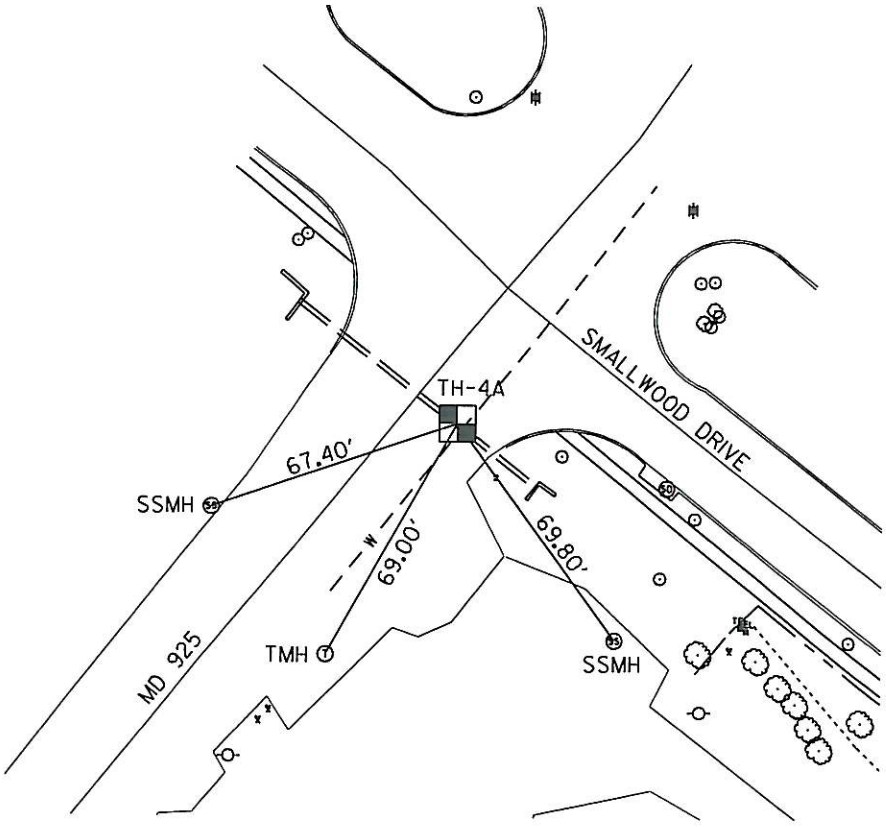
NORTHING: 343430.05

EASTING: 1334184.05

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.



SKETCH
NOT TO SCALE:

NAVD 88
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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
80 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

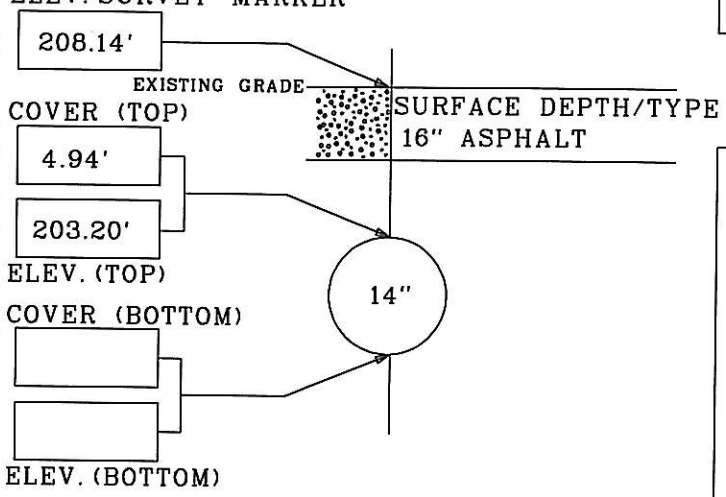
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-5 DATE DUG: 02/23/09

ANTICIPATED UTILITY: SEWER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 14" UNKNOWN SEWER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

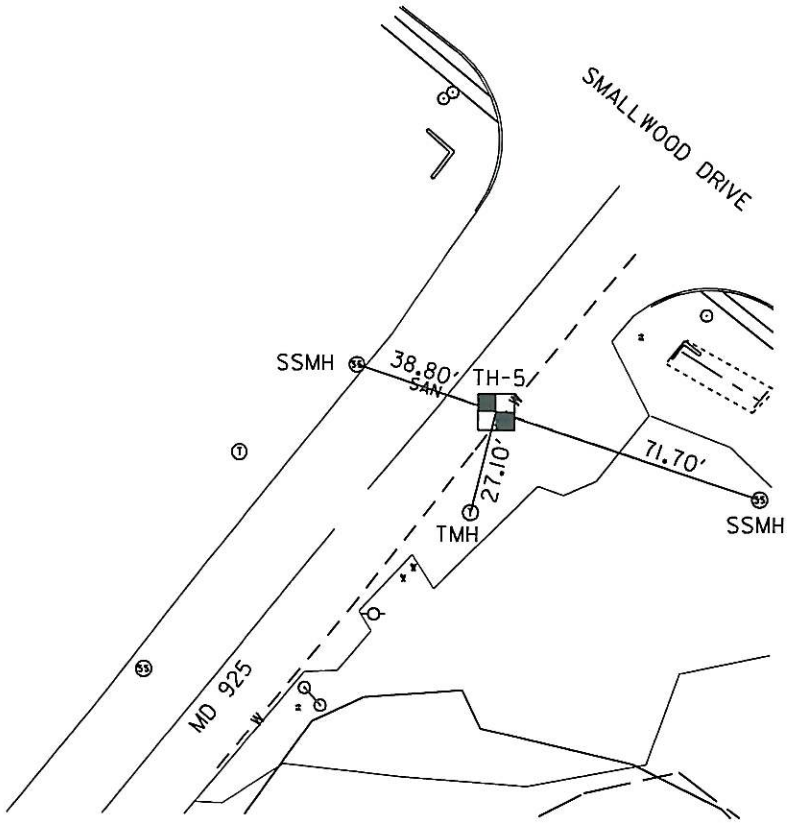
NORTHING: 343396.06

EASTING: 1334156.88

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.
POSSIBLE CONDUIT FOR SANITARY SEWER RUNNING UNDER ROADWAY.



SKETCH
NOT TO SCALE:

NAVD 88
NAD 83/91

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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
80 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-5A DATE DUG: 02/23/09

ANTICIPATED UTILITY: WATER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 6" C/I WATER

ELEV. SURVEY MARKER

208.09'

EXISTING GRADE

SURFACE DEPTH/TYPE
16" ASPHALT

COVER (TOP)

4.24'

203.85'

ELEV. (TOP)

6 "

COVER (BOTTOM)

ELEV. (BOTTOM)

TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

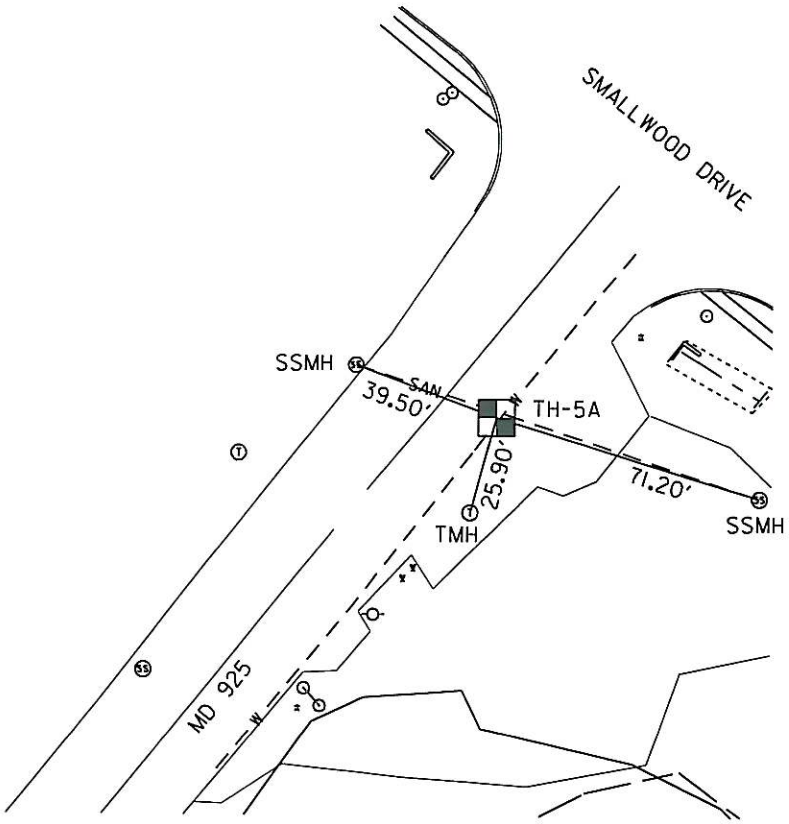
NORTHING: 343394.59

EASTING: 1334157.10

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.



SKETCH
NOT TO SCALE:

NAVD 88
NAD 83/91

AB CONSULTANTS, INC.
1500 S. EDGEWOOD STREET, SUITE 1600
BALTIMORE, MARYLAND 21227
Tel - (443)-524-2891
Fax- (443)-524-2897

STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

Neil Eppig

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
100 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

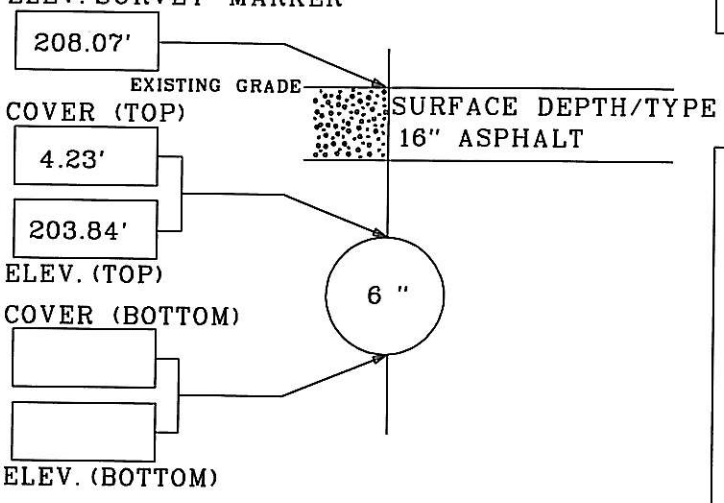
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-6 DATE DUG: 02/23/09

ANTICIPATED UTILITY: WATER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 6" C/I WATER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

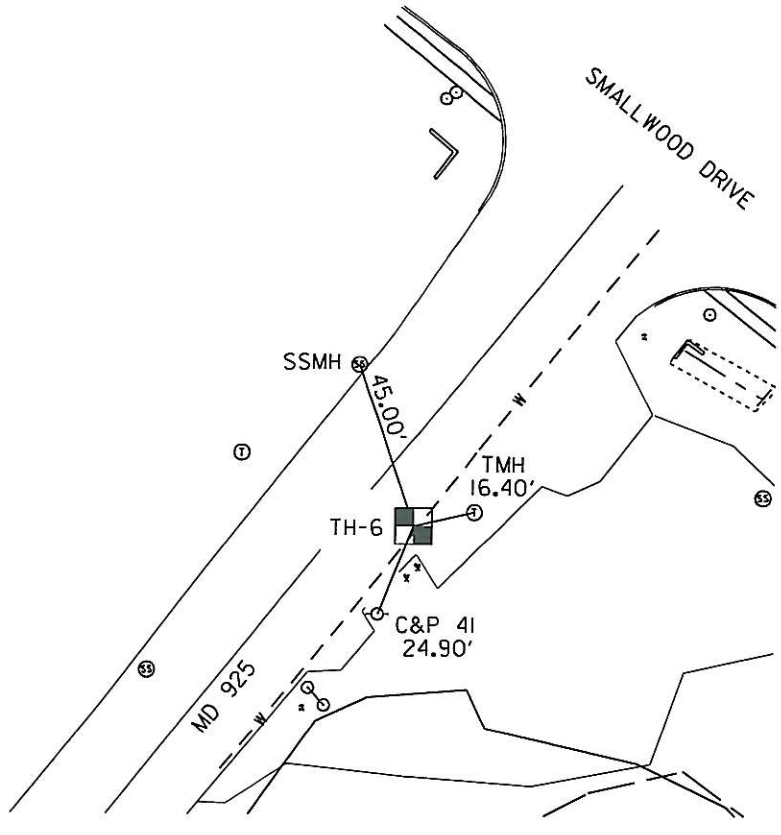
NORTHING: 343366.10

EASTING: 1334134.67

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.



SKETCH
NOT TO SCALE:

NAVD 88
NAD 83/91

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Neil L. Eppig

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
100 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

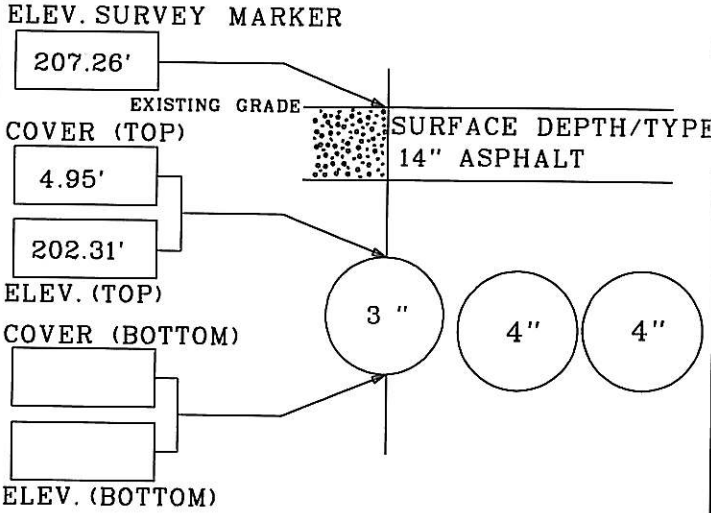
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-7 DATE DUG: 02/20/09

ANTICIPATED UTILITY: TELEPHONE

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
VERIZON 3" PLASTIC CONDUIT TELEPHONE

ELEV. SURVEY MARKER



TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

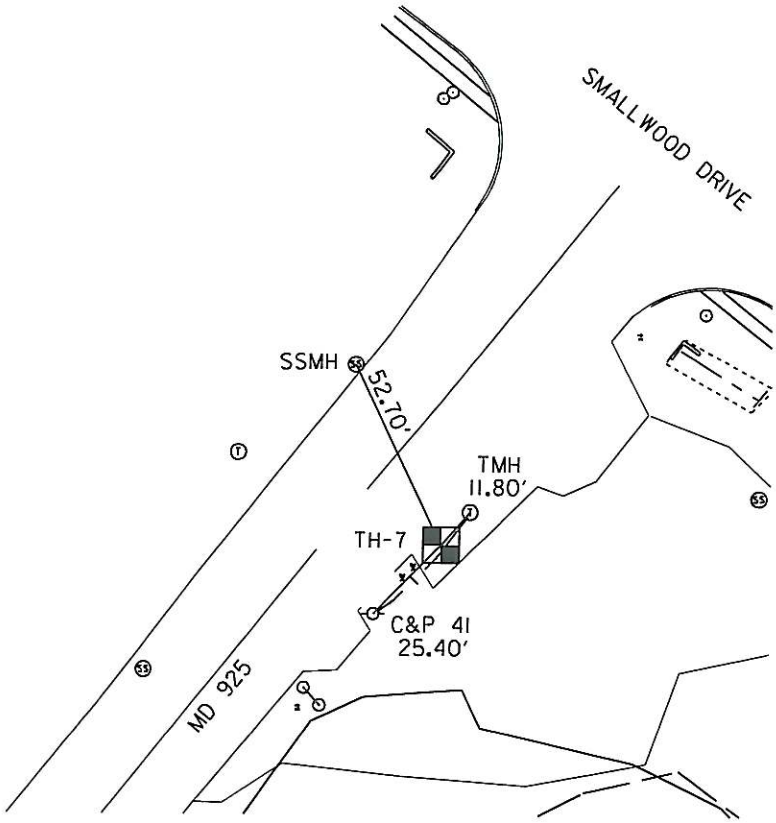
NORTHING: 343361.10

EASTING: 1334142.90

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.
ALSO FOUND TWO 4 INCH UNKNOWN PLASTIC CONDUITS IN HOLE EAST OF THE TELEPHONE CONDUIT AWAY FROM THE ROAD AT APPROXIMATELY THE SAME DEPTH AND ELEVATION.



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NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
100 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

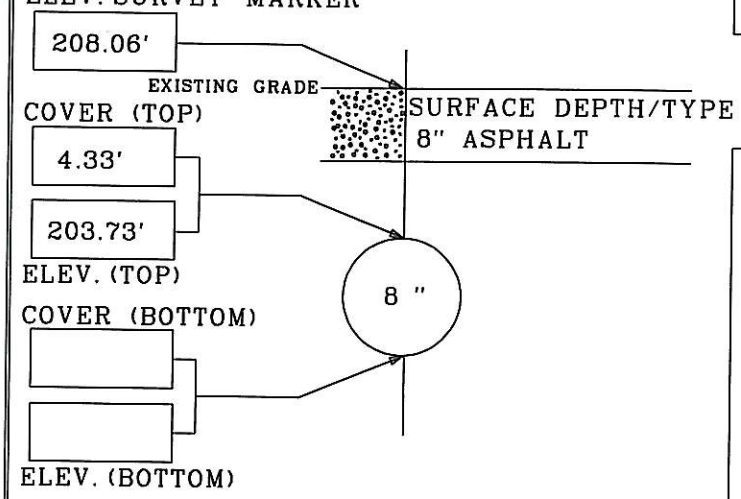
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-8 DATE DUG: 02/20/09

ANTICIPATED UTILITY: WATER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 8" C/I WATER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

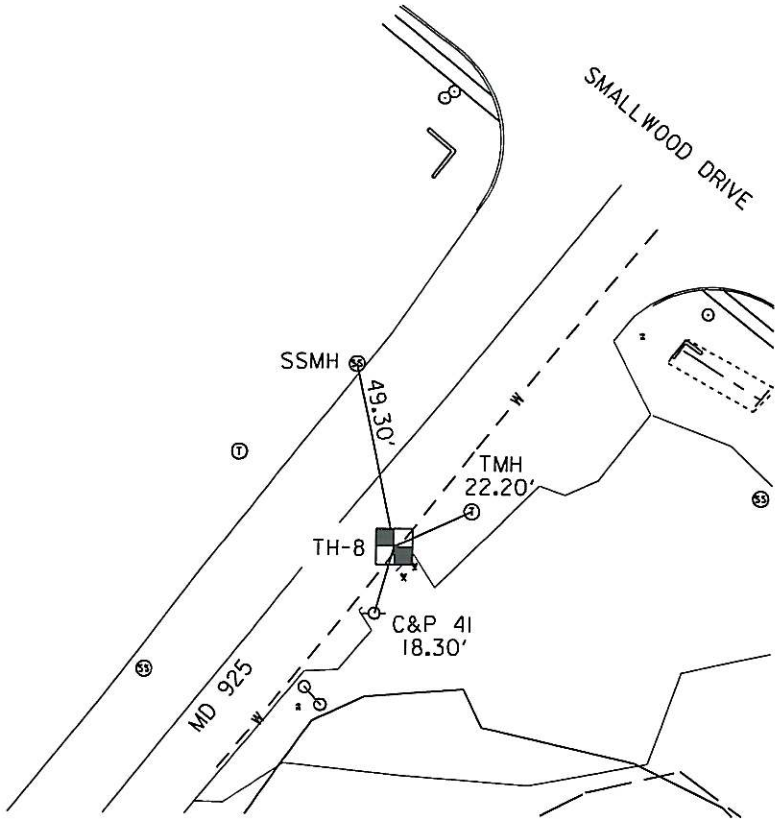
NORTHING: 343360.54

EASTING: 1334130.42

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.
ALSO FOUND A 5 INCH METAL PIPE CROSSING MD 925 OVER THE TOP OF THE WATER LINE AT A DEPTH OF 3.81 FEET AND AT AN ELEVATION OF 204.25 FEET.



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Neil Eppig

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
150 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

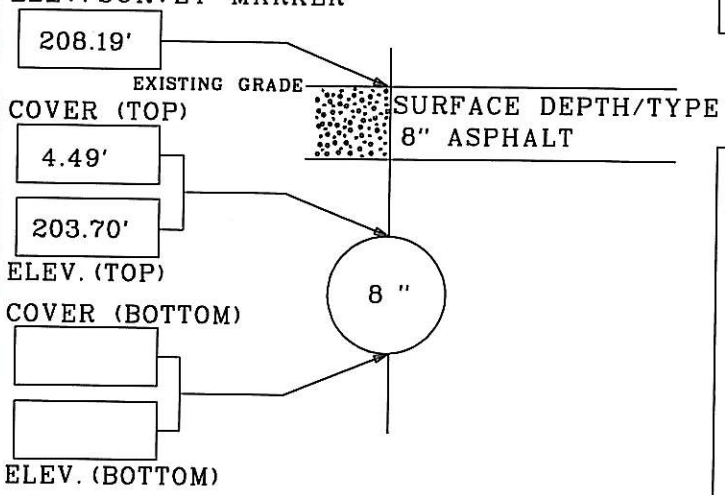
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-9 DATE DUG: 02/20/09

ANTICIPATED UTILITY: WATER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 8" C/I WATER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

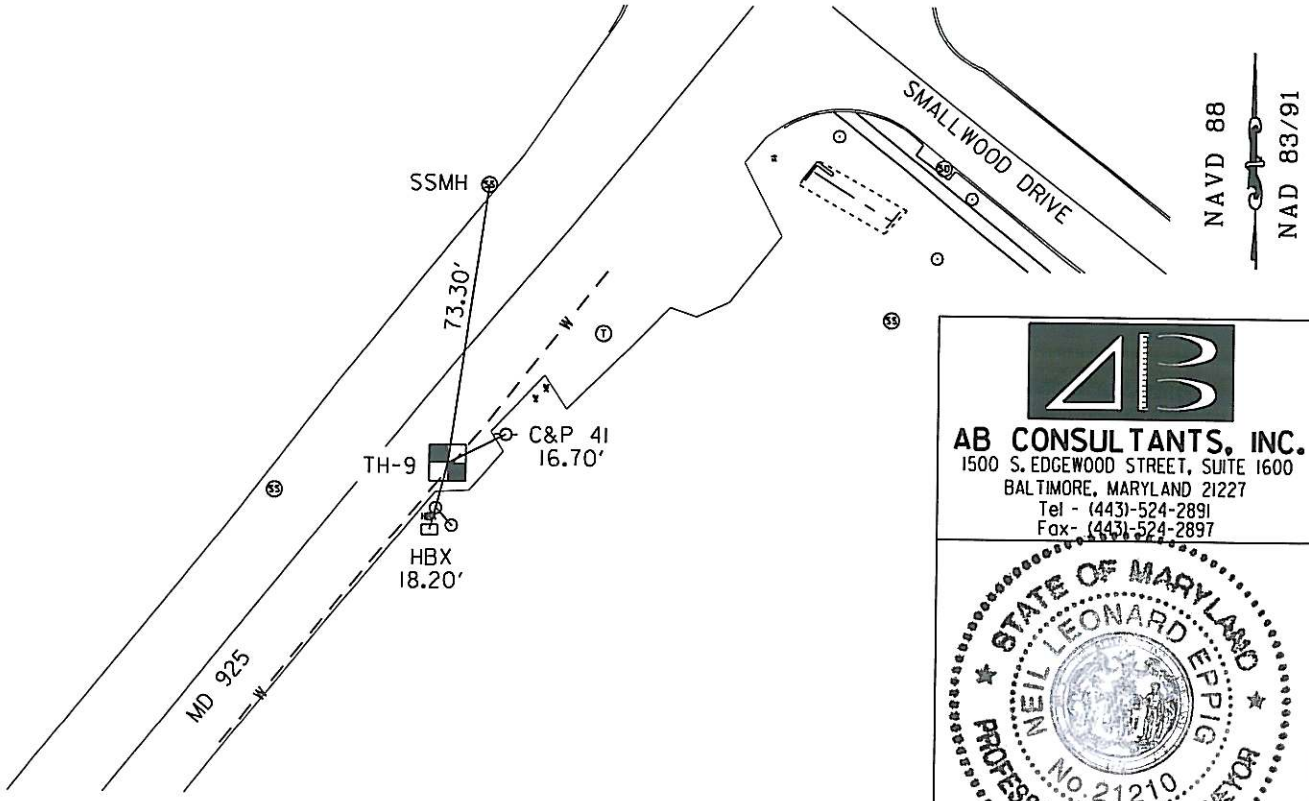
NORTHING: 343335.56

EASTING: 1334110.46

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.



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Neil Eppig

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
300 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

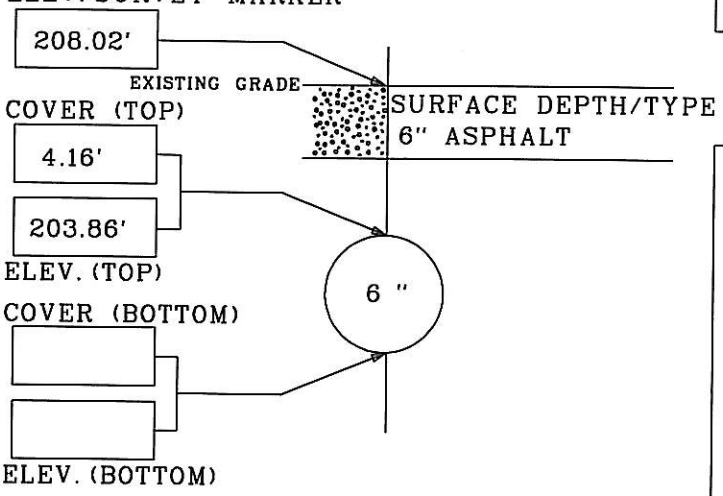
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-10 DATE DUG: 02/23/09

ANTICIPATED UTILITY: WATER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 6" C/I WATER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: PK

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: KEN LOSKOT

TEST PIT SURVEY INFORMATION

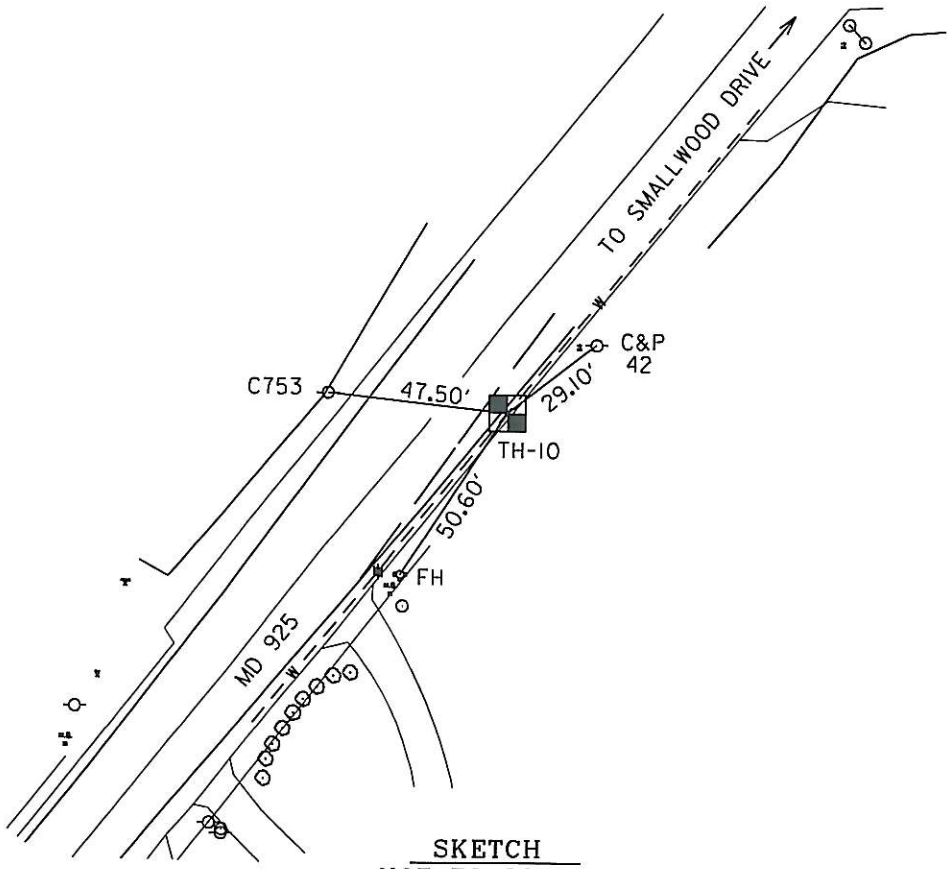
NORTHING: 343221.96

EASTING: 1334019.38

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-301 ELEV.= 207.78'

NOTES: PK NAIL SET OVER CENTER OF UTILITY.



SKETCH
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AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: RICK WALKER

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
75 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT #

AB PROJECT # 07-08102

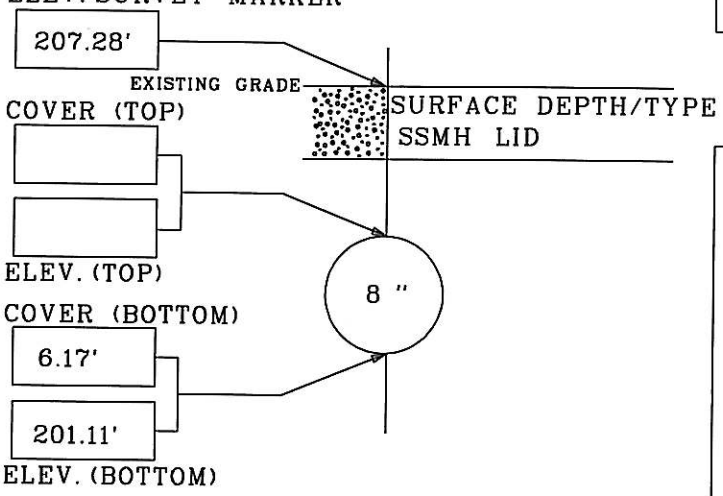
SHEET # PLAN SCALE: 1"= '

TEST HOLE NO: TH-11 DATE DUG: 02/20/09

ANTICIPATED UTILITY: SEWER INVERT

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 8" PLASTIC SEWER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: TOP SSMH LID

AT EXISTING GRADE OF:

SURVEY PARTY CHIEF:

TEST PIT SURVEY INFORMATION

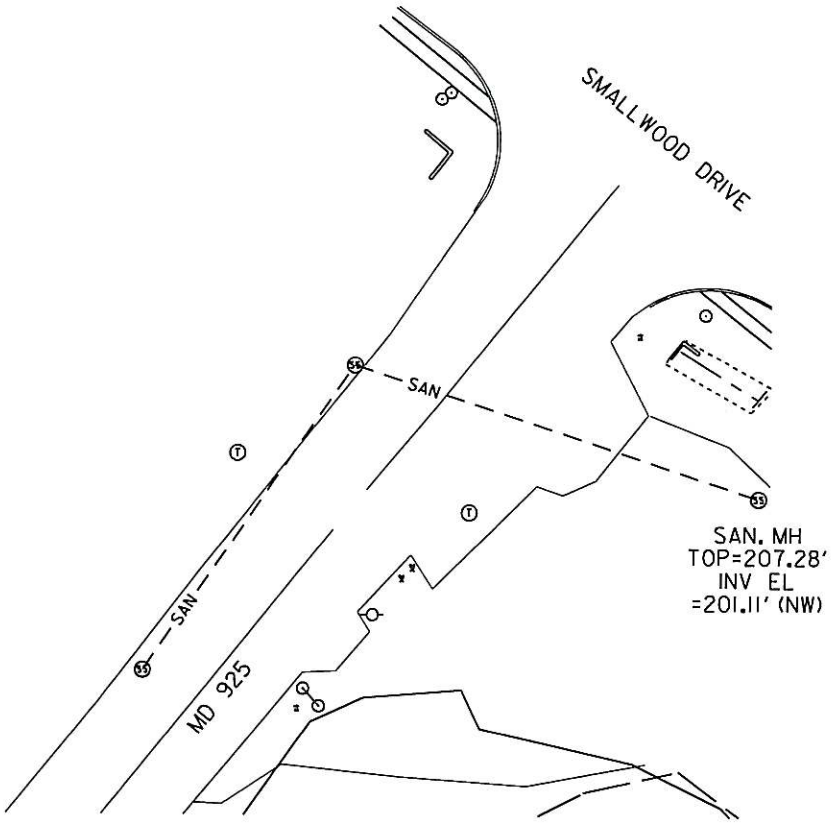
NORTHING:

EASTING:

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: ELEVATION CHECK ON SSMH LID AND INVERT.



SKETCH
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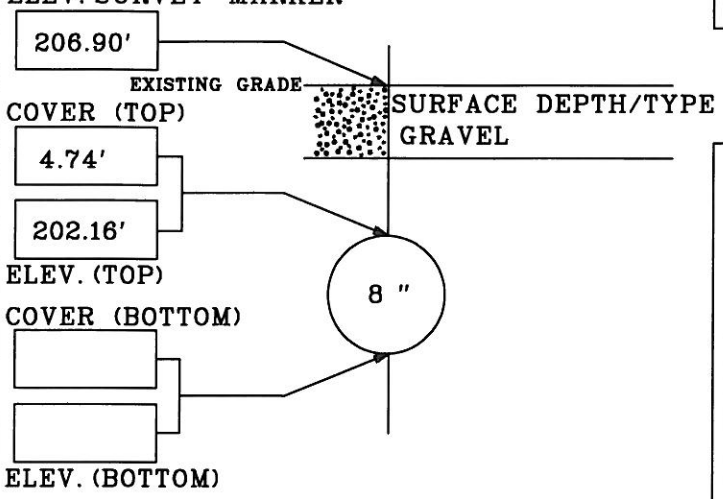
STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

Neil Eppig

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG	CLIENT PROJECT *
FOREMAN: TIM LYNN	AB PROJECT * 200916703
JURISDICTION: CHARLES COUNTY	SHEET * PLAN SCALE: 1"= '
LOCATION: MD 925 60 FEET SOUTH OF SMALLWOOD DRIVE	TEST HOLE NO: TH-20 DATE DUG: 03/24/11
	ANTICIPATED UTILITY: SANITARY SEWER
	FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE CHARLES COUNTY 8" PLASTIC SANITARY SEWER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: NAIL

AT EXISTING GRADE OF: GRAVEL

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

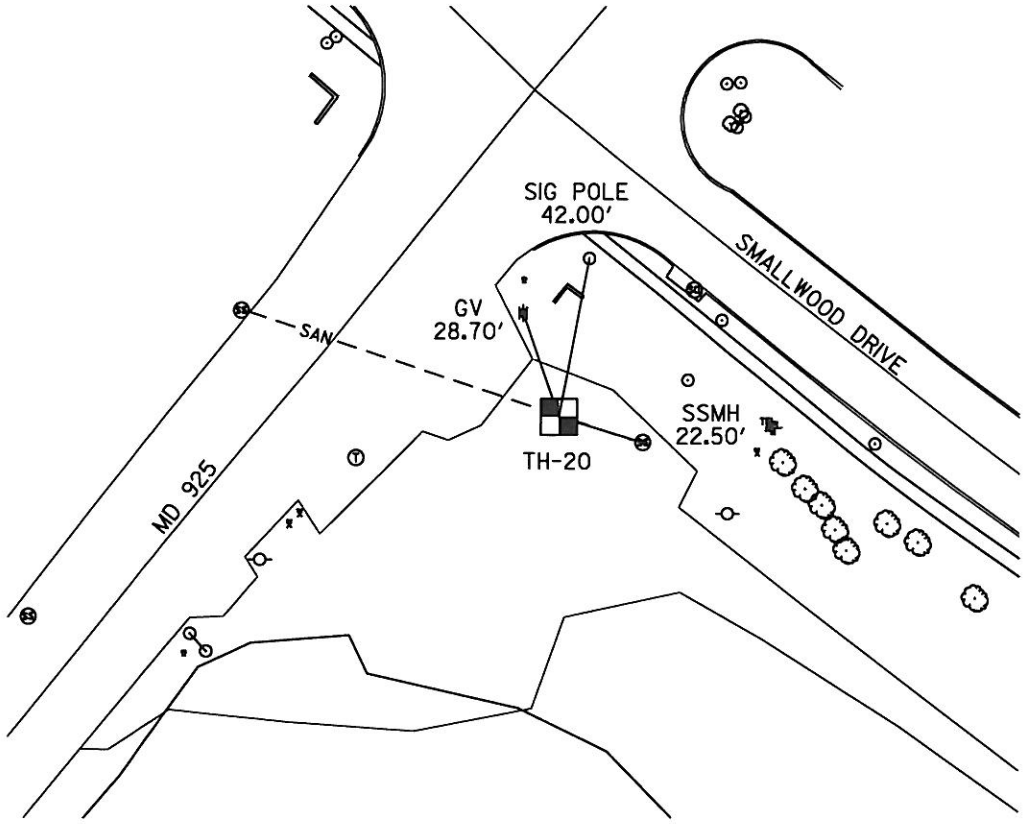
NORTHING: 343380.41

EASTING: 1334203.47

HORIZONTAL/VERTICAL CONTROL PROVIDED BY: AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: MAG NAIL SET OVER CENTER OF UTILITY IN GRAVEL PARKING AREA.



SKETCH
NOT TO SCALE:

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NAD 83/91

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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
60 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

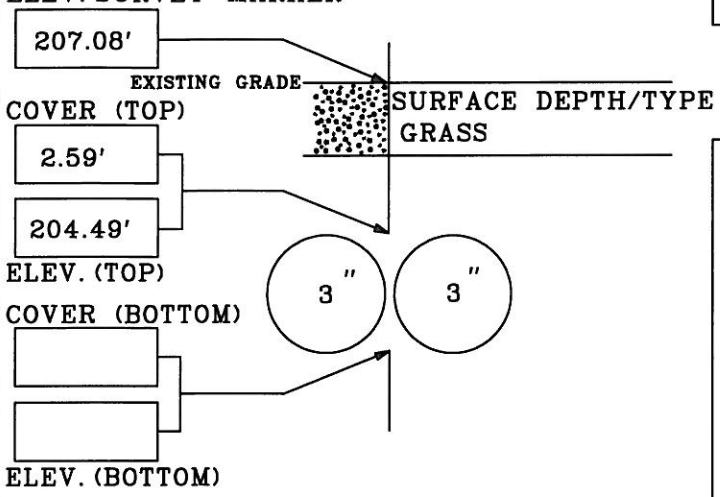
SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-21 DATE DUG: 03/24/11

ANTICIPATED UTILITY: TELEPHONE

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
VERIZON (2) 3" PLASTIC CONDUITS
TELEPHONE

ELEV. SURVEY MARKER



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: GRASS

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

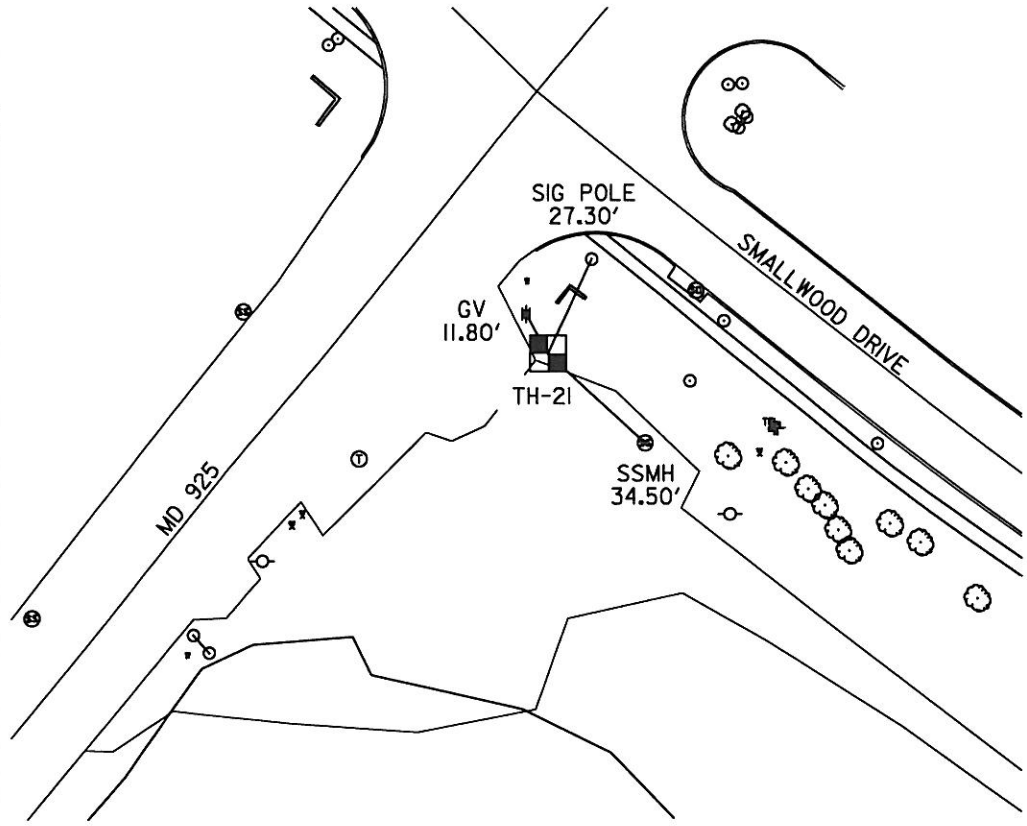
NORTHING: 343397.22

EASTING: 1334199.81

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.



SKETCH
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AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
60 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

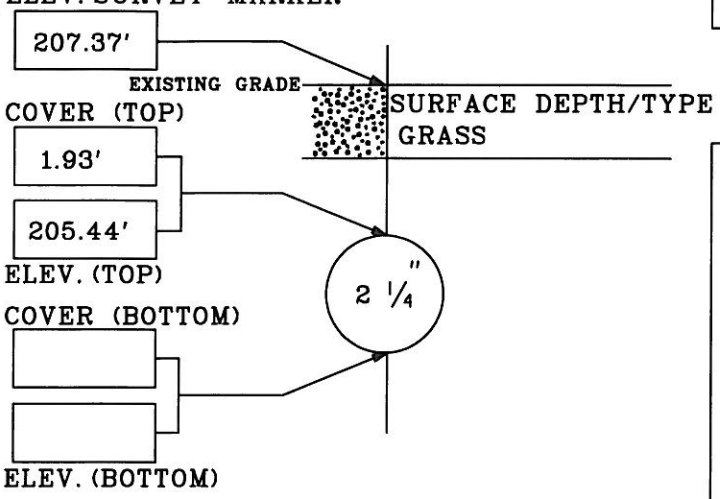
SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-22 DATE DUG: 03/24/11

ANTICIPATED UTILITY: ELECTRIC

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
SHA 2 1/4" PLASTIC CONDUIT ELECTRIC

ELEV. SURVEY MARKER



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: GRASS

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

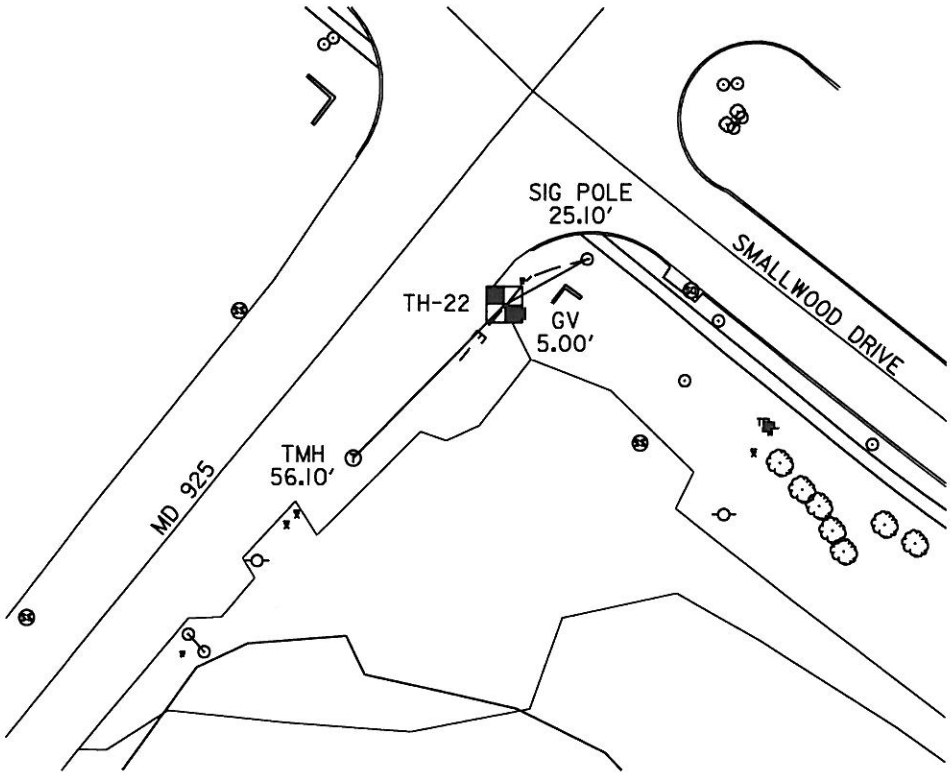
NORTHING: 343409.82

EASTING: 1334189.61

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.



SKETCH
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AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
60 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

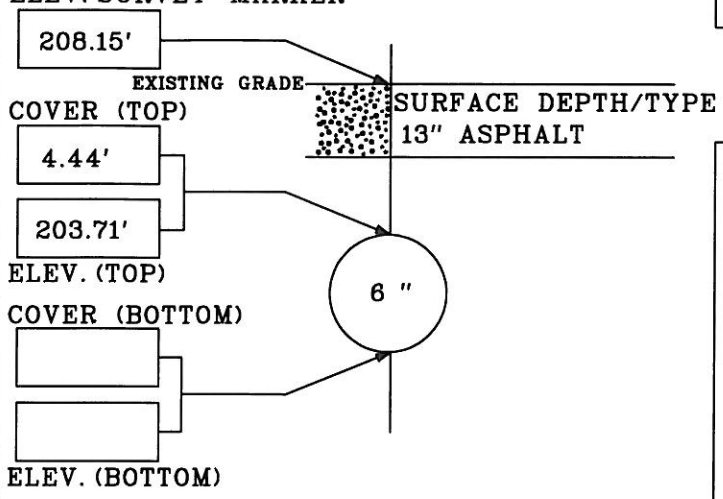
SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-23 DATE DUG: 03/29/11

ANTICIPATED UTILITY: WATER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 6" C/I WATER

ELEV. SURVEY MARKER



TYPE OF MARKER SET: MAG NAIL

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

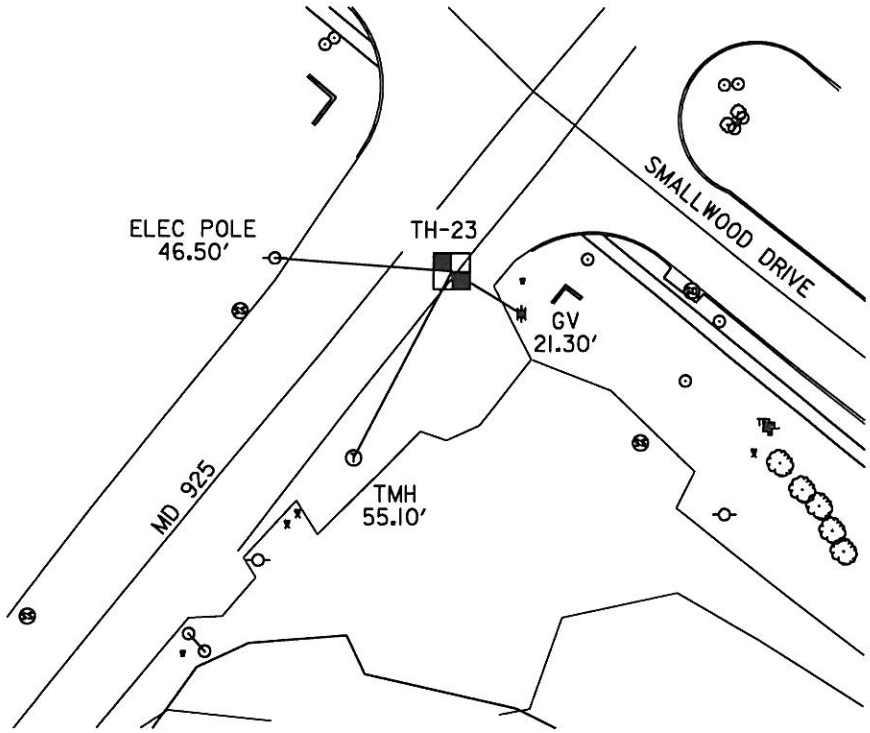
NORTHING: 343418.59

EASTING: 1334175.80

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: MAG NAIL SET OVER CENTER OF UTILITY.
SURFACE IS 13 INCHES OF ASPHALT ON TOP OF 8 INCHES OF CONCRETE WITH REBAR REINFORCEMENT.



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AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
50 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

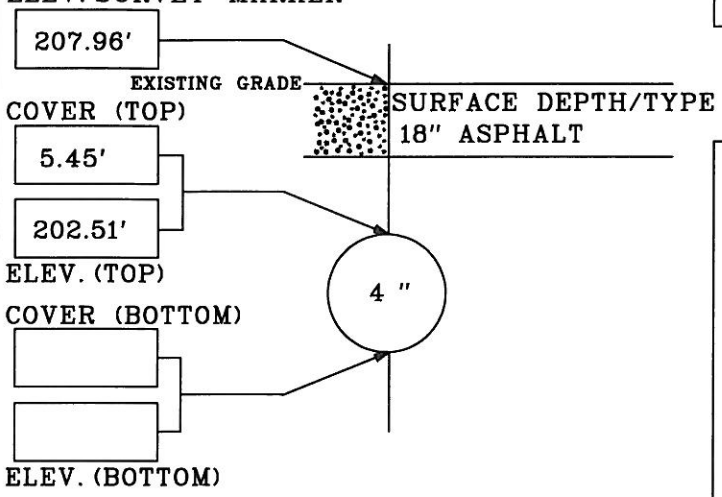
SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-24 DATE DUG: 03/28/11

ANTICIPATED UTILITY: SEWER FORCE MAIN

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 4" C/I SANITARY SEWER FORCE MAIN

ELEV. SURVEY MARKER



TYPE OF MARKER SET: MAG NAIL

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

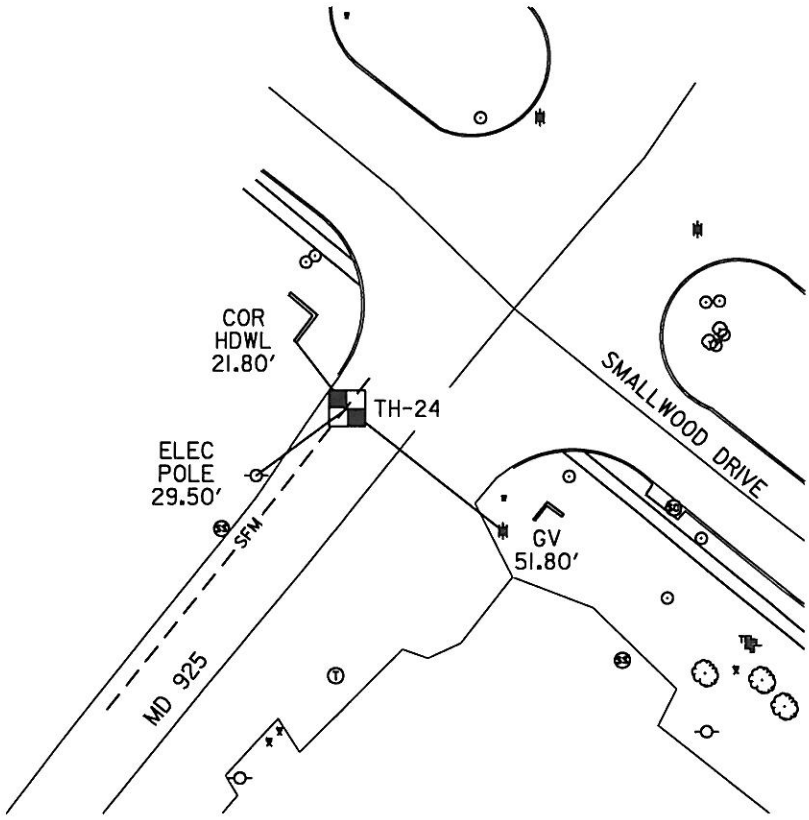
NORTHING: 343439.47

EASTING: 1334153.23

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: MAG NAIL SET OVER CENTER OF UTILITY.
PIPE IS HEAVILY COVERED WITH CORROSION.



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AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
50 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

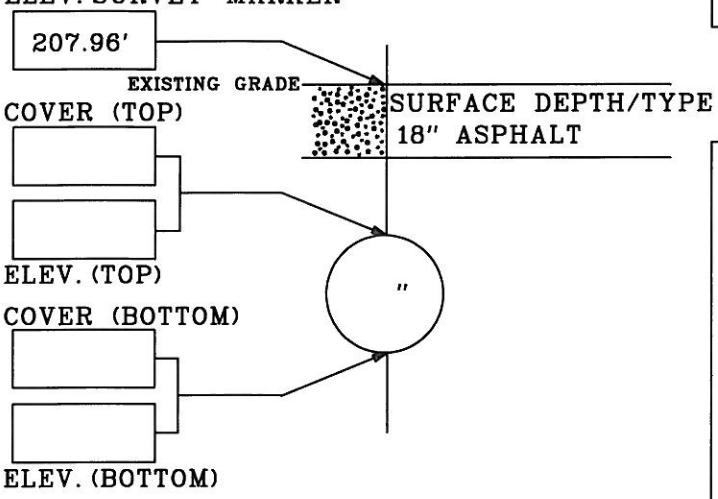
SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-25 DATE DUG: 03/28/11

ANTICIPATED UTILITY: SANITARY SEWER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
NOT FOUND SEE NOTE

ELEV. SURVEY MARKER



TYPE OF MARKER SET: NONE

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

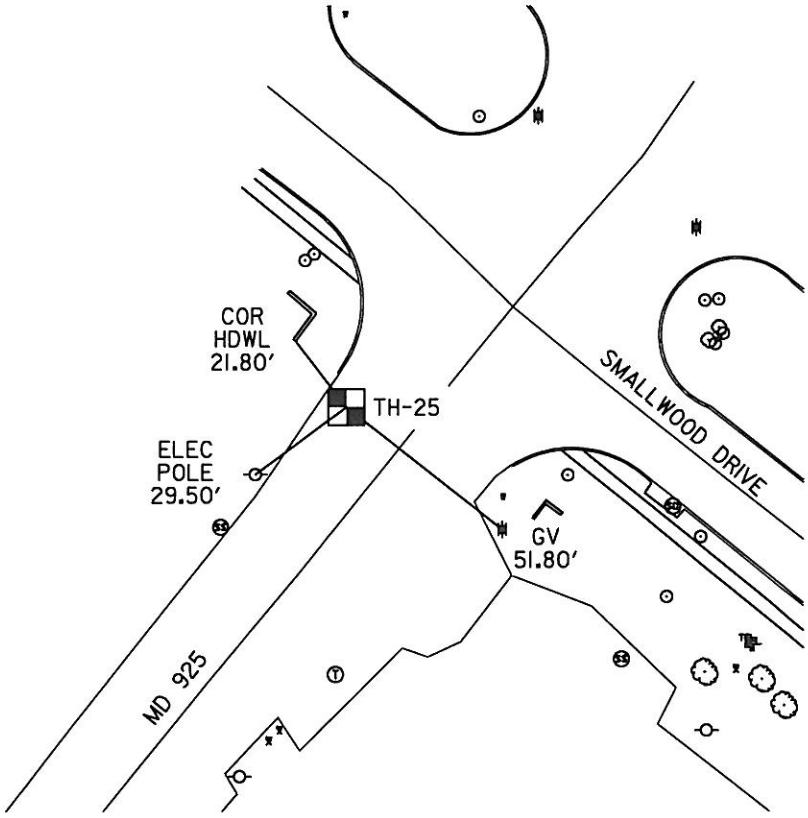
NORTHING: 343439.47

EASTING: 1334153.23

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: DUG DOWN 9.25 FEET. WIDENED HOLE OUT 2.5 FEET ON BOTH SIDES OF THE 4 INCH FORCE MAIN AT TEST HOLE 24. HOLE KEPT FILLING UP WITH WATER AND COLLAPSING IN AT A DEPTH OF 5.5 FEET. UNABLE TO LOCATE THE 8 INCH SANITARY.



SKETCH
NOT TO SCALE:

NAVD 88
NAD 83/91

AB CONSULTANTS, INC.
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Fax- (443)-524-2897

STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
50 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

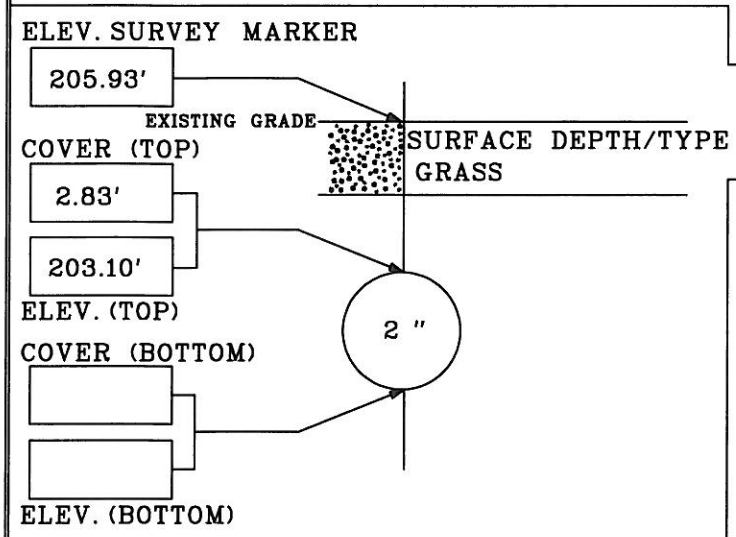
AB PROJECT * 200916703

SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-26 DATE DUG: 03/30/11

ANTICIPATED UTILITY: SEWER FORCE MAIN

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
CHARLES COUNTY 2" PLASTIC SANITARY
SEWER FORCE MAIN



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: GRASS

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

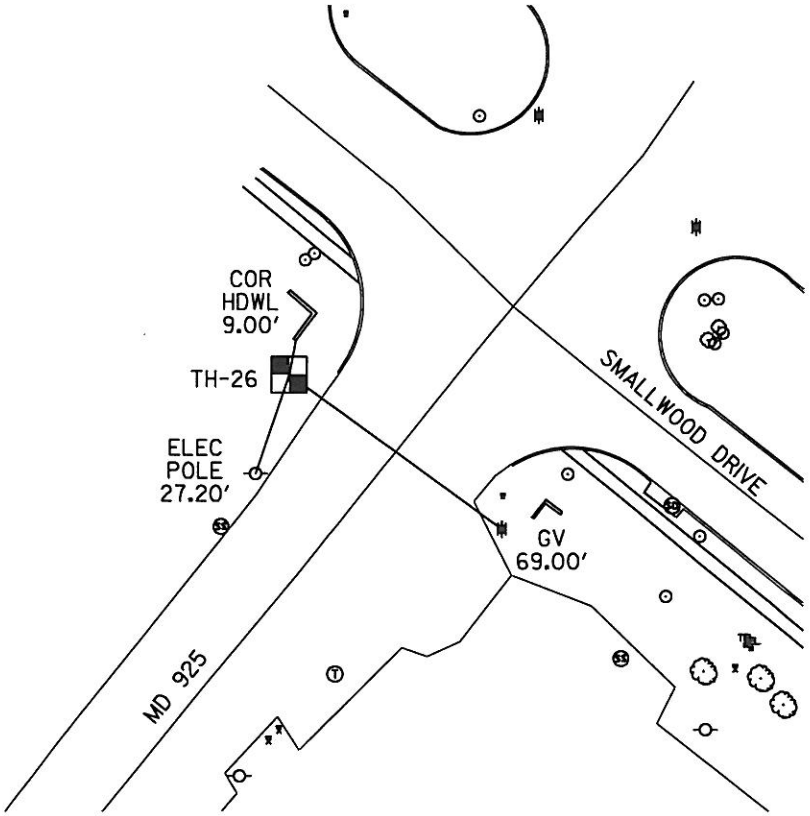
NORTHING: 343447.83

EASTING: 1334138.20

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.



SKETCH
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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
125 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

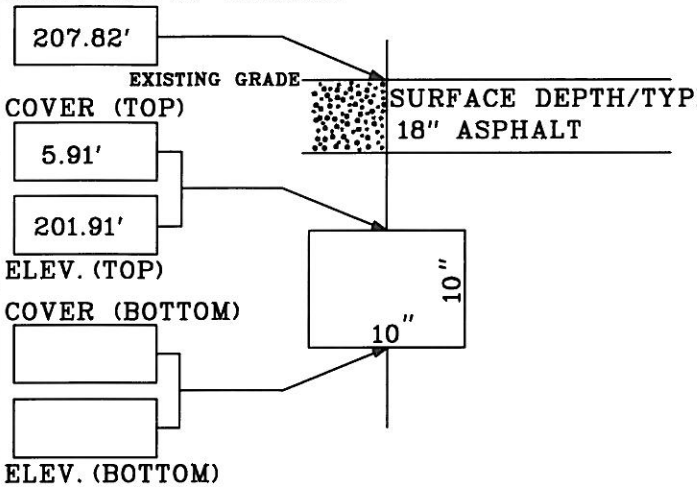
SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-27 DATE DUG: 03/28/11

ANTICIPATED UTILITY: SANITARY SEWER

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
10" WIDE BY 10" HIGH WOOD BEAM OR
DUCT BANK. SEE NOTE.

ELEV. SURVEY MARKER



TYPE OF MARKER SET: MAG NAIL

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

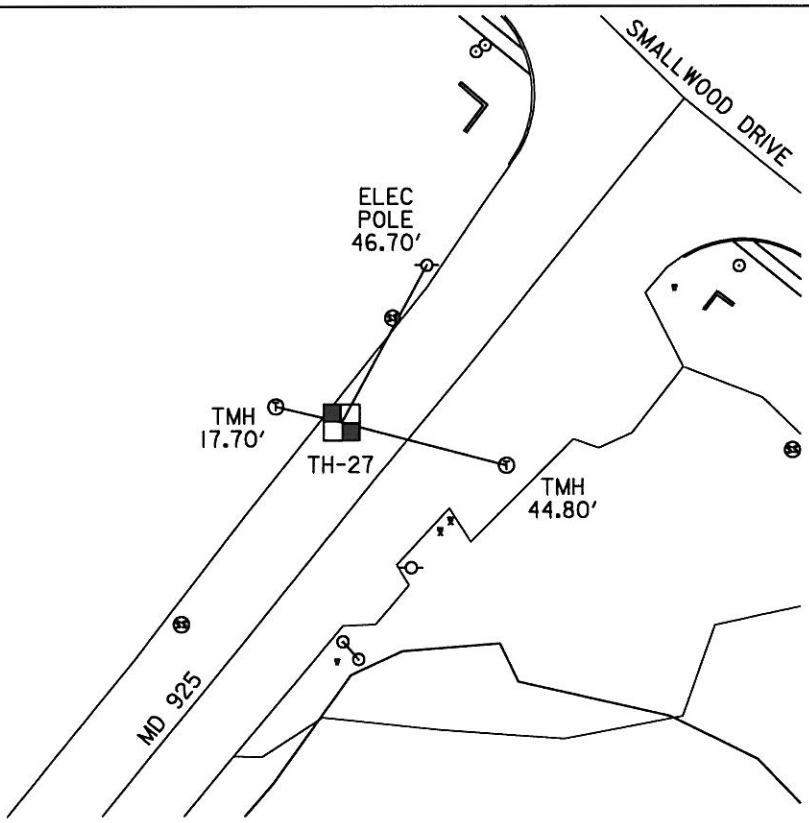
NORTHING: 343380.99

EASTING: 1334107.09

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: MAG NAIL SET OVER CENTER OF OBJECT. FOUND 10 INCH WIDE BY 10 INCH HIGH WOOD BEAM OR DUCT BANK AT ASSUMED LOCATION OF SEWER LINE. DOES NOT APPEAR TO BE DEEP ENOUGH TO BE THE ACTUAL SEWER LINE. POSSIBLE PROTECTION OVER TOP OF SEWER LINE. UNABLE TO LOCATE ACTUAL SEWER LINE.



SKETCH
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NAD 83/91

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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
125 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

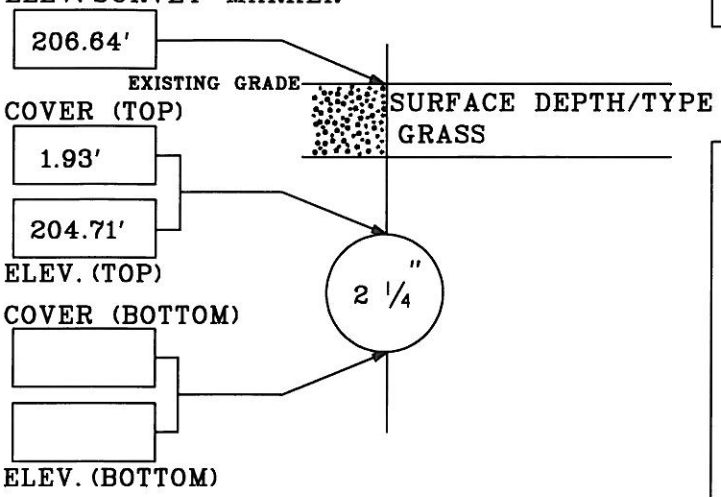
SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-28 DATE DUG: 03/24/11

ANTICIPATED UTILITY: ELECTRIC

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
SHA 2 1/4" PLASTIC CONDUIT ELECTRIC

ELEV. SURVEY MARKER



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: GRASS

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

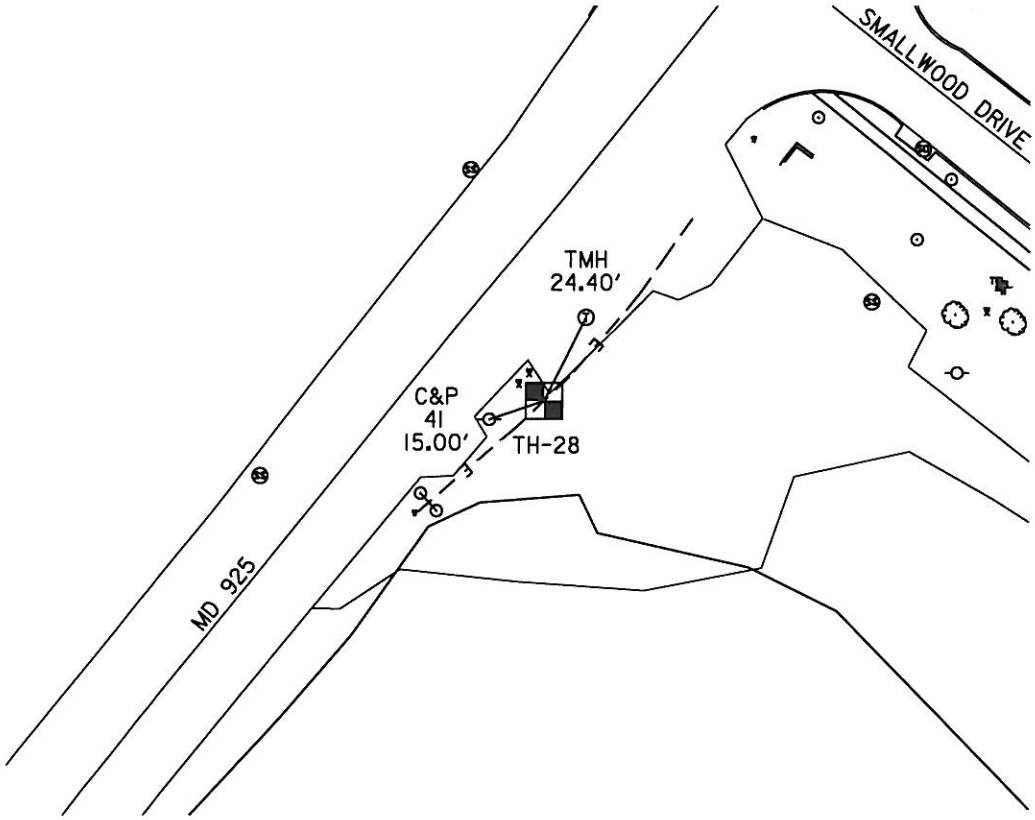
NORTHING: 343347.89

EASTING: 1334139.61

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.



SKETCH
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NAD 83/91

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STATE OF MARYLAND
NEIL LEONARD EPPIG
No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
125 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

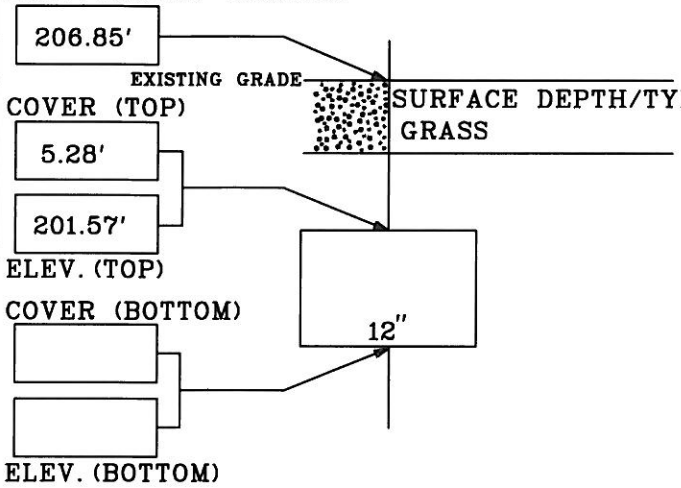
SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-29 DATE DUG: 03/30/11

ANTICIPATED UTILITY: TELEPHONE

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
VERIZON 12" WIDE CONCRETE DUCT BANK
TELEPHONE. SEE NOTE

ELEV. SURVEY MARKER



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: GRASS

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

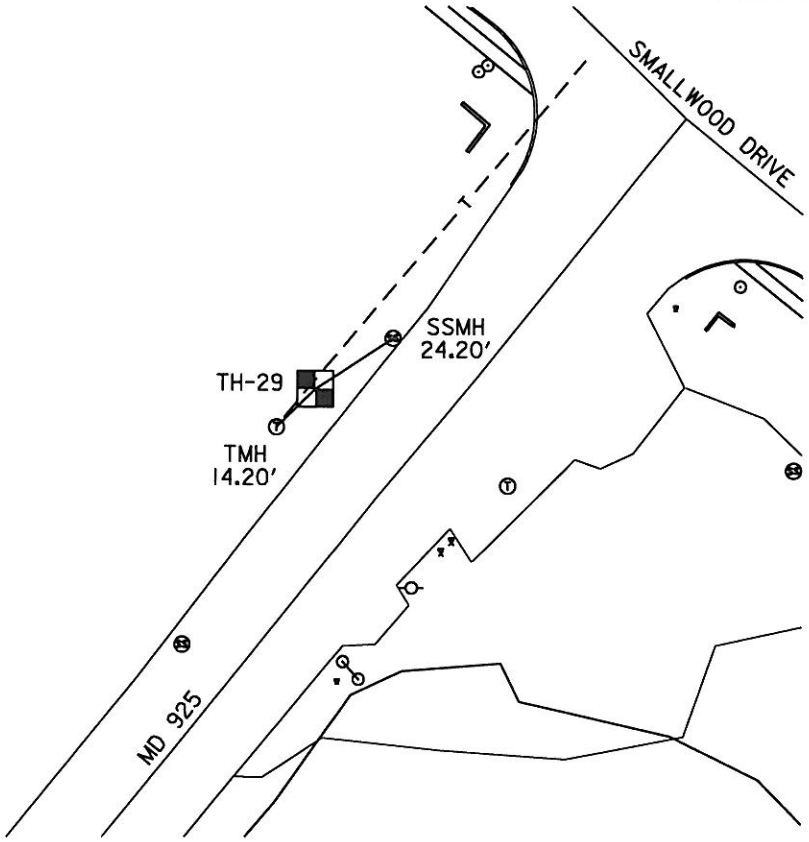
NORTHING: 343395.00

EASTING: 1334100.03

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.
UNABLE TO DETERMINE ELEVATION OR THICKNESS TO THE BOTTOM OF THE DUCT BANK DUE TO HOLE FILLING UP WITH WATER AND COLLAPSING IN.



SKETCH
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STATE OF MARYLAND
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No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
125 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

AB PROJECT * 200916703

SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-30 DATE DUG: 03/29/11

ANTICIPATED UTILITY: TELEPHONE

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
VERIZON 4" STEEL CONDUIT TELEPHONE

ELEV. SURVEY MARKER

208.12'

EXISTING GRADE

SURFACE DEPTH/TYPE
16" ASPHALT

COVER (TOP)

3.53'

204.59'

ELEV. (TOP)

4 "

COVER (BOTTOM)

ELEV. (BOTTOM)

TYPE OF MARKER SET: MAG NAIL

AT EXISTING GRADE OF: ASPHALT

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

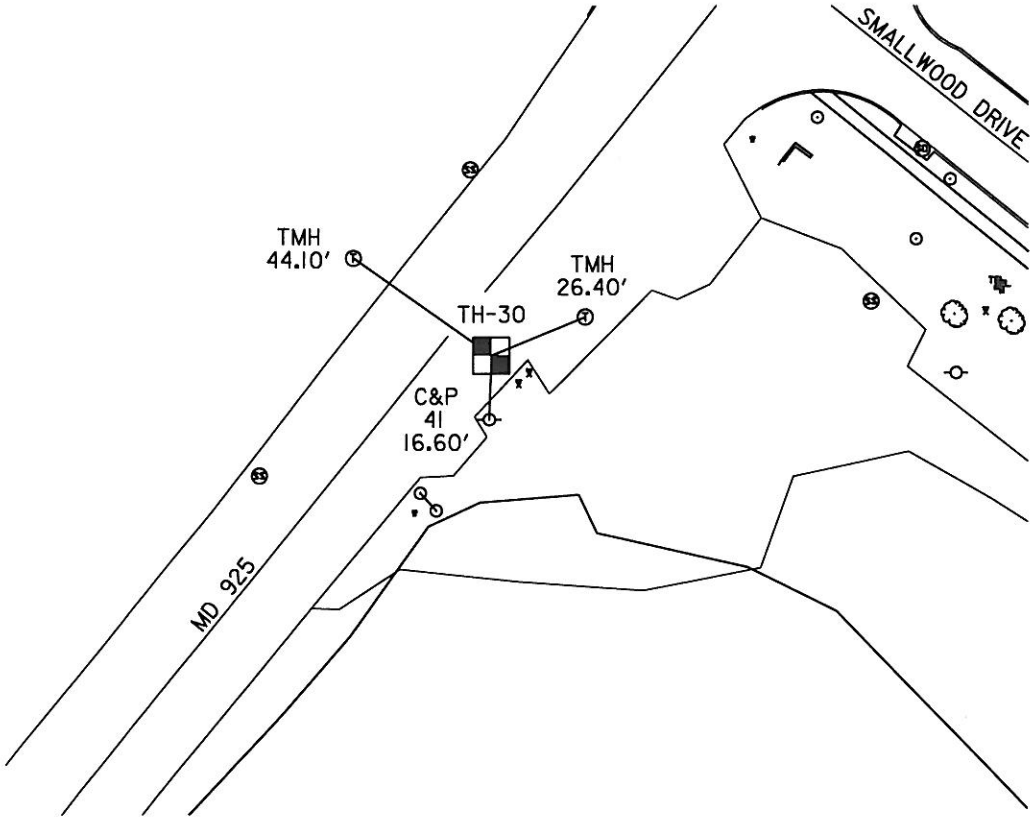
NORTHING: 343359.74

EASTING: 1334125.96

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: MAG NAIL SET OVER CENTER OF UTILITY.



SKETCH
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NAD 83/91

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STATE OF MARYLAND
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No. 21210
PROFESSIONAL LAND SURVEYOR

AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
60 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

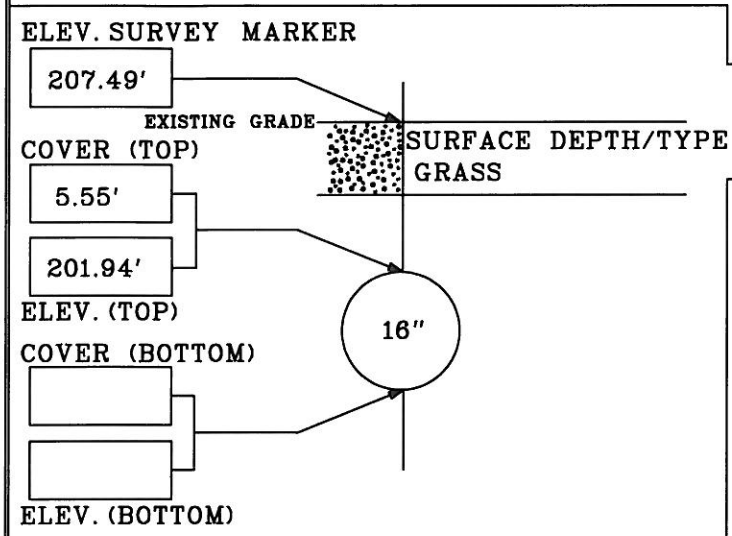
AB PROJECT * 200916703

SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-31 DATE DUG: 03/24/11

ANTICIPATED UTILITY: GAS

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
WG 12" IN 16" STEEL CASING GAS



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: GRASS

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

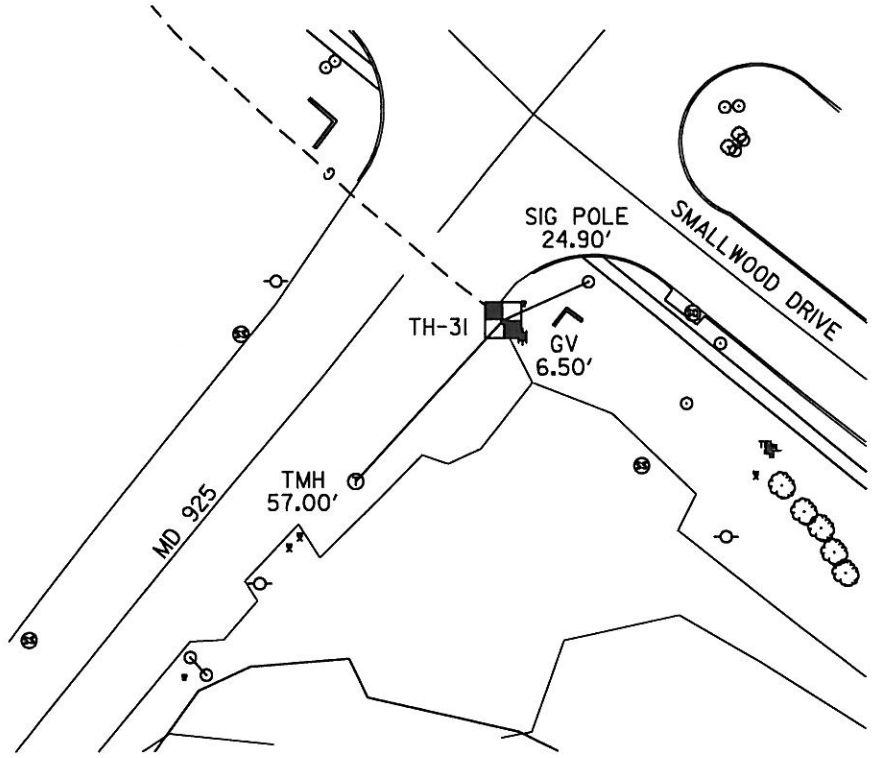
NORTHING: 343411.79

EASTING: 1334188.94

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.



SKETCH
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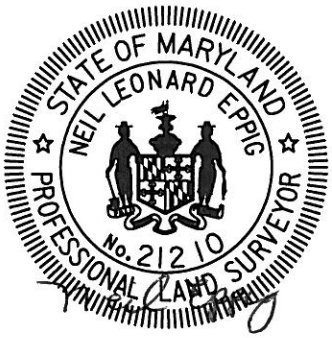


AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
50 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

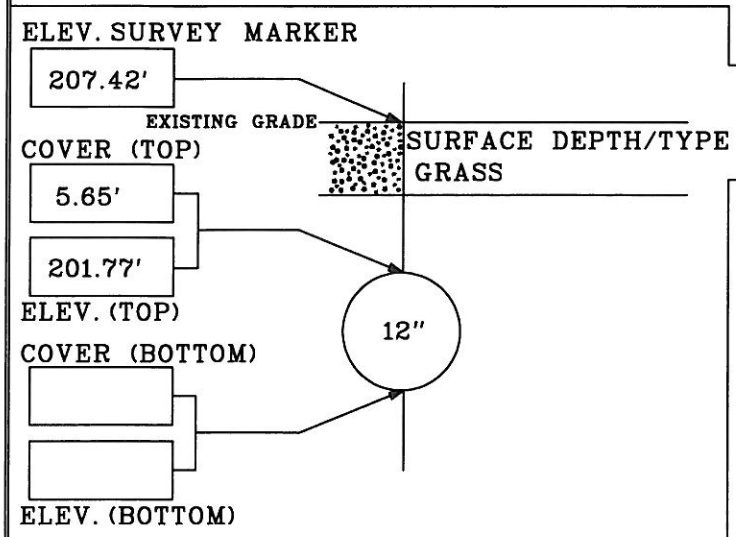
AB PROJECT * 200916703

SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-32 DATE DUG: 03/30/11

ANTICIPATED UTILITY: GAS

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
WG 12" C/I GAS



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: GRASS

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

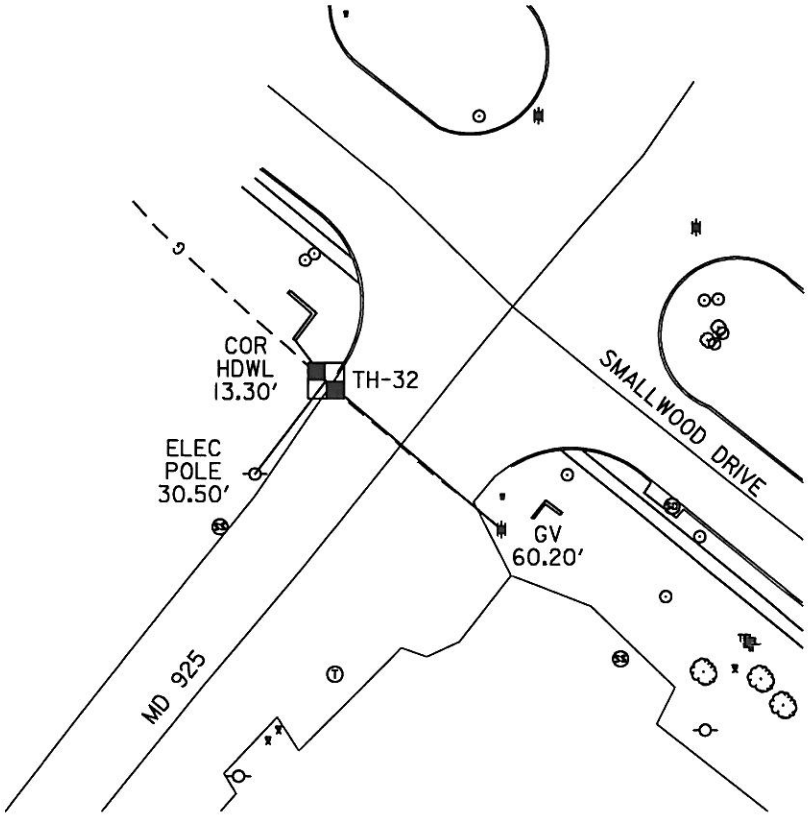
NORTHING: 343446.26

EASTING: 1334147.90

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.= 208.07'

NOTES: HUB SET OVER CENTER OF UTILITY.



SKETCH
NOT TO SCALE:

NAVD 88
NAD 83/91

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STATE OF MARYLAND
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AB CONSULTANTS UTILITY TEST HOLE REPORT

REPORT PREPARED BY: NEIL EPPIG

FOREMAN: TIM LYNN

JURISDICTION: CHARLES COUNTY

LOCATION: MD 925
50 FEET SOUTH OF SMALLWOOD DRIVE

CLIENT PROJECT *

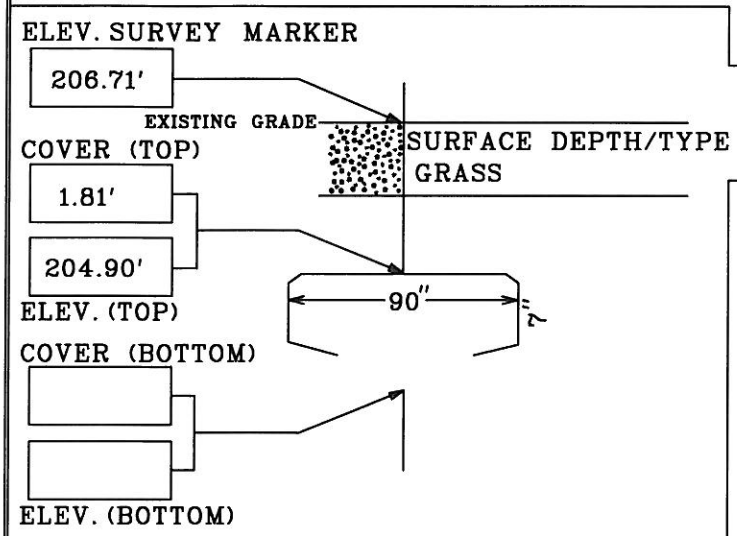
AB PROJECT * 200916703

SHEET * PLAN SCALE: 1"= '

TEST HOLE NO: TH-33 DATE DUG: 03/30/11

ANTICIPATED UTILITY: TELEPHONE

FOUND UTILITY: OWNER/SIZE/MATERIAL/TYPE
VERIZON 90" WIDE ROUGH POUR CONCRETE PROTECTION TELEPHONE



TYPE OF MARKER SET: HUB

AT EXISTING GRADE OF: GRASS

SURVEY PARTY CHIEF: MIKE SINGER

TEST PIT SURVEY INFORMATION

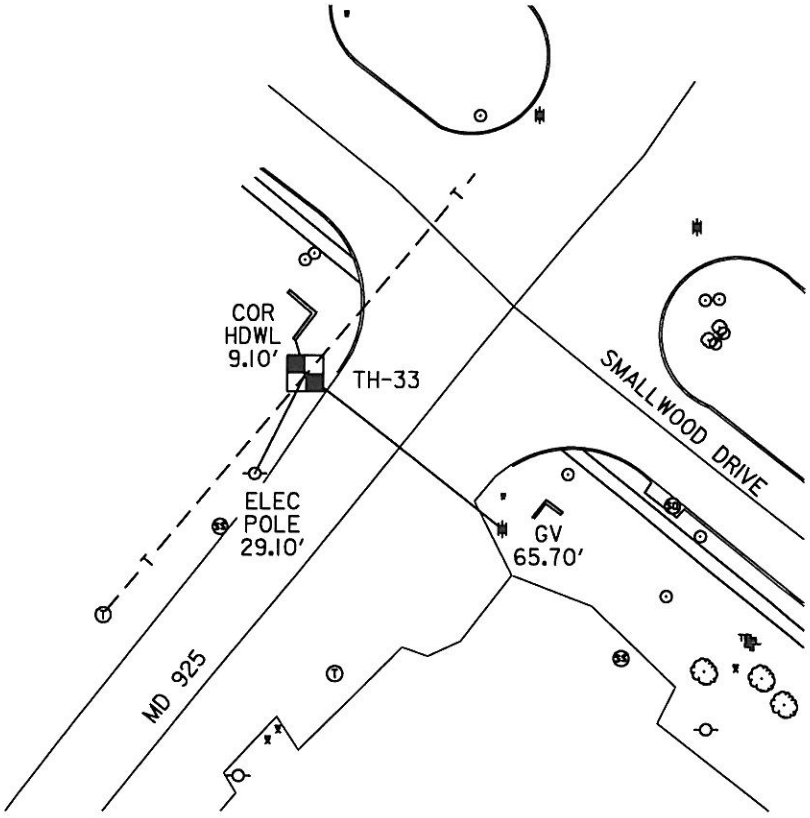
NORTHING: 343448.03

EASTING: 1334142.50

HORIZONTAL/VERTICAL CONTROL PROVIDED BY:
AB CONSULTANTS

BENCH MARK: TRAV-300 ELEV.- 208.07'

NOTES: HUB SET OVER CENTER OF CONCRETE PROTECTION.
UNABLE TO DETERMINE BOTTOM OF CONCRETE PROTECTION DUE TO THE SIZE AND CONFIGURATION.



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APPENDIX J
SUPPLEMENTAL SPECIFICATIONS

CONTRACT NO. T-1038-0140

WALDORF PARK AND RIDE
FACILITY DESIGN

CATEGORY 100
PRELIMINARY

SECTION 107 CONSTRUCTION STAKEOUT

107.03 CONSTRUCTION.

ADD: 107.03.10 Highway Traffic Signals. For installation of Highway Traffic Signals, arrange a meeting with the Engineer and representatives from the Traffic Operations Division to stakeout all items indicated on the sketches, plans, and in the Special Provisions. This meeting shall occur prior to any work after the notice to proceed. No work shall proceed before the stakeout is approved by the Engineer.

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107.04 MEASUREMENT AND PAYMENT.

ADD: Intersection Utility Stakeout. Intersection Utility Stakeout for Traffic Control Devices will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

CATEGORY 500
PAVING

SECTION 550 — PAVEMENT MARKING PAINT

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

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

Nontoxic Lead Free Waterborne Pavement Marking Material	951.01

550.03 CONSTRUCTION.

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

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

(a) Temperature. The markings shall be applied when the paint, ambient and surface temperature, and relative humidity conform to the manufacturer's recommendations.

(b) Glass Beads. The Contractor shall apply the Maryland Blend gradation of glass beads uniformly across the surface of the stripe, at the rate of 7 to 9 lb/gal of paints.

(c) Thickness. The paint shall be applied at a wet film thickness of 18 ± 1 mils.

(d) Color. The color of the dry markings shall match Federal Standard 595 (38907 - yellow or 37925 - white). The Contractor shall make available the specified color chips for the Engineer's use to visually determine that the waterborne material matches the specified color.

(e) No-Track. The paint shall conform to 60 second no-track requirements. The no-track condition shall be determined by passing over the applied line at approximately 30 degrees with a standard passenger car or pickup truck. When viewed from a distance of 50 ft, the pavement surface shall show no evidence of the paint being picked up and redeposited on the pavement by the vehicle.

(f) Retroreflectance. The minimum retroreflectance shall be 150 millicandelas/lux/square meter for yellow and 250 millicandelas/lux/square meter for white as determined in conformance with MSMT 729.

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

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

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

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

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

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

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

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

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

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

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

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

(a) Pavement Marking Paint lines (striping) will be measured and paid for at the Contract unit price per linear foot for the color and width specified.

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

CATEGORY 500 PAVING

SECTION 556 — PREFORMED THERMOPLASTIC PAVEMENT MARKINGS

556.01 DESCRIPTION. Furnish and install heat applied preformed thermoplastic pavement marking symbols, legends, and lines as specified in the Contract Documents or as directed by the Engineer.

556.02 MATERIALS.

Preformed Thermoplastic is a durable pavement marking material. All Preformed Thermoplastic Pavement Marking material shall be selected from the Qualified Products List.

Heat Applied Permanent Preformed Thermoplastic Pavement Marking Material	951.06

556.03 CONSTRUCTION.

556.03.01 Quality Assurance/Quality Control. Section 549.

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

Applying pavement markings over longitudinal joints is prohibited; they shall preferably be offset 2 in. from them.

Thermoplastic Pavement Marking shall conform to the following:

(a) Temperature. The markings shall be applied when the thermoplastic, ambient, and surface temperature, and relative humidity conform to the manufacturer's recommendations.

(b) Color. The color of the dry markings shall match Federal Standard 595 (13538 - yellow or 17886 - white). The Contractor shall supply the specified color chips for the Engineer's use to visually determine that the thermoplastic material matches the specified color.

(c) Primer. When specified by the manufacturer, a primer shall be used if thermoplastic is applied to Portland cement concrete.

(d) 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.

556.03.05 Packaging. The material shall be handled for shipping, unloading and storage as recommended by the manufacturer. Each shipping package shall be marked with the following information:

(a) Manufacturer's name.

(b) Description of item.

(c) Date of manufacture.

(d) Contractor's name.

(e) Purchase order number.

(f) Lot number.

(g) Color.

556.04 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.

Preformed Thermoplastic Pavement Marking 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

Preformed Thermoplastic Pavement Marking lines will be measured and paid for at the Contract unit price per linear foot for the color and width specified.

CATEGORY 500
PAVING

SECTION 565 — REMOVAL OF EXISTING PAVEMENT MARKINGS

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

565.02 MATERIALS. Not applicable.

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

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

(a) How the Contractor proposes to perform the work while ensuring conformance with the Specifications.

(b) Proposed method of removal based on road conditions, type and number of equipment to be used, manpower expectations, and time frame to complete the work based on maintenance of traffic (MOT) restrictions.

(c) Location and quantity of markings to be removed.

(d) Protective shielding plan and containment system, particularly in the case of markings that may contain toxic materials.

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

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

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

(a) Manual. A scraper or putty knife shall be used to lift tape from the pavement surface. Open flame for tape removal is prohibited.

(b) High Pressure Water Blasting. A high pressure water blast shall be used to break the bond between the marking material and the pavement surface. The water blast may contain fine grit.

(c) Alternate Methods. Abrasive blasting or grinding methods shall be submitted for approval to the Office of Materials Technology prior to use.

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

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

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

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

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

(a) Removal of Existing Pavement Marking Lines per linear foot, any width.

(b) Removal of Existing Pavement Marking Letters, Symbols, Arrows, and Numbers per square foot.

CATEGORY 800
TRAFFIC

AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS

DESCRIPTION. Furnish and install self-contained Audible/Tactile Pedestrian Pushbutton Station and Signs, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. Audible/Tactile Pedestrian Pushbutton Station and Signs and all component parts must meet the latest edition of the National Electrical Manufacturers Association (NEMA) Standards and Underwriters Laboratory (UL), as applicable

Serial numbers and model numbers, if available, shall be permanently engraved on all removable components and hardware. The serial number and model number shall be etched, stamped, molded, or attached using metallic self-adhesive labels. The use of adhesive backed paper labels is not acceptable.

CONSTRUCTION. Audible/Tactile Pedestrian Pushbutton Station and Signs will be designed to mount near or at the bottom of the pedestrian display mounting post. The pushbutton assembly for the audible signal may replace or supplement an existing pedestrian signal pushbutton.

Audible/Tactile Pedestrian Pushbutton Station and Signs shall be designed as follow:

(1) A single base unit at the traffic control cabinet must be able to control 2 to 12 (maximum of 3 per phase) push button stations.

(2) Only a single 2 - conductor cable will be required from traffic controller cabinet per each pushbutton to operate all pushbutton features.

(3) Each station will have a 2-in. button with a tactile raised directional arrow on the button.

(a) It shall be possible to change the arrow direction to one of four directions.

(b) Arrow/button shall vibrate during the walk period following a push of the button.

(4) The push button station frame shall be cast aluminum with mounting holes for a 5 in. by 7.75 in. or larger pedestrian sign.

Audible/Tactile Pedestrian Pushbutton Station and Signs will have the following features.

(1) Locating tone

(2) 5 walk sound choices that shall be field selectable.

(3) 3 pedestrian clearance sound choices that shall be field selectable.

(4) A Direction of Travel message shall be standard with extended push.

(5) An Information message shall be optional with extended push.

The audible sounds emitted by the Audible/Tactile Pedestrian Pushbutton Station and Signs shall have the following properties

(1) All audible sounds shall emanate from the push button station.

(2) All audible sounds for all push button stations shall be synchronized.

(3) Each audible feature shall have independently-adjustable minimum and maximum volume limits.

(4) All sounds shall automatically adjust over a 60 dB range to compensate for ambient noise levels.

(5) All volumes and optional features shall be settable using a handheld infrared device with password security. The infrared device shall be capable of updating/setting all push button stations, or the intersection from a single pushbutton station (Global updating).

(6) The ability to mute sounds at all crosswalks except activated crosswalks.

The system shall have user-selectable multiple language capability.

The system shall be able to play an emergency preemption message.

The system shall be able to self-test its buttons and to report any faults to the traffic controller.

Warranty. Audible/Tactile Pushbutton Station and Signs shall be warranted by the Manufacturer for a period of 24 months from the date of delivery.

Compatibility Testing: Audible/Tactile Pushbutton Station and Signs manufacturers shall certify that their modules meet the Load Switch and Signal Conflict Monitor Compatibility testing requirements found in the most recent, formally-adopted version of the specification titled "Pedestrian Traffic Control Signal Indications - Part 2: Light Emitting Diode (LED) Pedestrian Traffic Signal Modules," published by the Institute for Transportation Engineers (ITE).

MEASUREMENT AND PAYMENT. Audible/Tactile Pedestrian Pushbutton Station and Signs will be measured and paid for at the contract unit price each. The payment will be full compensation for furnishing, programming, delivery to the specified signal shop for testing, pick up, and installing the push button stations, signs, all cables, labor, equipment, tools, and incidentals necessary to complete this work.

Audible/Tactile Pedestrian 2-wire Central Control Unit will be measured and paid for at the contract unit price per each. The payment will be full compensation for furnishing, programming delivery to the specified signal shop for testing, pick up, and installing the Audible/Tactile Pedestrian Base unit and all cables, labor, equipment, tools, and incidentals necessary to complete this work.

CATEGORY 800
TRAFFIC

CATALOG CUTS AND WORKING DRAWINGS

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

MATERIALS. Not Applicable.

CONSTRUCTION.

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

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

Submittal Documents. Drawings shall be neat in appearance, legible and explicit to enable proper review. D size plans shall still be legible when reduced to one half size. They shall be complete and detailed to show fabrication, assembly and installation details, wiring and control diagrams, catalog data, pamphlets, descriptive literature, and performance and test data. They shall be accompanied by calculations or other sufficient information to provide a comprehensive description of the structure, machine or system provided and its intended manner of use. If drawings deviate from the Contract Documents, advise the Engineer in writing with the submittal and state the reason for the deviation.

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

Shop drawings shall show types, sizes, accessories, layouts including plans, elevations and sectional views, component, assembly and installation details, and all other information required to illustrate how applicable portions of the Contract requirements will be fabricated and installed. In case of fixed mechanical and electrical equipment, layout drawings drawn to scale, shall be submitted to show required clearances for operation, maintenance and replacement of parts. Manufacturer's certified performance curves, catalog cuts, pamphlets, descriptive literature, installation and application recommendations, shall be provided and indicate conformance to the Contract Documents. Certifications shall be originals. Certification shall also be sent to the Office of Materials and Technology (OMT) as required in the Contract Documents.

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

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

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

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

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

The review and approval of Contractor's drawings by the Administration shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. The Contractor shall be responsible for the verification and accuracy of all dimensions and insuring that all Contractor furnished items are compatible, and conform to all design and performance criteria.

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

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

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

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

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

Chief, Traffic Operations Division
Maryland State Highway Administration
7491 Connelley Drive
Hanover, Maryland 21076

Each submittal shall have a transmittal page that indicates the Contractor's and Subcontractor's address and phone numbers. Submittals containing multiple items need the transmittal only on the exterior of each package. For original submittals, and each subsequent resubmittal that may be required, 9 copies will be submitted for projects administered by the District, and 6 copies will be submitted for projects administered by Office Of Traffic and Safety. A separate copy shall be forwarded to the Engineer.

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

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

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

MARYLAND STATE HIGHWAY ADMINISTRATION
SUBMITTAL PACKAGE #_____ DATED CONTRACT # _____ LOCATION PROJECT DESC. ITEM # _____ THIS ITEM CONTAINS_____ PAGES ITEM DESCRIPTION
☐ ACCEPTED ☐ ACCEPTED AS NOTED ☐ REJECTED - REVISE & RESUBMIT
REVIEWERS NAME DATE

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

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

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

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

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

ACCEPTED: no corrections, no marks

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

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

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

CATEGORY 800
TRAFFIC

GALVANIZED TRAFFIC SIGNAL PEDESTAL POLES AND TRANSFORMER BASES

DESCRIPTION. Furnish and install galvanized traffic signal pedestal poles and transformer bases at locations specified in the Contract Document or as directed by the Engineer.

MATERIALS. Design shall meet 2001 edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals except as noted. All welding shall conform to American Welding Society (AWS) Structural Welding Code D1.1 - Steel, Tubular Structures.

Determine each pedestal pole's height by the total height of the pedestal pole including the transformer base.

(a) 10 ft pole height consists of a 103 in. steel shaft with a steel base plate plus a 17 in. transformer base.

(b) 14 ft pole height consists of a 151 in. steel shaft with a steel base plate plus a 17 in. transformer base.

(c) 20 ft pole height consists of a 240 in. steel shaft with a steel base plate plus a 17 in. transformer base.

Each pedestal pole furnished shall consist of a design from a steel shaft with a steel base plate, transformer base and all miscellaneous hardware.

(a) The pedestal pole shaft shall be fabricated of one length and shall have one longitudinal weld, parallel to the long axis of the pedestal pole shaft, with no transverse welds. The longitudinal weld shall be finished to form a smooth outside surface and the wall of the pedestal pole shaft shall be uniform in thickness including the welded area. The pedestal pole shaft shall be round or multi-sided (less than eight sides not acceptable) in cross section. 14 ft units shall be uniformly tapered from butt to tip with a 1 in. reduction in diameter for each 7 ft in length (0.14 in./ ft). 10 ft unit shall not be tapered.

(1) 10 ft pedestal pole shaft shall be 4-1/2 in. outside diameter, Schedule 40 pipe, and conform to A 501.

(2) All 14 ft pedestal poles shall be 7-1/2 in. outside diameter at the base and shall be made of 11 gauge (0.119 in.) thickness steel conforming to A 595, Grade A or equivalent.

(3) All 20 ft pedestal poles shall be 7-1/2 in. outside diameter at the base and shall be made of 3 gauge (0.25 in.) thickness steel conforming to A 595, Grade A or equivalent

(b) The base plate material shall meet the requirements of A 709, Grade 36. The base plate shall be secured to the lower end of the pedestal pole shaft by two continuous electric arc welds. The base plate shall telescope the pedestal pole shaft with one weld on the inside of the base plate at the end of the pedestal pole shaft. The remaining weld shall be located on the outside of the base plate at the top of the pedestal pole shaft. The weld connection shall develop the full strength of the adjacent pedestal pole shaft to resist bending action. All bases plate shall be fabricated with the holes for anchor bolts to the size and location dimensions as shown in MD-818.16 and 818.17.

(c) 14 ft pedestal poles shall be furnished with entrance ways for cable as noted in the contract documents. These holes must be factory drilled and a straight tapped coupling, conforming to Underwriters Laboratory's UL-6 Specification, for 2 in. rigid conduits, must be installed for each hole. A nipple with a unitized hexagonal fitting and integral inside radius on one end must then be installed and fully seated on the interior side of the coupling. Location and installation of the coupling shall be as shown in MD-818.17.

(d) All pedestal poles and hardware, except materials manufactured from stainless steel or cast aluminum, shall be hot dipped galvanized. The galvanized coating shall conform to the thickness, adherence and quality requirements of A 123 and A 153 for hardware. Threaded components shall be chased and cleaned after galvanizing. All internally threaded components shall be tapped oversize the minimum amount required to permit assembly on the coated externally threaded fastener. Internally threaded components shall be provided with a lubricant which shall be clean and dry to the touch.

(e) Each pedestal pole shall be furnished with a removable domed cap, fabricated from cast aluminum, circumferentially attached to the side of the pole with three hex head type 304 stainless steel bolts (1/4 in. - 20 UNC).

(f) Each pedestal pole shall have an identification plate mechanically attached 6 in. above the pedestal pole base plate and oriented so that the identification plate may be read from a ground observation position.

(g) Recessed hub type, galvanized malleable iron plugs shall be inserted flush into all couplings.

Transformer Bases

(a) All transformer bases shall be approved by FHWA as meeting breakaway under NCHRP 350.

(b) Each transformer base must be furnished with four hex head bolts, four hex head nuts and all associated hardware as shown on the appropriate detail for fastening the pedestal pole base plate to the top of the transformer base. All bolts shall conform to A 325 specifications and must be galvanized.

Anchor Bolts

(a) Each pedestal pole anchor bolt shall be made of steel conforming to M 314, Grade 55 S1

(b) Anchor bolt threads shall be of cut thread design with a minimum 6 in. of threads at the top.

(c) The template and anchor plates shall be as shown on MD801.01.

(d) The diameter of the anchor bolt shall be stamped into the top of the threaded end of each anchor bolt.

(e) Each anchor bolt shall be provided with two attached heavy hex nuts and two attached flat washers.

(1) Anchor bolt nuts shall conform to A 194, grade 2 or 2H, or A 563, D or DH.

(2) All nuts shall be tapped oversize the minimum amount required to permit assembly on the coated externally threaded fastener.

(3) Washers shall conform to F 436.

(f) All nuts, washers, and the top 12 in. of all anchor bolts shall be hot dipped or mechanically galvanized. The galvanized coating shall conform to the thickness, adherence and quality requirements of A 123 or A 153 for hardware.

All high strength bolts (of a given length), nuts (of a given size) and washers (of a given diameter) shall be from the same manufacturing lot per each requisition of materials. The use of foreign made fasteners is prohibited.

CONSTRUCTION.

Refer to 818.03

MEASUREMENT AND PAYMENT.

Pedestal poles will be measured and paid for at the Contract unit price per each type of pole furnished and installed. The payment will be full compensation for furnishing and installing pedestal poles, breakaway base and all materials , labor, equipment, tools and incidentals necessary to complete work.

Anchor bolts will be measured and paid for as specified in Section 801.

Tag Detail

Mfg: _____[1] Contract #: ____[2]

Pole Diameter:__[3] Height:_[4] Gauge:_[5]

Anchor Bolts:___[6] Bolt Circle:__[7]

Tag Reference

[1] Name of the manufacturer of the pedestal pole.

[2] Administration Contract Number of the pedestal pole.

[3] Pole outside diameter at the base: 4-½ in. O.D. or 7-½ in. O.D.

[4] Pole height[1]: 10ft' , 14ft, 20 ft

[5] Pole gauge: Schedule 40 or 11 GA

[6] Anchor bolt size: 1 in. Dia. x 40 in. Length

[7] Bolt circle diameter: 11 in. Dia.

[1]Pole height includes the height of the pedestal pole and transformer base. Typically, the transformer base is 17 in. in height which corresponds to 10 ft pole having a height of 103 in.; and a 14 ft having a height of 151 in

800 TRAFFIC
LED COUNTDOWN PEDESTRIAN SIGNALS

DESCRIPTION. Furnish and install self-contained LED Pedestrian Countdown Signals, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. LED Pedestrian Signals and all component parts must meet the latest edition of the National Electrical Manufacturers Association (NEMA) Standards and Underwriters Laboratory (UL), as applicable. In addition, LED Pedestrian Countdown signals must meet the requirements set forth in the most recent, formally-adopted version of the specification titled "Pedestrian Traffic Control Signal Indications (PTCSI) - Part 2: Light Emitting Diode (LED) Pedestrian Traffic Signal Modules," published by the Institute for Transportation Engineers (ITE). All LED Pedestrian Countdown Signals must be certified by the manufacturer to meet or exceed all requirements of that specification over their entire 5-year warranty period. Serial numbers and model numbers, if available, must be permanently engraved on all removable components and hardware. The serial number and model number must be etched, stamped, molded, or attached using metallic self-adhesive labels. The use of adhesive backed paper labels is not acceptable.

CONSTRUCTION.

LED Countdown Signal Modules.

- **(a)** LED countdown modules must fit into existing 16-inch traffic signal housings built to PTCSI standards without modification to the housing.
- **(b)** The LED countdown module must be a single, self-contained device, not requiring on-site assembly for installation into existing traffic signal housing.
- **(c)** The assembly of the LED countdown module must be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.
- **(d)** The signal module must be protected by a ¼ inch thick non-glare UV treated polycarbonate face lens.
- **(e)** The signal must have 2 individual sets of wires for electrical connections. One set for the hand/man section and another for the countdown section. Each set must be made of three secured, color coded (blue, red, white), 36 inches long, 600V, 16 AWG jacketed wires, rated for service at +105ºC.

Environmental

(a) The LED countdown module must be rated for use in the ambient operating temperature range of -40°C (-40°F) to +74°C (+165°F).

(b) Completely seal the LED countdown module against dust and moisture intrusion per the requirements of NEMA Standard 250 – 1991 sections 4.7.2.1 and 4.7.3.2 for type 4 enclosures to protect all internal components.

Chromaticity

(a) The measured chromaticity coordinates for the white walking Person and the Portland Orange Hand and Digits must conform to the chromaticity requirements of section 8.04 and figure 1 of the PTCSI standard.

(b) The chromaticity measurements must remain unchanged over the input line voltage range of 80 VAC to 135 VAC.

Display

(a) The LED countdown signal module must consist of a double overlay message combining the symbols of a Hand and walking Person and two “7 segment” digits forming the time display.

(b) Arrange the Pedestrian icon LEDs to form solid icon symbols. The shape of the symbols must conform to the standard symbols for pedestrian signals.

(c) Distribute the LED's evenly in each Pedestrian icon. The distance between each LED shall be evenly spaced.

(d) The Hand/Person symbols must be at least 10" high and 6.5" wide and must incorporate sufficient LED’s to assure adequate luminous intensity.

(e) The countdown digits must be at least 9" high and must be made of 2 rows of at least 144 LED's.

(f) The Portland Orange LED's must be of the latest Alln GaP technology and the white LED's of the latest In GaN technology.

(g) Interconnect the individual LED light sources so that a catastrophic failure of a single LED will result in a total loss of not more than 3 LED's or 5% of the signal light output.

Drive circuitry

(a) The LED drive current shall be regulated to compensate for line voltage fluctuations over the range of 80VAC to 135 VAC. The luminous output shall not vary more than 1% over the voltage range and shall not be perceptible to the human eye.

(b) The drive circuitry must include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in section 2.1.6, NEMA Standard TS-2, 1992.

(c) The on-board circuitry must meet FCC title 47, Sub-Part B, Section 15 regulations concerning the emission of electronic noise.

(d) The circuitry shall ensure compatibility and proper triggering and operation of load switches and conflict monitors in signal controllers currently in use by the procuring traffic authority.

(e) The countdown signal shall not be activated by input signals under 80 VAC.

(f) The "countdown" portion of the signal must have a high "off state" input impedance to ensure it does not prevent the conflict monitor from detecting an open load failure on the pedestrian signals. The input impedance of the countdown signal shall be such as to produce a load switch leakage voltage above 25 VAC to the conflict monitor for up to 4 units per channel.

(g) The countdown signal drive circuitry must not suffer any damage when subjected to defective load switches providing a half wave signal output.

(h) Typical power consumption of the countdown display must not exceed 5 watts with a power factor greater than 90%.

Countdown Function.

(a) The countdown module must be compatible with all types of traffic controllers.

(b) The countdown timer module must have a micro-processor capable of recording it's own time when connected to a traffic controller.

(c) When connected, the module must blank out the display during the initial cycle while it records the countdown time using the Walk & D/Walk signal indications.

(d) The display of the number of remaining seconds shall begin only at the beginning of the pedestrian change interval.

- **(1)** After the countdown displays "zero," the display must remain dark until the beginning of the next countdown.
- **(2)** The countdown pedestrian signal must display the number of seconds remaining until the termination of the pedestrian change interval.
- **(3)** Countdown displays shall not be used during the walk interval, nor during the yellow change interval of a concurrent vehicular phase.

(d) The countdown timer module shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.

(e) The countdown module shall register the time for the walk and clearance intervals individually and shall begin counting down from the start of the clearance time or the sum of both interval times if selected.

(f) If the walk interval is pre-empted (emergency vehicle), the countdown module shall skip the remaining walk time and begin the clearance interval countdown to reach 0 at the same time as the flashing hand becomes solid.

(g) If the clearance interval is pre-empted (train), the countdown module shall skip the remaining clearance time and reach 0 at the same time as the flashing hand becomes solid.

(h) In the cycle following a pre-emption call, the signal shall display the correct time and not be affected by the reduced previous cycle. The countdown must always reach 0 at the same time as the flashing hand becomes solid.

(i) When the flashing hand becomes solid, the module will display “0” for one second and then blank-out.

(j) The countdown timer must be capable of timing 2 consecutive complete pedestrian cycles outputted by the traffic controller (no steady hand signal between cycles).

(k) The countdown module must have an internal conflict monitor preventing any possible conflicts between the Hand/Person signal indications and the time display. It shall be impossible for the countdown to display any time during a solid hand indication.

(l) The countdown module shall have accessible dip-switches for the following user selectable options:

(1) Display 0 during stand-by.
(2) Turn on all LEDs for testing
(3) "Coordinated" mode, (displays clearance time only)
(4) Disable countdown display.

(m) The LED module shall have a removable plug on the rear of the unit to allow for easy access to dip switches.

(n) If the pedestrian change interval is interrupted or shortened as a part of a transition into a preemption sequence, the countdown pedestrian signal display must be discontinued and go dark immediately upon activation of the preemption transition.

Housing. Countdown Pedestrian Signals must be have a single piece cast aluminum case housing, a lens, and a single piece cast aluminum swing down door frame.

(a) The maximum overall dimension of the signal shall be 18.5" W x 18.75" H x 9" D. (470 x 476 x 229 mm), including the visor and hinges. The distance between the mounting surfaces of the upper and the lower openings shall be 15.75" (400 mm).

(b) The case shall be one piece corrosion resistant aluminum alloy die casting, complete with integrally cast top, bottom, sides and back.

(1) Four integrally cast hinge lug pairs, two at the top and two at the bottom of each case, shall be provided for operation of the swing down door.

(2) When properly mated to other pedestrian signal components and mounting hardware, the case shall provide a dustproof and weatherproof enclosure and shall provide for easy access to and replacement of all components.

(3) The case shall be mounted via upper and lower openings, suitable for either post top or bracket mounting. The openings must accommodate standard 1.5" (39 mm) pipe brackets. The bottom opening of the case must have a shurlock boss integrally molded into the case. The dimension of the shurlock boss shall be:

(a) Outside diameter 2.625" (667 mm)
(b) Inside diameter 1.969" (50 mm)
(c) Number of teeth 72
(d) Angle of teeth 90°
(e) Depth of teeth 5/64" (2 mm) inch.

A shurlock boss of the same dimensions shall be an option for the top opening of the case. The radial angular grooves of the shurlock boss, when used with the shurlock fittings, shall provide positive positioning of the entire signal to eliminate rotation or misalignment of the signal.

(c) The door frame shall be a one piece corrosion resistant aluminum alloy die casting, complete with two hinge lugs cast at the bottom and two latch slots cast at the top of each door.

(1) The door must be attached to the case by means of two Type 304 stainless steel spring pins.
(2) Two stainless steel hinged bolts with captive stainless steel wingnuts and washers must be attached to the case with the use of stainless steel spring pins.
(3) Latching or unlatching of the door must require no tools.

Warranty. Manufacturers shall provide a written warranty with the following minimum provisions:

(a) LED countdown signal modules shall be replaced, repaired or purchase value refunded if the module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery.
(b) LED countdown signal modules which exhibit luminous intensities less than the minimum specified values within the first 60 months of the date of delivery shall be replaced, repaired or purchase value refunded.

Compatibility Testing: The LED Pedestrian Countdown Signal manufacturer shall certify that their equipment meets the Load Switch and Signal Conflict Monitor Compatibility testing requirements found in the most recent, formally-adopted version of the specification titled “Pedestrian Traffic Control Signal Indications - Part 2: Light Emitting Diode (LED) Pedestrian Traffic Signal Modules,” published by the Institute for Transportation Engineers (ITE).

MEASUREMENT AND PAYMENT. LED Pedestrian Countdown Pedestrian Signals will be measured and paid for at the contract unit price each. The payment will be full compensation for furnishing and installing the signals, LED modules, equipment specified, all mounting hardware, labor, and incidentals necessary to complete this work.

CATEGORY 800
TRAFFIC
LED TRAFFIC SIGNAL MODULES

DESCRIPTION. Furnish and install self-contained LED signal head modules to be used in place of the incandescent lamp, reflector, socket, gasket, and lens assembly of standard vehicle signal sections, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. Manufacturers of Red and Green 8-in. and 12-in. LED traffic signal modules are required to file a statement with the Maryland Energy Administration, certifying that each signal to be sold or offered for sale in Maryland is in compliance with the State's energy efficiency standard. Information on this requirement can be found at the Maryland Energy Administration's website.

The modules shall employ a lens assembly that presents an appearance that is similar to those found on standard incandescent signals.

LED signal heads, and all component parts shall meet the latest edition of the National Electrical Manufacturers Association (NEMA). In addition, LED signals shall meet the requirements set forth in the most recent, formally-adopted version of the specification titled “Vehicle Traffic Control Signal Heads - Part 2: Light Emitting Diode (LED) Vehicle Traffic Signal Modules,” published by the Institute for Transportation Engineers (ITE).

(a) The manufacturer must certify all signals meet or exceed all requirements of that specification over their entire 5-year warranty period.

(b) Permanently identify serial numbers and model numbers, if available, on all removable components and hardware. The serial number and model number shall be etched, stamped, molded, or attached using metallic self-adhesive labels. The use of adhesive backed paper labels is not acceptable.

CONSTRUCTION. LED modules shall fit in standard, incandescent vehicle traffic signal housings without modifications or the need for special tools, and shall be complete with a one-piece, integral lens assembly that is tinted for the appropriate color.

Design. LED traffic signal modules shall have:

(a) A printed circuit board inclusive of all of the LEDs and required circuit components.

(b) Minimum 39- in. wire leads, minimum # 20 AWG, 600 volt, 105 C, with strain relief and spade terminals. Screw-type terminals shall not be allowed.

(c) A rigid housing for protection in shipping, handling and installation:

(d) A one piece neoprene gasket shall be used to seal out water and contaminants.

Assembly Techniques.

(a) The LEDs within the modules shall be mounted and soldered to a printed circuit board.

(b) LED signal modules shall be watertight when properly installed in traffic signal housings.

(c) LED signal modules shall utilize the same mounting hardware used to secure a standard incandescent lens and gasket assembly, and shall only require a screwdriver or basic installation tools to complete the mounting.

(d) LED signal module assemblies shall weigh less than 5 Lb.

(e) LED signal modules may not protrude into the signal visor area more than two and three-quarters of an in. in depth.

(f) LED signal modules shall be marked ‘TOP’ or have an up arrow to designate the proper orientation of the signal module in the traffic signal housing.

(g) LED signal module housings shall utilize an integral metal layer in their design and construction.

(h) LED signal modules shall utilize the latest technology in thermal management..

Lenses. Make lenses for ball type modules of ultraviolet stabilized polycarbonate, and incorporate facets that serve to enhance the optical efficiency of the LED traffic signal module. Individual *lens-lets* or external lens facets shall not be permitted.

(a) The ball type signals shall incorporate a diffuser-type lens system that serves to collimate the light emitted by the LEDs. The lens and diffuser system shall focus the collimated light, to meet ITE intensity and distribution standards.

(b) LED signals shall almost perfectly approximate the appearance of an incandescent traffic signal to the motorist.

(1) The face of the ball LED lamps shall appear to the motorist as uniform in illumination, and have a wide viewing angle that makes it suitable for installation on wide boulevards.

(2) The external lens surface for all vehicle signals shall be smooth, with no raised features, so as to minimize the collection of dirt, diesel smoke, and other particulate contaminates, and to facilitate periodic cleaning.

(3) The lens shall be keyed to the housing of the LED signal module to insure the proper orientation and to avoid possible rotation during any handling.

(4) Hard coat external lenses to prevent an accumulation of dust and dirt.

(5) For LED turn arrow signals, the LED arrow lens may be a replaceable part without the need to replace the complete LED arrow.

Optical. The light intensity, chromaticity, and distribution from eight and twelve-in. Red and Green, and eight-in. Yellow LED traffic signal modules shall meet all photometric values stated in the most recent, formally-adopted version of the specification titled "Vehicle Traffic Control Signal heads – Part 2: Light Emitting Diode (LED) Vehicle Traffic Signal Modules," published by the Institute for Transportation Engineers (ITE). Twelve-in. Yellow LED traffic signal modules shall meet the chromaticity requirements of the most recently-adopted ITE specification, with a minimum intensity of 1,500 candelas.

(a) Red and Green LED signals shall be certified by the manufacturer to meet or exceed all requirements of that specification over their entire 5-year warranty period.

(b) The light output from twelve-in. Yellow LED signals shall be the peak instantaneous intensity, measured at instant-on and at the highest intensity point.

Design.

(a) The LEDs shall be connected in series-parallel strings.

(1) No more than 1 percent of the total luminosity of the entire signal module may be lost in the event of a single string failure.

(2) The failure of a single LED shall cause loss of light from only that LED.

(3) No loss of light output from the complete module assembly shall occur as a result of a single LED failure.

(b) The control circuitry shall prevent the current flow through the LEDs in the off state to avoid any false indication as may be perceived by the human eye, during daylight and evening hours.

(1) The LED traffic signal module shall be operationally compatible with NEMA TS – 1 and NEMA TS – 2 conflict monitoring parameters.

(2) The intensity of the LED signal module shall not vary by more than 10percent over the allowable voltage range as specified in the electrical section below.

Electrical.

(a) The Power factor shall be 0.90 or greater, at nominal rated voltage, at 25°C, after 60 minutes of operation.

(b) Total harmonic distortion (THD) shall be less than 20 percent at rated voltage, at 25°C.

©All LED traffic signal modules shall be in compliance with FCC noise regulations and must meet the FCC Title 47, SubPart B Section 15 regulation.

(d) The LED junction technology used in all signal modules shall not exhibit degradation of more than 30percent of the modules' initial light intensity following accelerated life testing (operating at 85 degrees C and 85percent humidity, for 1000 hours). Under no circumstances shall AlGaAs technology be acceptable.

(e) The LED signal modules shall be connected directly to line voltage, 120 Volts AC nominal, and shall be able to operate over the voltage range of 80 VAC to 135 VAC.

(f) Red and Green LED traffic signal modules shall consume no more than a nominal 15 watts for either the 8" or 12" signal. Yellow signal modules shall consume no more than 24 watts.

(g) Transient voltage suppression rated at 1500 watts for 1 millisecond and fusing with a maximum rating of 2 amps shall be provided to minimize the effect and repair cost of an extreme over voltage situation or other failure mode.

(h) Low Voltage Turn OFF: There shall be no visible illumination from the LED signal module when the applied voltage is less than 50 VAC.

(i) Turn-ON and Turn-OFF Time: A module shall reach 90percent of full illumination (turn-ON) within 75 msec of the application of the nominal operating voltage. The signal shall cease emitting visible illumination (turn-OFF) within 75 msec of the removal of the nominal operating voltage.

Compatibility Testing: The LED module manufacturer shall certify that their modules meet the Load Switch and Signal Conflict Monitor Compatibility testing requirements found in the most recent, formally-adopted version of the specification titled "Vehicle Traffic Control Signal heads - Part 2: Light Emitting Diode (LED) Vehicle Traffic Signal Modules," published by the Institute for Transportation Engineers (ITE).

Electronic Failure Protection. To assure compatibility with NEMA TS1/TS2 controllers for both conflict monitoring and Red Fail, all signal colors (Red, Yellow, and Green) once energized, must turn off prior to 50VAC, and if the signal fails it shall present a high impedance on the input side of the signal.

Warranty. Manufacturers shall provide a written with the following minimum provisions:

(a) Modules shall be replaced, repaired or purchase value refunded if the module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery.

(b) Modules which exhibit luminous intensities less than the minimum specified values within the first 60 months of the date of delivery shall be replaced, repaired or purchase value refunded.

Miscellaneous. The manufacturers part number, date code, and electrical characteristics of the LED signal module shall be visible on the rear of the assembly.

MEASUREMENT AND PAYMENT. Self-contained LED signal head modules will be measured and paid for at the contract unit price each. The payment will be full compensation for the LED module, hardware, assembly, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

CATEGORY 800
TRAFFIC

MAST ARMS AND MAST ARM POLES -
SINGLE, TWIN AND TRIPLE

DESCRIPTION. Furnish and install galvanized traffic signal mast arms and mast arm poles at locations specified in the Contract Document or as directed by the Engineer.

MATERIALS. Design shall meet the 2001 edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals except as noted. All welding shall conform to American Welding Society (AWS) Structural Welding Code D1.1 - Steel, Tubular Structures.

Each mast arm(s) and mast arm pole structure furnished shall consist of a design from a steel pole shaft with a steel base plate and flange plate, steel mast arm shaft(s) with steel flange plate(s), four flange bolts per mast arm, four anchor bolts and miscellaneous hardware.

(a) Manufacture the mast arms and mast arm poles from steel tubing conforming to A 595 Grade A or equal. Each mast arm and mast arm pole shall be fabricated of one length and shall have one longitudinal weld, parallel to the long axis of the mast arm or mast arm pole, with no transverse welds. Finish the longitudinal weld to form a smooth outside surface and the wall of the mast arms and mast arm poles shall be of uniform thickness including the welded area. The mast arms and mast arm poles shall be round or multi-sided (8 sides or more) in cross section and be uniformly tapered from butt to tip with a 1 in. reduction in diameter for each 7 ft in length (0.14 in./ ft). Mast arms shall be of two piece design for all mast arms 50 ft and 60 ft in length. Mast arms shall be of three piece design for all mast arms 70 ft in length. Any combination of two piece of 50 ft and 60 ft arms of the same butt diameter shall fit together and any combination of two or three piece of 60 ft and 70 ft mast arms in sequence shall fit together. The bolted splice for two or three piece mast arms shall be as specified in the Contract Document.

(1) 50 ft mast arms shall have a butt section 30 ft in length.

(2) 60 ft and 70 ft mast arms shall have a butt section of 35 ft in length.

(3) 38 ft single piece mast arms shall be 9 in. outside diameter at the flange plate and made of 7 gauge (0.179 in.) thickness steel.

(4) 50 ft two piece mast arm butt sections shall be 10 in. outside diameter at the flange plate and made of 3 gauge (0.250 in.) thickness steel.

(5) 60 ft two piece and 70 ft three piece mast arm butt sections shall be 12.5 in. outside diameter at the flange plate and made of 3 gauge (0. 250 in.) thickness steel.

(6) All extension sections of two and three piece mast arms shall be made of 7 gauge (0.179 in.) thickness steel.

(7) Single 27 ft mast arm pole designed with a 38 ft mast arm length shall be 12 in. outside diameter at the base plate and made of 7 gauge (0.179 in.) thickness steel.

(8) Single 27 ft mast arm pole designed with a 50 ft mast arm length shall be 13 in. outside diameter at the base plate and made of 3 gauge (0.250 in.) thickness steel.

(9) Single 27 ft mast arm pole designed with 60 ft or 70 ft mast arm lengths shall be 15 in. outside diameter at the base plate and made of zero gauge (0.312 in.) thickness steel.

(10) Twin 27 ft mast arm poles designed with 50 ft mast arm lengths shall be 13 in. outside diameter at the base plate base and made of 3 gauge (0.250 in.) thickness steel.

(11) Twin 27 ft mast arm poles designed with mast arm lengths for one mast arm of 50 ft and the remaining mast arm of 60 ft or 70 ft shall be 15 in. outside diameter at the base plate and made of zero gauge (0.312 in.) thickness steel.

(12) Triple 27 ft mast arm pole designed with mast arm lengths for one mast arm of 38 ft, second mast arm of 60 or 70 ft and the third mast arm of 50 ft shall have 15 in. outside diameter at the base plate and made of zero gauge (0.312 in.) thickness steel.

(b) The material for mast arm pole base plate shall conform to A 709, Grade 36 and shall be of sufficient size and strength. Secure the base plate to the lower end of the mast arm pole by two continuous electric arc welds. The base plate must telescope the mast arm pole with one weld on the inside of the base plate at the end of the mast arm pole shaft. Locate the remaining weld on the outside of the base plate, around the circumference of the mast arm pole. The weld connection shall develop the full strength of the adjacent mast arm pole shaft to resist bending action. Fabricate all base plates with the holes for anchor bolts to the size and location dimensions as shown on the appropriate detail.

(c) All mast arms and mast arm poles must be furnished with flange plate(s) as noted in the details. Connect these attachments, including the bolts, in such a manner as to develop the minimum guaranteed yield and ultimate tensile strength for the mast arm and mast arm pole. This assembly shall be capable of transferring the maximum moment being carried by the mast arm without distortion or rotation of the mast arm or the attachment. Connect flange plate(s) by the use of 4 bolts. The size of the plates and bolts shall be as shown in the details. Furnish four (1-1/2 in. O.D.) rubber grommets for each mast arm to accommodate signal heads wiring access.

(d) Secure the mast arm flange plate to the lower end of the mast arm pole by two continuous electric arc welds. The mast arm flange plate shall telescope the mast arm with one weld located on the inside of the flange plate at the end of the mast arm. Locate the remaining weld on the outside surface of the flange plate around the circumference of the mast arm pole. The weld connections shall develop the full strength of the adjacent mast arm to resist bending action.

(e) Mast arm flange plates and mast arm pole flange plates surfaces shall be plane to within 1/16 in. and shall be free of any buildup of galvanizing (drips, runs, etc.) which would prevent intimate contact between the connecting surfaces.

(f) Weld access hole frames into the mast arm pole as detailed in MD 818.11. A galvanized steel cover, conforming to A 709, Grade 36 shall cover the access hole frame. Secure the access hole cover's top to the access hole frame by a hinge fabricated from 0.063 in. stainless steel using a 0.120 in. diameter stainless steel hinge pin. Secure the hinge to the access hole frame with 2 (1/4 in. - 20 UNC) hex head stainless steel bolts. Secure the hinge access hole cover by 2 (1/4 in. - 20 UNC) hex head stainless steel bolts and lock nuts. Provide a slotted opening at the bottom of the access hole cover to allow for attachment of a furnished (1/4 in. - 20 UNC) hex head stainless steel bolt into the access hole frame face.

(g) A 3/8 in. diameter X 1 in. stud copper servit post for two #6 AWG stranded wire shall be furnished into the bottom of the access hole frame.

(h) Provide mast arm poles with entrance ways for cable as noted on the appropriate detail. These holes shall be factory drilled and a straight tapped coupling, conforming to Underwriters Laboratory's UL-6 Specification, for 3 in. rigid conduits, shall be installed for each hole. A nipple with a unitized hexagonal fitting and integral inside radius on one end shall then be installed and fully seated on the interior side of the coupling. Location and installation of the coupling shall be as shown in the details.

(i) Install "J" hooks as follows, located 1 ft above the highest mast arm T dimension.

(1) Weld a single "J" hook inside the pole for single mast arm poles.

(2) Weld two "J" hooks inside the pole for twin mast arm poles and triple mast arm poles.

(j) Hot dip galvanize all mast arms, mast arm poles, access hole frames and hardware, except materials manufactured from stainless steel or cast aluminum. The galvanized coating shall conform to the thickness, adherence and quality requirements of A 123 or A 153 for hardware. Chase and clean threaded components after galvanizing. Tap all internally threaded components the minimum amount required to permit assembly on the coated externally threaded fastener. Provide internally threaded components with a lubricant which shall be clean and dry to the touch.

(k) Furnish each mast arm pole with four removable ornamental anchor bolt covers made of cast aluminum. Bolt holes for attaching the bolt covers to the base plate shall be drilled at the location obtained by following the diagonal line of the base plate until it intersects the bolt circle diameter, then proceeding tangentially from the bolt circle diameter a distance equal to the Anchor Bolt Center to Bolt Slot Center Distance as provided in the MD 818.14. Attachment to the base shall be made using hex head stainless steel bolts (1/4 in.- 20 UNC).

(l) Furnish each mast arm extension section and mast arm pole with a removable domed cap, fabricated from cast aluminum, circumferentially attached to the outside of the pole shaft or mast arm end with 3 hex head stainless steel bolts (1/4 in.- 20 UNC). All mast arm caps shall have inside diameter one in. Larger than the outside diameter of mast arm end.

(m) Each mast arm and mast arm pole shall have an identification plate mechanically attached, oriented such that the identification plate may be read from a ground observation position.

(1) Single piece mast arms and the butt section of two and three piece mast arms shall have the identification plate attached 6 in. above the flange plate.

(2) Each extension section of two and three piece mast arms shall have the identification plate attached 6 in. from the larger diameter end.

(3) Poles shall have the identification plate attached 6 in. above the bottom flange plate.

(n) Insert recessed hub type, galvanized malleable iron plugs flush into all mast arm pole couplings.

Anchor Bolts.

(a) Make each mast arm pole anchor bolt of steel in accordance with F1554, Grade 55 S1.

(b) Anchor bolt threads shall be of cut thread design with a minimum 9 in. of threads at the top and bottom.

(c) The template and anchor plates shall be as shown the contract documents.

(d) Stamp the diameter of the anchor bolt into the top of the threaded end of each anchor bolt.

(e) Provide each anchor bolt with two anchor bolt nuts and two flat washers.

(1) Anchor bolt nuts shall conform to A 194 grade 2 or 2H or A 563 D or DH.

(2) Tap all nuts oversize the minimum amount required to permit assembly on the coated externally threaded fastener.

(3) Washers shall conform to F436.

(f) Hot dip or mechanically galvanize all nuts, washers and the top 12 in. of all anchor bolts. The galvanized coating shall conform to the thickness, adherence and quality requirements of A 123 or A 153 for hardware.

All high strength bolts (of a given length), nuts (of a given size) and washers (of a given diameter) shall be from the same manufacturing lot per each requisition of materials. The use of foreign made fasteners is prohibited!

Alternate Design. Alternate mast arm and mast arm pole designs will be considered provided the following qualifications are observed:

(a) Alternate mast arm designs may use sectional construction provided each section has a minimum length of 30 ft except for the outer most section.

(b) Overlap between sections shall be a minimum 18 in.

(c) Bolt circle diameters shall be as specified in the Contract Document.

(d) Alternate post designs may be straight (not tapered) sections and shall have a base diameter equal to, or no greater than 1 in. more than, those values shown on the typicals.

(e) All alternate design must be structurally equivalent to the original design and as approved by the Engineer.

CONSTRUCTION Refer to 818.03

MEASUREMENT AND PAYMENT

MEASUREMENT AND PAYMENT. Furnish and install poles for mast arm(s) and mast arm(s) will be measured and paid for at the contract unit price per each type of pole and mast arm(s) size as specified in the Contract Document. The payment will be full compensation for furnishing & installing all materials including labor, equipment, materials, tools and incidentals necessary to complete the work.

Anchor bolts will be measured and paid for as specified in section 801.

Tag Details

Single Mast Arm Pole

Mfg: [1] Contract. #: [2]

Pole Height: [3]

Arm Sizes: [4]

Anchor Bolts: [5] Bolt Circle: [8]

Flange Bolts: [7]

One Piece Mast Arm

Mfg: [1] Contract #: [2]

Arm Length: [6]

Flange Bolts: [7]

Two or three Piece Mast Arm - Butt Section

Mfg: [1] Contract #: [2]

Butt For Arms: [4]

Flange Bolts: [7]

Connection Bolt: [9]

Two or three Piece Mast Arm –
Extension Section

Mfg:	[1]	Contract #:	[2]
Extension Arm:	[6]		
Connection Bolt:	[9]		

Twin Mast Arm Pole
(Identical Size Flange Plates)

Mfg:	[1]	Contract #:	[2]
Pole Height:	[3]		
Arm Sizes:	[4]		
Anchor Bolts:	[5]	Bolt Circle:	[8]
Flange Bolts:	[7]		

Twin Mast Arm Pole
(Different Size Flange Plates)

Mfg: [1] Contract #: [2]

Pole Height: [3]

Left Arm Sizes: [4]

Right Arm Sizes: [4]

Anchor Bolts: [5] Bolt Circle: [8]

Left Arm Flange Bolts: [7]

Right Arm Flange Bolts: [7]

Pole Type [10]

Triple Mast Arm Pole
(Different Size Flange Plates)

Mfg: [1]	Contract #: [2]
Pole Height: [3]	
Left Arm Sizes: [4]	
Center Arm Sizes: [4]	
Right Arm Sizes: [4]	
Anchor Bolts: [5]	Bolt Circle: [8]
Left Arm Flange Bolts: [7]	
Center Arm Flange Bolts: [7]	
Right Arm Flange Bolts: [7]	

Tag Reference

[1] Name of the manufacturer of the mast arm or mast arm pole.

[2] Administration Contract Number of the mast arm or mast arm pole.

[3] 27 ft height.

[4] Mast Arm Size and Orientation[1]

Pole Gauge Size	Indicate
7 GA	38'
3 GA	50'
0 GA	60' or 70'

[5] Anchor Bolts

Pole Gauge Size	Indicate
7 GA	1-½" x 54" & 2 Washers
3 GA	1-¾" x 66" & 2 washers
0 GA	2" x 72" & 2 washers

[6] Mast Arm Length
-

Constructed Extension for arm length	Indicate
50'	50'
60'	60'-70'
70'	70'

[7] Flange Bolt Size[2]

Pole Gauge Size	Indicate
7 GA	1-¼" x 4" & washer
3 GA	1-½" x 5" & washer
0 GA	1-¼" x 6-½" & 2 flat washers & lock washer

[1]For twin mast arm poles with identical size flange plates, indicate **L & R** preceding the 50' mast arm size; for twin mast arm poles with different size flange plates, indicate either 50' or 60'-70' mast arm sizes in the corresponding Left Arm Size or Right Arm Size as oriented by the line bisecting the acute angle formed by the two mast arm pole flange plates. For triple mast arm poles with different size flange plates, indicate either 50', 60'-70' or 38' mast arm sizes in the corresponding Left Arm Size, Center Arm Size or Right Arm Size as oriented by the centerline of the mast arm pole center flange plate.

[2]For twin mast arm poles with identical size flange plates, indicate **L & R** preceding the 1-½" x 5" & washer Flange Bolt Size; for twin mast arm poles with different size flange plates, indicate either 1-½" x 5" & washer or 1-¼" x 6-½" & 2 flat washers & lock washer flange bolt sizes in the corresponding Left Flange Bolt Size or Right Flange Bolt Size as oriented by the line bisecting the acute angle formed by the two mast arm pole flange plates. For triple mast arm poles with different size flange plates, indicate either 1-½" x 5" & washer, 1-¼" x 6-½" & 2 flat washers & lock washer or 1-¼" x 4" & washer flange bolt sizes in the corresponding Left Flange Bolt Size, Center Flange Bolt Size or Right Flange Bolt size as oriented by the centerline of the mast arm pole center flange plate.

[8] Bolt Circle

Pole Gauge Size	Indicate
7 GA	16" Dia.
3 GA	18" Dia.
0 GA	22" Dia.

[9] Connection Bolt Size

Two or three Piece Arm Size	Indicate[3]
50'	5/8" x Var.
60'	5/8" x Var.
70'	5/8" x Var.

[10] Standard or Alternate Twin.

[3]Length to be determined by the successful bidder.

CATEGORY 800
TRAFFIC

NON-INVASIVE, MAGNETO-INDUCTIVE MICROLOOP DETECTOR

DESCRIPTION. Furnish and install non-invasive, magneto-inductive microloop vehicle detection sensors/probes. Install the sensors/probes as a set or assembly of three (3) per traveled lane.

MATERIALS. All materials and equipment furnished and installed must be new corrosion resistant, and approved by the Engineer. Manufacturer's certifications or certified copies of reports of tests shall be furnished as directed by the Engineer.

CONSTRUCTION.

(a) Vehicle data collection requirements.

(1) Each non-invasive sensor shall have an inductance change that will allow an appropriately designed, matched inductive loop vehicle detector to detect all licensable vehicles that contain ferromagnetic material. The sensor will detect these vehicles when they are within a travel distance less than one half the height of the ferromagnetic material of the vehicle.

(2) The non-invasive vehicle sensing assemblies shall consist of three sensors connected in series to a common lead in wire.

(3) Connect each non-invasive, magneto-inductive vehicle sensing assembly to an appropriately designed, matched inductive loop vehicle detector.

(4) Optimize traffic data collection or traffic flow parameter measurements across diverse roadway geometry by installing, triple non-invasive sensor assemblies.

(b) Electrical and magnetic requirements

(1) The non-invasive sensor shall convert changes in the ambient magnetic field to changes in its inductance. An increase in the ambient magnetic field shall result in a decrease in the inductance of the non-invasive sensor, and the inductance change of the non-invasive sensor shall be directly proportional to the changes in the earth's magnetic field.

(2) The nominal magnitude of the vertical magnetic field over which the non-invasive sensor shall function to specified requirements shall be 200 millioerstads to 800 millioerstads. The non-invasive sensor shall detect reliably and consistently changes in the ambient magnetic field of seven (7) millioerstad or greater when the earth's magnetic field is ≥200 millioersted (H_{DC}=200 mOe) and the peak-to-peak amplitude of the applied inductive current is 40 $mAmp_{p-p}$ (I_{AC} = 40 $mAmp_{p-p}$). This requirement defines the sensitivity to be ≥ 2 nanohenries/millioerstad at H_{DC}=200 mOe and I_{AC} = 40 $mAmp_{p-p}$.

(3) The sensor/probe inductance shall be between 50 μH to 80 μH. The nominal operating frequency of the probe shall be between 20 kHz and 60 kHz. The non-invasive sensor shall operate with drive currents of 2.5 $mAmp_{p-p}$ to 175 $mAmp_{p-p}$. The specified electrical and operating requirements shall be maintained over temperatures ranging from –29.9 F to 162.5 F

(c) Sensor physical requirements. The non-invasive sensor shall have a maximum outer diameter of 0.8125 in. and a maximum height of 2.25 in. and shall be suitably sealed for use in 100 percent humidity environments within a conduit. Equipment shall be included to secure the probes in the conduit, ensure proper orientation during installation, and maintain proper orientation through life of the device. The sensors shall have pull chords to facilitate installation and removal from the conduit. The probes shall be designed to be easily assembled on-site without the use of special tools and equipment. The sensors shall be serviceable from adjacent handholes. Installation of sensors shall not disturb roadway surface.

(d) Conduit installation requirements.

(1) For detection locations that shall require new conduit installation, the conduit shall be a 3 in.conduit consisting of schedule 80 PVC with an inner diameter of 2.9 in. and an outer diameter of 3.5 in. The conduit shall be installed at a nominal centerline depth of 20 in. from the road surface following the roadway crownline. The depth of the conduit centerline from the road surface shall be maintained between 18 and 22 in. over its entire length. The centerline of the conduit shall not deviate horizontally more than required by the application, however, any deviation in conduit alignment shall be less than 0.25 in. per foot. At least one end of the conduit shall terminate at a standard size handhole with a nominal 24 inch diameter and extend three in into the handhole, and the conduit shall have a grade to permit drainage.

(2) The non-invasive probes shall function in 3 in. conduits that have been previously installed at greater than the optimum operational depth stated above. Non-invasive probe installation and alignment for non-optimum pavement depths shall be performed as directed by the Engineer or described in the contract plans.

(e) **Probe lead-in cable.** The cable leading from each probe set or assembly to the controller shall be included with the probes.

(f) Requirement of verification of proper installation

(1) Provide a log of the boring depth measured every 2 ft in boring distance.

(2) Verify that the non-invasive sensor set or assembly and lead-in cable installation meets requirements by measuring the inductance of the non-invasive sensor assembly with a properly designed, matched vehicle detector. The installer shall verify that the installation meets requirements by measuring the DC resistance of the non-invasive sensor assembly with a properly calibrated ohm meter. The installer shall measure the change in inductance of the installed non-invasive sensor assembly using a properly designed, matched vehicle detector when a standard, midsize vehicle is driven directly over the sensor.

Provide a log of the measured inductance, DC resistance and the change in inductance for each installed non-invasive sensor assembly.

(3) The inductance shall be the sum of probe inductance, inductance of lead-in cable (16.5 μH per 100 ft) and home-run cable (23 μH per 100 ft) and shall be within ±20 per cent of the calculated inductance. The measured DC resistance shall be the sum of 1.5 ohms per probe, 3.0 ohms per 100 ft of lead-in wire and 2.0 ohms per 100 ft of home-run cable and shall be within ±20% of the calculated DC resistance. The measured change in inductance for a standard midsize vehicle shall be in the range from 120 nH to 1200 nH.

MEASUREMENT OF PAYMENT. Non-invasive Magneto Inductive Vehicle Detectors shall be measured and paid for at the contract unit price per each in the cable length specified. The payment will be full compensation for furnishing and installing one probe set, lead-in cable from the probe set to the field cabinet, probe carrier system, pull rope and all other incidentals. The payment shall be full compensation for all materials, labor, equipment and all other incidentals necessary to complete this work.

Conduit will be measured and paid for as specified in section 805.

CATEGORY 800
TRAFFIC

SIGNAL EQUIPMENT TURN ON, PICK UP, REMOVAL AND MAINTENANCE

DESCRIPTION. Pick up of Administration furnished materials, remove existing equipment, and maintain existing equipment as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. Not applicable

CONSTRUCTION.

Equipment Turn On. Notify the Engineer and Traffic Operations Division representatives within 10 working days prior to completion of the project to allow the Administration to install any additional traffic control device.

Notify the Engineer and Traffic Operations Division representative five working days prior to the completion of the project to schedule a final inspection and turn-on.

Stakeout, with the Engineer present, the proposed construction as indicated on the plan.

Pick-Up of Administration Furnished Materials. Notify the appropriate OOTS warehouse a minimum of 72 hours in advance of the anticipated pick up or delivery of materials. The OOTS signal and sign warehouses are located at:

7491 Connelley Drive
Hanover, Maryland 21076
Signal Phone 410-787-7667
Sign Phone 410-787-7670

The Contractor shall be responsible for the transportation, labor, equipment, tools and incidentals necessary to obtain and load any Administration furnished materials.

Materials not furnished by the Administration shall be furnished by the Contractor.

Removal and Disposal of Existing Material and Equipment. Remove concrete foundations specified in 207.03.01. All holes caused by this removal shall be backfilled, compacted and restored to surrounding conditions.

Remove all existing hard rubber detectors and handholes not shown on the Plans. The holes shall be backfilled, compacted and restored to surrounding conditions. The sidewalk where handholes are removed shall be reconstructed to the nearest tooled joint or expansion joint. The roadway where hard rubber detectors are removed shall be reconstructed in conformance with Administration utility patch repair standards.

Disconnect existing inductive loop detectors and magnetic detectors not shown on the plans.

Disposal of all material not salvaged. Non-galvanized green painted structures may contain lead and the contractor will be responsible for proper disposal of such material.

Storage of Materials. Materials shall be bundled, stored, and protected in conformance with the manufacturer's recommendations or as approved by the Engineer.

Maintenance of Materials and Equipment. The maintaining agency will continue maintenance of any existing signals until the Contractor places new equipment into operation.

When the work requires adjustments to the traffic control devices to maintain the minimum Administration standards, the adjustments to the traffic control devices shall be made within 4 hours of verbal notification by the Engineer. Failure to comply with this time period will result in the Administration performing adjustment and deducting the cost of the adjustment from the Contractor's payment.

Existing signals shall remain in their original condition until the new signals have been completed, satisfactorily tested and its operation accepted by the Engineer.

Maintain the continuous operation of all vehicular and pedestrian detectors. If any detector is damaged by the Contractor, it shall be repaired within 72 hours after notification by the Engineer.

All traffic signals and existing interconnect cable shall be operational and actuated as specified in the Contract Documents.

Plan the work to minimize interference with any existing traffic control device.

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

Equipment Turn On. Equipment Turn On will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

Pick-Up of Administration Furnished Materials. Pick-up of Administration furnished materials will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

Removal and Disposal of Existing Signal Material and Equipment. Removal and disposal of existing signal material and equipment will be measured and paid for at the Contract unit lump sum price.

Maintenance of Existing Signal Equipment. Materials storage, cable sealing and handling, adjustments to maintain minimum Administration standards on existing signals made necessary by new signal or geometric modifications and Contractor repair of any damaged detector caused as a result of Contractor's error will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

CATEGORY 800

TRAFFIC
IP-BASED VIDEO TRAFFIC DETECTION CAMERAS

DESCRIPTION. Furnish and install self-contained detection cameras that monitor vehicles on a roadway via the machine vision processing of color video images, and provide outputs to a traffic controller or similar device, as well as streaming MPEG-4 video over a common Ethernet connection, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. Video traffic detection cameras, cabinets, and all component parts shall meet the latest edition of the National Electrical Manufacturers Association (NEMA) Standards and Underwriters Laboratory (UL), as applicable. All camera components shall be ISO 9002 and CE certified. The advertising date of this Contract shall be used to determine the date of the applicable standards.

Serial numbers and model numbers, if available, shall be permanently engraved on all removable components and hardware. The serial number and model number shall be etched, stamped, or molded. The use of adhesive backed labels is not acceptable.

CONSTRUCTION. Video detection cameras shall consist of an IP-based video camera and a 3-conductor power cable that carries both power to the camera, and video and data signals back to Administration-installed video processing equipment in the controller cabinet. The cabinet equipment permits direct connection to the signal controller via an 10/100 Ethernet connection and the industry-standard TCP/IP communications protocol, or to contact-closure hardwired devices.

Features.

- **(a)** Built-in IP-based addressing with a unique Ethernet MAC address. No plug-in devices or cards shall be necessary.
- **(b)** Web-server interface and network connection via standard CAT-5 cable
- **(c)** Easy locking connector that allows technicians/installers to pull power cable either up or down a pole without splicing.
- **(d)** Zoom configuration is conducted at the cabinet.
- **(e)** MPEG-4 streaming video via any standard digital video player, with viewing rates of 5 fps to 30 fps, depending on bandwidth.
- **(f)** An access point in the cabinet that provides standard NTSC or PAL full-motion video output to an analog video monitor.
- **(g)** Internet browser interface with common Internet browsers for password-protected access over the internet. The embedded web server capability shall enable access to streaming video, configuration editing, and camera monitoring via the Internet.

(h) Dual core processor with DSP image processing and ARM general-purpose processing.
(i) Direct real-time iris and shutter speed control.
(j) Non-volatile memory data storage

Camera Hardware. Hardware supplied shall consist of a color video image processing camera, and a 3-wire control & data transfer cable for signal control and streaming MPEG-4 video image transfer.

Machine Vision Processor (MVP). The MVP camera shall be an integrated imaging color CCD array with zoom lens optics, high speed, dual-core image processing hardware bundled into a sealed enclosure.

(a) The CCD array shall be directly controlled by a dual-core processor, thus providing high-quality video for detection that has virtually no noise to degrade detection performance.
(b) It shall be possible to zoom the lens as required for setup and operation.
(c) The MVP shall provide JPEG video compression as well as standard MPEG-4 digital streaming video with flashing detector overlay.
(d) The MVP shall provide direct real-time iris and shutter speed control.
(e) The MVP camera shall be equipped with an integrated 22x zoom lens that can be changed using either configuration computer software.
(f) The digital streaming video output and all data communications shall be transmitted over the three-wire power cable.
(g) The MVP camera shall operate on 120/220 VAC, 50/60 Hz, with a maximum wattage of 25 watts.
(1) The camera and processor electronics shall consume 10 watts.
(2) The enclosure heater shall consume 15 watts.

MVP Lens.

(a) Low-power thermostatically-controlled ITO faceplate
(b) Built-in heater
(c) Hydrophilic faceplate coating to shed water
(d) Weatherproof rear connector (IDC rapid termination industrial connector)
(e) The lens shall be available in a standard configuration or wide-angle.
(f) The focal length shall be 4.1mm to 87.8mm.

Detection Zone Programming. Placement of detection zones shall be by means of a portable or desktop computer using the Windows XP, or Vista operating system, a keyboard, and a mouse.

- **(a)** The PC monitor shall be able to show the detection zones superimposed on images of traffic scenes.
- **(b)** The mouse and keyboard shall be used to draw detection zones on the PC monitor. It shall be possible to:
  - **(1)** Download detector configurations from the PC to the MVP camera and cabinet interface module.
  - **(2)** Retrieve the detector configuration that is currently running in the MVP camera.
  - **(3)** Back up detector configurations by saving them to the PC fixed disks or other removable media storage.
- **(c)** The supervisor's mouse and keyboard shall be able to:
  - **(1)** Edit previously defined detector configurations.
  - **(2)** Adjust the detection zone size and placement.
  - **(3)** Add detectors for additional traffic applications.
  - **(4)** Reprogram the camera for different traffic applications, changes in installation site geometry, or traffic rerouting.
  - **(5)** Perform the above upload, store, and retrieve functions for video snapshots of the MVP cameras' view.

Optimal Detection. The video detection camera shall provide optimal detection of vehicle passage and presence when the:

- **(a)** The MVP camera is mounted 10 m (30 ft) or higher above the roadway.
- **(b)** The image camera is adjacent to the desired coverage area.
- **(c)** The distance to the farthest detection zone locations is not greater than 10 times the mounting height of the MVP camera.
- **(d)** The deployment geometry provides an unobstructed view of each traveled lane where detection is required. Although optimal detection may be obtained when the MVP camera is mounted directly above the traveled lanes, the MVP camera shall not be required to be directly over the roadway.
- **(e)** The MVP camera is able to view either approaching or receding traffic or both in the same field of view. The preferred image camera orientation for optimal detection shall be to view approaching traffic since there are more high contrast features on vehicles as viewed from the front rather than the rear.
- **(g)** The MVP camera, when placed at a mounting height that minimizes vehicle image occlusion and equipped with a lens to match the width of the road, is able to monitor a maximum of 7 traffic lanes when mounted at the roadside, or up to 8 lanes when mounted in the center with four lanes on each side.

18-Gauge Camera-to-Cabinet Cable. The cable between the MVP and the cabinet interface shall consist of three conductors 18 AWG, with an overall UV-resistant Low Density Polyethylene jacket.

(a) Conductors.

(1) Three, 18 AWG, 19 strands of 30 gauge tin-plated copper conductor diameter .046”/.052”

(2) Extruded polyethylene 200 conductor insulation, with nominal .030” wall Thickness.

(3) Black, green, and white colors

(b) Construction

(1) Extruded black polyethylene jacket .040”/.050” wall thickness, UV-resistant.

(2) 0 .330” - .354” maximum outside diameter.

(3) 600 volt (rms) rated.

(4) The cable shall be imprinted with the manufacturer’s part number, number of conductors, conductor size, voltage rating, jacket material, and an indication that it is conduit rated.

Count Detection Performance. Using a MVP camera installed within the optimal viewing specifications described above for count station traffic applications; the camera shall be able to accurately count vehicles with:

(a) At least 98 Percent accuracy under normal operating conditions (day and night).

(b) At least 93% accuracy under artifact conditions. Artifact conditions are combinations of weather and lighting conditions that result from shadows, fog, rain, snow, etc. The volume count shall be:

(1) Accumulated for the entire roadway (all traveled lanes).

(2) Accumulated over time intervals that contain a minimum of one hundred (100) vehicles to ensure statistical significance.

Demand Presence Detection Performance. Using a MVP camera installed within the optimal viewing specifications described above for intersection control traffic applications; the camera shall be able to accurately provide demand presence detection.

(a) The demand presence accuracy shall be based on the ability to enable a protected turning movement on an intersection stop line, when a demand exists.

(b) The probability of not detecting a vehicle for demand presence shall be less than 1- Percent error under all operating conditions.

(c) In the presence of artifact conditions, the MVP camera shall minimize extraneous (false) protected movement calls to less than 7 %.

(d) To ensure statistical significance, the demand presence accuracy and error shall be calculated over time intervals that contain a minimum of one 100 protected turning movements performance specifications shall be achieved with a minimum of 2 presence detectors coupled with a single detector function (Type-9) to provide adequate road coverage to sample the random arrival patterns of vehicles at the stop line.

(e) The calculation of the demand presence error shall not include turning movements where vehicles do not pass through the presence detectors, or where they stop short or stop beyond the combined detection zones.

Speed Detection Performance. The MVP shall accurately measure average (arithmetic mean) speed of multiple vehicles with more than 97% accuracy under all operating conditions for approaching and receding traffic.

(a) The average speed measurement will include a minimum of 100 vehicles in the sample to ensure statistical significance.

(b) Optimal speed detection performance requires that camera location conform to the specifications described above for count station traffic applications with the exception that the camera must be higher than 13 m (40) feet.

(c) The MVP will accurately measure individual vehicle speeds with more than 94% accuracy under all operating conditions for vehicles approaching the camera (viewing the front end of vehicles), and more than 90% accuracy for vehicles receding from the camera (viewing the rear end of vehicles).

(d) These specifications will apply to vehicles that travel through both the count and Speed Detector pair and will not include partial detection situations created by lane-changing maneuvers.

(e) To ensure statistical significance, the average speed accuracy and error will be calculated over time intervals that contain a minimum of one hundred vehicles.

Modular Cabinet Interface Unit (Access Point). <u>The modular cabinet interface unit shall be furnished and installed by the ADMINISTRATION.</u> This section is for reference only**.**

The modular cabinet interface unit shall communicate directly with up to eight (8) MVP cameras and shall comply with the form factor and electrical characteristics to plug directly into a NEMA type C or D detector rack providing up to thirty-two (32) inputs and sixty-four (64) outputs or a 170 input file rack providing up to sixteen (16) contact closure inputs and twenty-four (24) contact closure outputs to a traffic signal controller.

(a) Additional Features.

(1) Easy IP-addressable Ethernet connectivity using RJ-45 connectors.

(2) USB 2.0 connector for a USB mouse.

(3) Provides PAL or NTSC analog video output for MPEG-4 streaming digital video.
(4) Detector rack or shelf mount installation
(5) 1500 volts RMS isolation between rack logic ground and street wiring.
(6) Emulates the function of up to 4 TS2 Bus Interface Units (BIU)
(7) Self diagnostics on power-up
(8) High-energy transient protection

(b) Power: 12 to 24 VDC, 11W maximum
(c) Environmental
(1) Temperature: -34° C to +74° C (-29° F to +165° F)
(2) Relative Humidity: 0 to 95 Percent
(d) Dimensions and Weight
(1) 114 mm H x 59 mm W x 175 mm L
(4.5 in H x 2.34 in W x 6.9 in L)
(2) Weight: 0.5 lb.
(e) Complies with: CE EN 55022, EN 61000-6-1
FCC Part 15, Class A

Communications Interface Panel. The communications interface panel shall be furnished and installed by the ADMINISTRATION. This section is for reference only. The communications interface panel shall have the following features:

(a) Four (4) sets of three (3) electrical terminations for three-wire cables for powering up to eight (8) MVP cameras.
(b) High-energy transient protection to electrically protect the modular cabinet Interface unit and connected MVP cameras.
(c) Single-point Ethernet connectivity via RJ45 connector for communication to and between the modular cabinet interface module and the MVP cameras.
(d) Predefined wire termination blocks for MVP power connections.
(e) A Broadband-Over-Power-Line (BPL) transceiver that supports up to 10 MB/s inter-device communications.
(f) An Interface connector to cable directly to the modular cabinet interface unit.
(g) The option of using either 110/220 VAC 50/60 Hz power.
(h) Fuse protection using SLO-BLO, ½ amp fuses.

Installation and Training. The supplier of the video detection camera shall supervise the installation and testing of the video detection camera and any optional computer equipment.

Warranty, Maintenance and Support . The video detection camera shall be warranted by its supplier for a minimum of two (2) years.

Documentation. The equipment supplier shall deliver a CD containing operating manuals, service manuals, and maintenance instructions for the video traffic detection camera being supplied to the Administration's Office of Traffic & Safety, Signal Operations Division, located at 7491 Connelley Drive, Hanover, Maryland 21076. The phone number is 410-787-7650.

MEASUREMENT AND PAYMENT. Video traffic detection cameras will be measured and paid for at the contract unit price per each. The payment will be full compensation for furnishing and installing the video traffic detection camera, equipment specified, all mounting hardware, including camera support to structure, 3-conductor cable from the camera to the controller cabinet, labor, and all incidentals necessary to complete this work.

NOTE: The Communications Interface Panel, Modular Cabinet Interface Unit, and all other cabinet equipment will be furnished and installed by the ADMINISTRATION.

CATEGORY 800
TRAFFIC

UTILITY CONNECTIONS, AND UTILITY STAKEOUT

DESCRIPTION. This work shall consist of utility connections, and utility stakeout, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS.

Disconnect Switches and Utility Connections 950.13.10

CONSTRUCTION. Arrange a meeting with the utility company representatives, Traffic Operations Division representatives, the Engineer and the District Utility Engineer as specified in the Contract Documents to establish a schedule for utility connections before any equipment or material is installed.

Do not disconnect, de-energize, reconnect, tamper with, or otherwise handle any of a utility company's facilities. The Contractor shall be responsible for the utility service connections to the utility company's supplied point of service.

Make the necessary arrangements with the utility companies to insure having needed utilities available at the time of turn on. Any utility energization, connection or disconnection delays will not be considered a valid reason for any work time extension claim. Difficulties in securing utility company services are to be reported to the Engineer at the earliest possible time.

Utility Stakeout. Notify the appropriate agencies listed in the Contract Documents, and those listed below a minimum of 72 hours (excluding weekends and holidays) prior to the Contractor's anticipated beginning of any underground work.

a) In Montgomery County, request Montgomery County (240-777-2100) to stakeout their ITS and signal facilities.

b) Request the Statewide Operations Center (800-543-2515) to stake out SHA fibreoptic and communication cables.

c) Request the Communications Division (410-747-8590) to stake out ITS devices.

d) Request appropriate RME to stake out lighting.

e) Notify the Hanover Complex Signal Shop (410-787-7652) of all requests for signal and ITS stakeouts.

Plan the work to minimize interference with any existing traffic control devices.

Existing equipment shall remain in it's original condition until the new equipment has been completed, satisfactorily tested and its operation accepted by the Engineer.

MEASUREMENT AND PAYMENT. Utility Connection. Utility Service Equipment connections will be measured and paid for as specified in 807.04.01.

All utility company energization, connection or disconnection costs will be the responsibility of the Administration.

Utility Stakeout. Utility Stakeout will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

CATEGORY 800
TRAFFIC

SECTION 814—SIGNAL HEADS

814.01 DESCRIPTION.

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

Furnish and install Aluminum and Polycarbonate 8-in. and 12-in. vehicle traffic control signal heads and hardware with LED Green, Yellow, and Red indications, as specified in the Contract Documents or as directed by the Engineer. All signal housing shall have a black face and yellow housing.

814.02 MATERIALS.

ADD: The following to the end of the list of materials.

LED Traffic Signal Modules	"Section 800 LED TRAFFIC SIGNAL MODULES"
ALL Red and Green Traffic Signals	COMAR 14.26.03
(LED or Incandescent)	(Certification of compliance with Maryland Energy Efficiency Standards)

814.04 MEASUREMENT AND PAYMENT.

ADD: The following after the first paragraph.

Aluminum and Polycarbonate LED Signal heads will be measured and paid for at the Contract unit price per each section of signal head type and size as specified in the Contract Documents. The LED signal heads will have the LED module fitted into the housing assembly. The payment will be full compensation for the housing, LED signal module, and, mounting hardware, assembly, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

CATEGORY 800
TRAFFIC

SECTION 816 TRAFFIC CONTRO DEVICES
CABINETS AND EQUIPMENT

643 **816.04 MEASUREMENT AND PAYMENT.**

DELETE: 816.04.02 in its entirety.
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INSERT: The following:

816.04.02 Concrete foundations for Traffic Control Devices and Equipment will not be measured and paid for, but will be incidental the to pertinent traffic control cabinet.

CATEGORY 900
MATERIALS

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

INSERT: The following.

SECTION 902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS

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

902.02 CERTIFICATION OF PORTLAND CEMENT AND BLENDED HYDRAULIC CEMENT. The manufacturer shall furnish certification as specified in TC-1.03. The certification shall also include:

(a) The mill shall report its quality control procedures, and submit a new report whenever there is a procedural change.

(b) The mill's control laboratory shall be inspected by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology on their regularly scheduled visits. The Engineer shall be provided with copies of the reports of these inspections along with an account of the action taken to correct cited deficiencies.

(c) Records of data accumulated by the quality control procedures shall be produced upon request.

(d) A certified document shall accompany each shipment stating that the contents conform to all applicable requirements. Additionally, the document shall show the producer's name, mill location, carrier number, date loaded, weight contained in carrier, silo number, consignee, destination, Contract number, and type of cement. The signature and title of the signer shall be shown on the document.

(e) The mill shall, upon request, supply certified chemical and physical test values that can be associated with any sample representing cement drawn from a particular silo on a given date.

(f) Acceptance of cement by certification will be terminated if test results differ from mill results by more than the precision limits given in the test method. The acceptance procedure will then revert to storage testing and approval prior to shipment.

902.03 HYDRAULIC CEMENT.

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

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

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

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

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

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

902.06.01 Air Entraining Admixtures. M 154.

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

902.06.03 High Range Water Reducing Admixtures. M 194, except that it shall be a liquid, the water content shall be a maximum of 85 percent of that of the control, and the durability factor shall be a minimum of 90. Use Type F for early strength, which shall produce a minimum compressive strength in 12 hours of 180 percent of that of the control. Use Type G when early strength is not specified. The manufacturer shall furnish certification as specified in TC-1.03. The certification shall include curves indicating the fluid ounces of admixture per 100 lb of cement as related to water reduction and strength gain for 12 hours when used with a minimum cement factor of 700 lb.

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

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

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

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

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

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

902.07.02 Sheet Materials. M 171 with the following exceptions:

(a) White Opaque Burlap Polyethylene Sheeting. Tensile strength and elongation requirements are waived. Use sheeting having a finished product weight of not less than 10 oz/yd^2.

(b) White Opaque Polyethylene Backed Nonwoven Fabric. 902.07.02(a), with the thickness requirement waived. Use material having a finished product weight of not less than 5 oz/yd^2.

(c) White Opaque Polyethylene Film. Tensile strength and elongation requirements are waived.

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

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

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

(a) Cotton cloth covering shall weigh not less than 6.0 oz/yd^2 and have an average of not less than 32 threads/in. of warp and not less than 28 threads/in. of filling. Use raw cotton, cotton comber waste, cotton card strip waste, or combinations thereof as the raw material used in the manufacture of the cotton cloth.

(b) Burlap or jute covering for cotton mats shall weigh not less than 6.4 oz/yd^2 and shall have not less than of 8 threads/in. of warp and not less than 8 threads/in. of filling. Use the grade known commercially as "firsts" and they shall be free from avoidable imperfections in manufacture and from defects or blemishes affecting the serviceability.

Use a cotton bat, or bats made of raw cotton, cotton waste, cotton linters, or combinations thereof, as the filling material for the mats. Mats shall weigh not less than 12 oz/yd^2.

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

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

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

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

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

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

902.10.02 Materials.

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

902.10.03 Portland Cement Concrete Mixtures.

The concrete mixes shall conform to the following:

TABLE 902 A

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

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

Note 2: The temperature of Mix No. 6 when used for other than superstructure work as defined in TC-1.03 shall be 70 ± 20 F.

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

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

Note 5: Other Slump Requirements:
When a high range water reducing admixture Type F or Type G is specified, the slump shall be 4 to 8 in.
When synthetic fibers are specified, the slump shall be 5 in. maximum.
When concrete is to be placed by the slip form method, the slump shall be 2-1/2 in. maximum.
When the absorption of the coarse aggregate is greater than 10 percent, the slump shall be 3 in. maximum.

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

Note 7: Mix 10 and 12 shall be proportioned as specified in 211.2 of the ACI's Recommended Practices for Selection Proportions for. Structural Lightweight Concrete. The maximum average Density of Cured Concrete shall be 118 lb/ft^3. Control testing for Density of Cured Concrete shall be two companion cylinders for each 100 yd^3, or fraction thereof, as specified in M 195.

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

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

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

TABLE 902 B

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

(a) Pozzolan content of 15 – 25 percent by weight of cement
(b) For mix 9 used for Portland cement concrete pavement repairs; the maximum allowable percentage of alkalies in Portland cement shall be 0.70.

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

TABLE 902 C

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

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

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

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

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

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

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

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

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

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

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

902.10.05 Design Required Average Strength.

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

where:

f_c' = the 28 day specified compressive strength.
s = the standard deviation as specified in 902.10.06.

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

902.10.06 Standard Deviation.

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

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

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

Interpolate for intermediate number of tests.

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

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

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

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

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

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

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

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

(a) A second test will be made when the first slump or air content test fails. Acceptance or rejection will be based on the results of the second test.
(b) Compressive strength tests are defined as the average of two companion cylinders.
(c) The Contractor shall be responsible for the making of all early break cylinders and furnishing the molds, stripping, curing/delivery of all cylinders, including 28 day cylinders, to the testing laboratory.
(d) The Project Engineer will be responsible for making, numbering and signing the 28 day cylinders.
(e) When constructing plain and reinforced concrete pavements, the testing frequency for slump, air content, and temperature shall be 1 per 100 yd^3 or fraction thereof.

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

(a) The average of all sets of three consecutive strength tests equal or exceed the specified design strength.

(b) No individual strength test (average of two companion cylinders) falls below the specified design strength by more than 500 psi.

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

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

(Price per yd^3) X (quantity of yd^3 represented by the failing concrete strength) X (percent of failure).

Example:

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

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

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

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

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

Adjustment price equals (price per yd^3) X (quantity of yd^3 represented by the failing cylinders) X (the adjustment factor).

Example:

$400.00 per yd^3 X 50 yd^3 X 0.01 = $200.00

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

(a) One part Portland cement or blended hydraulic cement and one part mortar sand by dry loose volume.

(b) Prepared bag mixes consisting of Portland cement or blended hydraulic cement and mortar sand. The prepared mixes shall produce a mortar meeting the strength requirements specified in the Contract Documents.

(c) Use nonshrink grout when specified. The grout shall have a minimum compressive strength of 5000 psi in seven days when tested as specified per T 106, except that the cube molds shall remain intact with a top firmly attached throughout the curing period. The nonshrink grout shall have a minimum expansion of 0.0 percent after seven days when tested as specified per T 160.

(d) Epoxy grout shall consist of sand and epoxy mixed by volume in per the manufacturer's recommendations. The grout shall be capable of developing a minimum compressive strength of 6500 psi in 72 hours when tested per MSMT 501. Sand for epoxy grout as specified in 901.01.

(e) An epoxy or polyester anchoring system may be used when approved by the Engineer in accordance with the manufacturer's recommendations. Strength values shall be as specified in the Contract Documents.

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

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

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

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

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

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

Control and Acceptance Sampling.

(a) Submit a two qt minimum sample, of the styrene butadiene latex emulsion to the AME daily for each lot of material used in a day's production.

(b) A batch for LMC is defined as the capacity of the equipment being used on the project. Slump and air samples will be taken and tested before the placement of a batch is permitted. The slump shall be measured four to five minutes after discharge from the mixer. The test material shall be deposited off the deck and not be disturbed during this

waiting period. One additional sample for slump and air will be taken randomly during the placement of each batch. For seven day compressive strength, two tests each per batch are required. A test is defined as consisting of two companion cylinders. The samples for these tests will be taken at random while the placement is in progress.

TABLE 902.13 A

REQUIREMENTS FOR CHEMICAL PROPERTIES OF LATEX EMULSION MATERIALS

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

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

Note 2: The original or prequalification sample shall be accompanied by the producer's certification on all of the tests and properties noted above and as specified in TC-1.03. The certification shall contain actual test values of the product and the infrared spectrograph.

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

TABLE 902.13 B

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

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

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

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

Classification.

Class I — For use at ambient temperatures below 50 F.
Class II — For use at ambient temperatures of 50 to 90 F.
Class III — For use at ambient temperatures above 90 F.

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

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

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

TEST RESULTS	
TEST PROPERTY	**LIMITS**
Bond Strength, 7 days, psi min	2000
Length Change, increase after 28 days in water, based on length at 3 hr, % max	+ 0.15
Length Change, decrease after 28 days, % max	- 0.15
Freeze Thaw, loss after 25 cycles in 10% $CaCl_2$ solution, % max	8
Initial Setting Time, minutes min	10

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

(a) Date material was packaged.

(b) Approximate setting time.

(c) Recommended dosage of water or liquid component.

(d) Mixing instructions.

(e) Class or temperature range.

Certification. The manufacturer shall furnish certification as specified in TC-1.03 showing the actual test results for each class and type of material submitted to the Laboratory.

902.15 SYNTHETIC FIBERS. When synthetic fibers are specified in the Contract Documents, the fibers shall be 1/2 to 1-1/2 in. long and conform to C 1116, Type III. The manufacturer shall furnish certification as specified in TC-1.03. The quantity of fibers used and their point of introduction into the mix shall conform to the fiber manufacturer's recommendations.

902.16 CONTROLLED LOW STRENGTH MATERIAL.

902.16.01 Usage. Controlled Low Strength Material (CLSM) shall consist of the types described below:

TYPE A – Used where future excavation of the CLSM may be necessary (e.g. utility trenches, pipe trenches, bridge abutments, and around box culverts).

TYPE B – Used where future excavation of the CLSM is not anticipated (e.g. filling abandoned conduits, pipes, tunnels, mines, etc. and replacing unsuitable soils below roadway and structure foundations where extra strength is required).

902.16.02 Materials.

Coarse Aggregate	901.01*
Fine Aggregate	901.01
Cement	902.03 and 902.04
Concrete Admixtures	902.06
Fly Ash	902.06.04
Water	921.01

*maximum size of 3/4 in.

Produce CLSM in conformance with the applicable portions of Section 915 and the following:

902.16.03 Proportioning. Submit the sources and proportions of materials, and test data for each CLSM mixture prior to construction. CLSM shall be proportioned, on the basis of field experience and/or laboratory trial mixtures, to produce a flowable and self-compacting mixture meeting the requirements of 902.16.04.

CLSM shall be proportioned by weight; with the exception of water and chemical admixtures. Water and chemical admixtures may be proportioned by volume or weight.

902.16.04 CLSM Mixtures. Proportion CLSM with sufficient amounts of Portland cement, fly ash, or ground granulated blast furnace slag; individually or in combination, to produce a cohesive, non-segregating mixture that conforms to the physical properties in the following table:

CLSM Mix	28 Day Compressive Strength, (psi) ASTM D4832	Flow Consistency, (in.) ASTM D6103
Type A	50 - 200	8 min.
Type B	500 min.	8 min.

CATEGORY 900
MATERIALS

SECTION 908 — REINFORCEMENT STEEL

703 **DELETE:** 908.07 thru .10 in their entireties.

INSERT: The following.

908.07 FABRICATED STEEL BAR MATS. Steel shall meet A 184.

908.08 WIRE FABRIC FOR PNEUMATICALLY APPLIED MORTAR AND CONCRETE ENCASEMENT. Fabric shall meet A 185 and be galvanized as specified in 906.01.01. Fabricate from size W1.4 wire on 3 in. centers in each direction or from W0.9 wire on 2 in. centers in each direction.

908.09 COLD DRAWN STEEL WIRE. Concrete reinforcement shall meet M 32.

908.10 TIE DEVICES FOR CONCRETE PAVEMENT. Tie device sizes shall be as specified and produce a frictional force of at least 160 lb/ft per foot of spacing when tested per MSMT 512.

908.11 STEEL STRAND. M 203, Grade 270, Low Relaxation Strand.

CATEGORY 900
MATERIALS

789 **DELETE:** SECTION 925 — DETECTABLE WARNING SURFACES in its entirety.

INSERT: The following.

SECTION 925 — DETECTABLE WARNING SURFACES

925.01 GENERAL. Detectable warning surfaces shall conform to the current accessibility guidelines of the Americans with Disabilities Act (ADA). The Office of Materials Technology (OMT) maintains a Qualified Products List (QPL). Manufacturers seeking inclusion of their product on the QPL shall submit certified test results showing conformance to the properties in 925.07, as well as installation instructions and the types of adhesives and sealants required.

925.02 COMPOSITION. Warning surfaces shall be either flexible or rigid. If there is a change in the composition of a qualified product, the manufacturer shall notify OMT and submit new test results showing conformance with 925.07.

925.02.01 Pavers. Type III Brick Pavers shall conform to the requirements of C 902, Class SX, Type 1, and Application PX. The pavers shall be 2-1/4 x 4 x 8 in. with square edges and a surface meeting 925.03.

925.03 CONFIGURATION AND DIMENSIONS. The warning surface shall consist of a system of truncated domes having a base diameter of 0.9 in. to 1.4 in., a top diameter 50 to 65 percent of the base diameter, and a height of 0.2 in. The domes shall be arranged in a square grid with center-to-center spacing of 1.66 to 2.35 in.

925.04 COLOR. The color shall be homogeneous across the surface of the material and contrast with adjoining surfaces.

925.05 IDENTIFICATION. The top surface shall have an identifier that uniquely distinguishes the manufacturer. Brick pavers are excluded.

925.06 REQUIREMENTS.

TYPE	DESCRIPTION	PHYSICAL TEST REQUIREMENTS
Type I	Cast in Place	A, B, C, D, E, G
Type IIa	Surface Mount, Rigid	A, B, C, D, E, G
Type IIb	Surface Mount, Flexible	A, B, C, D, F, G
Type III	Brick Pavers	925.02.01
Type IV	Prefilled Pavers	A, B, C, D, G

925.07 PHYSICAL PROPERTIES.

	PROPERTY	TEST METHOD	SPECIFICATION LIMIT
A	Slip Resistance Coefficient	C 1028 (dry method)	0.80 minimum
B	Abrasive Wear, index	C 501	150 minimum
C	Fade (UV) Resistance/Color Retention	D 4587	Fade or Change in color after 2000 hours less than $\Delta E = 5$*
D	Freeze/Thaw Resistance	C 1026	No disintegration
E	Adhesion/Bond Strength, pull off	C 482/C 882(as appropriate)	No adhesion failure
F	Adhesion/Bond Strength, peel	D 903/D 429 (modified as appropriate)	No adhesion failure
G	Contrast	Contrast percentage formula** using E 1349 to determine cap Y brightness/light reflectance values (LRV)	Current ADA requirement***

* Chromaticity coordinates (L*a*b* system) checked in conformance with D 2244, before and after test.

** Contrast % = $[(B_1 - B_2)/B_1] \times 100$,

where B_1 = (LRV) of the lighter area, and B_2 = (LRV) of the darker area.

*** For the purpose of determining whether a material meets acceptable contrast criteria, use actual cap Y brightness of detectable warning surface, and assume a value of 15 for the cap Y brightness of cured concrete, or a value of 3 for asphalt wearing surfaces to determine percentage difference. Detectable warning surfaces to be installed on other materials are required to undergo additional testing.

CATEGORY 950
TRAFFIC MATERIALS

792 **SECTION 950.03-REFLECTORIZATION OF SIGNS AND CHANNELIZING DEVICES.**

DELETE: SECTION 950.03-REFLECTORIZATION OF SIGNS AND CHANNELIZING DEVICES IN ITS ENTIRETY

.

INSERT: The following.

SECTION 950.03-REFLECTORIZATION OF SIGNS AND CHANNELIZING DEVICES

All retroreflective sheeting must meet D 4956 and be selected from the Administration's QPL.

Color coordinates and values shall be as described in the MUTCD and 23 CFR Part 655, subpart F, Appendix.

When yellow, orange or pink sheeting is specified fluorescent colors must be used.

All sheeting for legend and backgrounds shall be from the same manufacturer.

Use ASTM type VI Sheeting with a Class 1 backing for drums and cones for Maintenance of Traffic

Use an ASTM type VI sheeting with a Class 5 backing for. Roll up signs for Maintenance of Traffic

Use an ASTM type IX or XI sheeting for static signs.

CATEGORY 950
TRAFFIC MATERIALS

SECTION 950.06-ELECTRICAL CABLE AND WIRE

794 **950.06.03 Cable Duct.**

DELETE: Delete the last sentence of 950.06.03.
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INSERT: The following.

Cable shall be type XHHW, rated for 600 volts.

CATEGORY 900
MATERIALS

SECTION 951 — PAVEMENT MARKING MATERIALS

951.01 NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKINGS

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

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

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

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

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

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

(a) Viscosity. The viscosity shall be 85 ± 10 KU when tested in conformance with D 562.

(b) Pigment For Yellow Pavement Marking Material. The colorants used to attain the color of the yellow product shall be one or more of the following, along with titanium dioxide: Pigment Yellow 65, Pigment Yellow 75, and opaque Pigment Yellow 74.

(c) Color and Appearance. Color and appearance shall be evaluated using the following: CIE 1976 L*a*b*, illuminant D 65, and standard observer angle 1931 CIE 2 degrees. The geometry shall be 45/0 or 0/45, or d/8, excluding specular gloss. Measurements shall be taken from samples applied to an opacity chart, e.g., Leneta Form 2A, at a wet film thickness of 15 mils ± 1 mil. The applied sample shall have been allowed to dry for at least 12 hours before measurements are taken. The evaluation shall be as follows:

(1) Production: The color of the dry paint film of the production sample shall match the L*a*b* values provided, under the specified conditions. For white material the values are: L* = 94.80, a* = -2.35, b* = 3.20. For yellow material the values are: L* = 80.70, a* = 19.40, b* = 88.65. The colors shall match when compared instrumentally.

(2) Control. The maximum permissible variation from the specified L*a*b* values shall be $2.0\ \Delta E_{cmc}$. The measurements shall be taken from a sample applied over the black portion of an opacity chart.

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

(3) Reflectance. The reflectance, without beads, and using CIE XYZ Yxy, 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 ΔE_{cmc} for white products and 1.3 ΔE_{cmc} for yellow products.

(5) Yellowness Index. The yellowness index of the white material, when determined according to E 313, Using Equation 1 and the coefficients for CIE D 65 illumination, 1931 from Table 1 in that standard, shall not exceed 8.0.

(d) Flexibility. The pigmented binder shall not display cracking or flaking when subjected to the flexibility test of Federal Test Method TT-P 1952D, with the exception that the panels shall be 35 to 31 gauge (0.0078 to 0.0112 in.) tin plate approximately 3 x 6 in. The tin plates shall be lightly buffed with steel wool and thoroughly cleaned with solvent and dried before being used for the test.

(e) Weight per Gallon. The weight per gallon for a production batch, when determined according to D 1475, shall be within ± 0.3 lb/gal of the value obtained by The National Transportation Product Evaluation Program (NTPEP), and reported on a NTPEP deck designated "north". When the Administration waives the NTPEP requirements, another target value will be stipulated.

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

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

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

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

Moisture resistance and flotation test are not required.

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

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

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

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

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

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

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

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

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

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

The Certification shall also, contain the following:

(a) Manufacturer's name.

(b) Place (address) of manufacture.

(c) Color of material.

(d) Date of manufacture (month-day-year).

(e) Lot or batch identification.

(f) Size of lot/batch.

(g) The recommended paint temperature at the spray gun.

(h) Material Safety Data Sheets for all materials submitted for testing and application.

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

951.01.08 Production Facility.

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

(b) The producer shall have a laboratory, subject to the Administration's approval, that is capable of performing the required tests.

CATEGORY 900
MATERIALS

SECTION 951 — PAVEMENT MARKING MATERIALS

951.06 HEAT APPLIED PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKING MATERIAL. The material shall be highly durable retroreflective polymeric materials designed for use as transverse lines, numbers, legends, symbols and arrow markings subjected to high traffic volumes and severe wear conditions such as shear action from crossover or encroachment.

The applied material shall adhere to hot mix asphalt (HMA), open-grade friction courses (OGFC), stone matrix asphalt (SMA), portland cement concrete (PCC), and any existing pavement markings when applied using normal heat from a propane fueled heat gun in conformance with manufacturer's recommendations.

The applied material shall be capable of conforming to pavement contours, breaks and faults, shall not be affected by weather conditions, and shall remain in place on pavement surfaces without being displaced by traffic.

The material shall have a minimum shelf life of one year.

The material shall conform to the requirements of the MdMUTCD and the following:

(a) Composition. The material shall consist of polymeric materials, pigments, binders and glass beads distributed throughout the entire cross-sectional area. The thermoplastic material shall conform to M 249 with the exception of the relevant differences for the material being supplied in the preformed state.

Restrictions. The combined total of lead, cadmium, mercury and hexavalent chromium shall not exceed 100 ppm when tested by X-ray diffraction, ICP, or comparable method capable of this level of detection. Nonleachable lead based pigments will not be permitted. Diarylide type pigments shall only be used when the manufacture or pavement marking material application temperature does not exceed 392 F.

(b) Color. Preformed markings shall consist of film with pigments selected and blended to match Federal Standard 595 color chip Nos. 17886 and 13538 for white and yellow respectively.

(c) Frictional Resistance. The surface of the applied material shall provide a minimum average skid resistance value of 50 BPN when tested in conformance with E 303.

(d) Patchability. The material shall be capable of use for patching worn areas of the same type in conformance with manufacturer's recommendations.

(e) Thickness. The minimum thickness, without adhesive, shall be 120 mils.

(f) Adhesion. The material shall retain a minimum of 65 percent adhesive bond after 100 cycles of freeze-thaw when tested in conformance with C 666, Method B.

(g) Beads.

(1) Index of Refraction. All beads shall meet the general requirements of M 247, Type I, and shall have a minimum index of refraction of 1.50 when tested using the liquid oil immersion method specified in MSMT 211.

(2) Acid Resistance. A maximum of 15 percent of the beads shall show a formation of a distinct opaque white layer on the entire surface after exposure to a 1 percent solution (by weight) of sulfuric acid in conformance with MSMT 211.

Field Testing. Materials conforming to this Specification shall be field tested at AASHTO regional test facilities, such as National Transportation Product Evaluation Program (NTPEP), for performance.

Materials performing satisfactorily throughout the test period, including exhibiting a minimum retained reflectance of 100 mcd/m^2/lux at the completion of the testing, will be placed on the Prequalified Materials List maintained by the Office of Materials and Technology.

Certification. Any marking material supplied during the Contract shall be identical in composition to the material submitted for initial testing. Samples submitted for testing shall be accompanied by the manufacturer's certified analysis in conformance with TC-1.03.

CATEGORY 950
TRAFFIC MATERIALS

SECTION 950.15 TRAFFIC SIGNAL HEADS

804 **DELETE** the table and section titled Hardware in its entirety

INSERT The following:

ITEM	DESCRIPTION	A	B	C	D
1	Aluminum Alloy - Casting	A 319	A 380	A 713	6063 T6
2	Yield Strength, ksi	18	23	25	25
3	Tensile Strength, ksi	27	47	35	30
4	Brinell Hardness	70	80	75	73
5	Elongation (% in 2 in.)	1.5	4	3	12
6	Stainless Steel	A 316	-	-	-
7	Galvanized Steel	A 157	A 153	G 60	-
8	Steel-Flat Sheet	16 gauge	-	-	-
9	Coating	*	Anodized Finish	-	-
10	Brass	CZ120	-	-	-

* The signal head housing shall be yellow in conformance with Federal Standards 595, Color Chip No. 13538. The signal head door and visor shall be optical flat (dull) black Federal Standards 595, Color Chip No. 37038. Aluminum signal heads shall be painted using fusion bonded polyester coating method.

Hardware.

(a) Hub plate shall conform to A, 1 thru 5 and 9B.

(b) Span wire hanger clamp shall conform to C, 1 thru 5.

(c) Balance adjuster body shall conform to 10A.

(d) Balance adjuster eyebolt and hardware shall conform to 6A, 7A, and 7B.

(e) 2-way lower arm shall conform to 7C and 8A.

(f) 2-way tri-stud arm shall conform to A, 1 thru 5.

(g) Span wire entrance fitting shall conform to C, 1 thru 5.

(h) Mast arm mount signal bracket (1-way, 2-way, and 5-section) shall conform to 1A and 1D.

(i) Side pole upper and lower arm assembly shall conform to 1B thru 5B or 1D thru 5D.

The maximum allowable play or space between the sides of the eyebolt and span wire clamp shall be 0.062 in.

808 **ADD** under **Electrical**

(f) Terminal blocks screws shall be of the captive type secured by fasteners on the reverse side of the terminal block. Terminal block screws shall be a # 10 size.

(g) Male spade terminal ends shall be furnished for each position on the terminal block angled at 45 degrees and perpendicular to the terminal block face.