

PROPOSAL FORM
BALTIMORE COUNTY
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TOWSON, MARYLAND

Division of Construction Contracts Administration



Contract Number 24125 WX0
WATER DESIGN SECTION
York Road – MD Route 45 24" Water Main Replacement – Phase 5
(from Wight Avenue to Shawan Road)
Cockeysville/Hunt Valley – District 8c3
Workday Number 030500466
Job Order Number 231-203-0050-0466

CONTRACT BASED ON SEPTEMBER 2023
STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS
AND STANDARD DETAILS FOR CONSTRUCTION

Bidders Information

A pre-bid meeting **ONLY** for Prevailing Wage & Local Hiring and MBE/WBE requirements will be held on Wednesday, October 22, 2025 at 9:00 a.m. EST via WebEx.

Phone-In (Audio Only) 1-415-655-0001, Meeting Number 2315 705 9888##.

Video Conference go to <https://signin.webex.com/join> Meeting Number 2315 705 9888, Password **n2MJNsjUD63**, for Webex link go to:

www.baltimorecountymd.gov/departments/public-works/engineering/contracts/current-solicitations

Last day for questions will be Friday, October 31, 2025 at 4:00 p.m. EST. Questions should be emailed to Pawan Poudel at ppoudel@baltimorecountymd.gov and Barbara Wentworth at bwentworth@baltimorecountymd.gov.

Baltimore County Prevailing Wage and Local Hiring Affidavit, Wage Rates & Requirements **see pages 281-288**

(Contract Disclosure): *“Wage rates that are in effect as of the contract solicitation date will be the wage rates through the duration of the project”*

MBE/WBE Requirements & Forms **see pages 289-303**

THIS PROPOSAL FORM INCLUDES AND INCORPORATES ALL DOCUMENTS AND INFORMATION REFLECTED, LISTED, AND/OR REFERENCED IN THIS TABLE OF CONTENTS, AND ALL SUCH DOCUMENTS AND INFORMATION ARE PART OF AND INCORPORATED INTO THE CONTRACT DOCUMENTS.

TABLE OF CONTENTS

<u>Section Number</u>	<u>SECTION NAME</u>	<u>Page Number</u>
	Title Page (cover)	1
	Table of Contents	2
I.	INFORMATION FOR BIDDERS	3-6
II.	SPECIAL PROVISIONS	7-202
III.	PERMITS	203
	MDOT	204-261
	MDE	262-265
	Baltimore County Grading Permit	266-267
IV.	PROPOSAL (This section to be completed at time of bid)	268
	Description of Work	269
	Description of Items & Schedule of Prices	270-273
	Proposal Affidavit	274-279
	Bid Bond	280
	Baltimore County Prevailing Wage and Local Hiring Affidavit, Wage Rates and Requirements.....	281-288
	MBE/WBE Requirements and Forms	289-303
V.	POST AWARD DOCUMENTS (This Section to be completed by successful bidder after award)	304
	Contract Agreement	305-307
	Performance Bond	308
	Payment Bond	309
	Insurance Documents	310

SECTION I

INFORMATION FOR BIDDERS

ELECTRONIC SUBMITTAL PROCESS

To be considered, Bids (Section IV – Proposal) shall be received by the bid closing date and time to the following email address dpwbid@baltimorecountymd.gov. The contract number and company name should be referenced in the Subject Line of the email. Bids may not be submitted by any other means. Bids that are mailed or otherwise delivered to the Purchasing Division (including emails which indicate links to locations where the bid may be downloaded) and/or emails sent to any other Baltimore County email address will not be accepted.

Late Bids will not be considered. Bidders are strongly encouraged not to wait until the last minute to submit bids. The time stated on the auto-receipt (described below) will be definitive of the time of receipt. Bids received after the deadline will not be accepted. Bidders are advised that the County cannot receive email attachments greater in size than twenty-five (25) megabytes and this size limitation may be further reduced by requirements of the Bidder's email provider which are beyond the control of the County. Bidder should consider separating any large bid attachment into multiple parts and emailing each part separately. In such case, Bidder will note that each email is *1 of 2, 2 of 2*, etc. Multiple part bids will not be considered unless all parts are received by the bid closing date and time.

After submitting a Bid to dpwbid@baltimorecountymd.gov, and upon successful receipt by the County thereof, Bidder will receive an auto-receipt email. This receipt is proof that the bid has been received by the Division of Construction Contracts Administration and should be retained for Bidder's records. In the case of a bid submitted in multiple parts as described above, an auto-receipt email will be generated for each part. The County has no obligation to consider any Bid for which an auto-receipt was not generated.

As with any system, power outages or technology problems may arise that are outside of the County's control and could affect your submission. The County will not be held accountable for such issues that may delay the transmission of any Bid.

NOTE: Electronic copy of the Bid Bond will be accepted at bid opening. The apparent low bidder is required to submit the original Bid Bond within ten (10) days after the bid opening to the Division of Construction Contracts Administration, 111 West Chesapeake Avenue, Room 300B, Towson, Maryland 21204.

INSTRUCTIONS AND SPECIFICATIONS

Refer to the enclosed proposal sheets for quantities to be bid upon. All proposals submitted on the attached form must give the price in clear figures for each item of the proposed work and be signed by the bidder with his name and address. Bidders must not change any item in the proposal for which a price has been stipulated by the County. Any change will cause rejection of the proposal.

NOTE: STATEMENT UNDER OATH FORM TO ACCOMPANY BID as per Baltimore County Purchasing Act 65-98, Section 15-94 and 15-95 which requires that the enclosed affidavit (see Proposal Affidavit pages in Section IV) be completed and submitted as part of the sealed bid.

Proposals made on any other than the attached form will not be considered. All papers included in, bound thereto, or attached to the Proposal Form are necessary parts thereof and shall not be detached, separated, or altered in their intent.

Changes in the phraseology of the proposal, additions, or limiting provisions will render the proposal informal or void and may cause its rejection.

All right is hereby reserved by the Purchasing Agent to reject any or all proposals and to waive formalities and technicalities as the interest of the County may require.

No successful bidder may withdraw his bid within **NINETY (90)** days after the opening thereof.

The successful bidder will be required to be bonded to Baltimore County, Maryland to the sum of One Hundred per Cent (100%) of the amount of his proposal or proposals according to the form of bond hereto attached for projects in excess of \$25,000.00.

This Proposal must be accompanied by a Bid Bond in an amount of 5% of the bid, the exact amount to be determined by the difference between the low bid and the next lowest bid if two or more bids are received, or 5% of the bid if one bid is received. This guarantees payment of the amount thus determined in case of a default in any matter specified as required before award or in any matter resulting in failure to execute and deliver an Agreement, together with Payment and Performance Bonds, after award. The Bid Bond must be in the form accompanying the Proposal executed by a Surety licensed in the State of Maryland. The Surety must be currently rated "B" or better by the A. M. Best Company, and the bid must be in an amount less than, or equal to, the underwriting limitation contained in Department of Treasury Circular 570 as amended at the time of the underwriting.

All work to be performed under this contract shall be done under strict compliance with Baltimore County Department of Public Works and Transportation September 2023 Standard Specifications for Construction and Materials and Standard Details for Construction and any and all proposed revisions thereto as of the date of advertisement and copies of which are available on the County's website at www.baltimorecountymd.gov/departments/public-works/standards, and all of which are made a part hereof and incorporated herein (collectively, the "Specifications").

If the bidder to whom an award is made shall fail to execute the contract and bond hereto attached and as herein provided, the award may be annulled and the contract awarded to the lowest responsible bidder who has consented to a time extension, and such bidder shall fulfill every stipulation embraced herein as if he were the original party to whom the award was made, or the Purchasing Agent may reject all of the bids as the interest of the County may require.

The Bid Bond of the three lowest bidders is deemed to be effective until the execution and delivery of the Contract Agreement, together with Payment and Performance Bonds for projects in excess of \$25,000.00 or until rejection of all bids, whereupon Surety is deemed relieved of all further obligations under the bid bonds provided.

Bidders must examine the drawings and specifications carefully and must make a personal examination of the location and nature of the proposed work. In case doubt shall arise as to the meaning or intent of anything shown on the drawings or comprised in the specification, inquiry shall be made of the Director of Public Works and Transportation at least five (5) days prior to the date of

bid opening. The submission of the Proposal shall indicate that the bidder thoroughly understands the drawings and the terms of the Specifications.

To better ensure fair competition and to permit a determination of the lowest bidder, unresponsive bids or bids obviously unbalanced may be rejected by the Purchasing Agent.

Bidders are required to fill out the total price column and total their proposals so that the result of the bidding, barring possible arithmetical errors, will be known at once. Any errors in computations will be corrected by the Engineer when the proposals are canvassed. Where the unit price and the total price are at variance, the unit price will prevail.

Bidders must be prepared to complete the work within the time stated in the proposal.

NOTE: ONLY CONTRACTORS FORMALLY PRE-QUALIFIED WITHIN THE ADVERTISED WORK CLASSIFICATION BY THE DIRECTOR OF PUBLIC WORKS AND TRANSPORTATION OF BALTIMORE COUNTY 10 CALENDAR DAYS PRIOR TO BID OPENING WILL BE ELIGIBLE TO SUBMIT BIDS.

Contracts for work under this proposal will obligate the contractors and subcontractors not to discriminate in employment practices. Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the contract. Successful bidders must be prepared to comply in all respects with the Contract Provisions regarding nondiscrimination.

Baltimore County has adopted a Minority Business Enterprise (MBE) program and Women's Business Enterprise (WBE) Program. The percentage of participation applies to the contract amount awarded to the Contractor. Qualified minority subcontractors are those certified as being a Minority Business Enterprise by the following:

1. Maryland Department of Transportation Certification Committee (MDOT)
2. City of Baltimore, Minority Business Certification Council

Projects funded by the Federal Highway Administration are limited to the certification listed under #1 (MDOT).

More detailed information regarding the County's MBE/WBE Program can be obtained from the County MBE Office, telephone (410) 887-3407. See Executive Order dated December 6, 2022. MBE/WBE Participation Summary and Forms A, B, C, D and E enclosed in this proposal booklet.

NOTE: If you do not complete and submit the enclosed forms with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer **NON-RESPONSIVE** and accordingly the **COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.**

The County reserves the right to require the low bidder to produce evidence indicating that the company's financial condition is equal to, or better than, that enjoyed by the company at the time of prequalification. This additional information may be in the form of a financial statement or other evidence satisfactory to the Office of Budget and Finance.

Bidders' attention is directed to the requirement that a permit must be obtained from the Baltimore County Bureau of Highways and Bureau of Traffic Engineering prior to cutting any County

road for the purpose of obtaining sub-surface soils information, and permission must be obtained from the State Highways Administration prior to making any openings in a State road.

Under no circumstances shall a bidder enter upon any property outside a County or State road for the purpose of securing sub-surface soils information until permission is received from the property owner. The fact that the County has obtained a utility easement does not give the bidder the right to enter upon the property.

Prevailing index price of asphalt cement/ton \$640.00.

INCLEMENT WEATHER POLICY: If Baltimore County General Government Offices are open or open with liberal leave the day the bids are due, the bids are due as stated in the bid documents (date and time). **ONLY** when the Baltimore County General Government Offices are **OFFICIALLY CLOSED** the day the bids are due, the bid date will be postponed and an Addendum will be issued the next business (or next day buildings are officially open) day the county offices are open with the new bid date and time.

BID TABULATIONS: All bid tabulations will be confidential until after final award, at which time the total bid amounts for all bidders, as well as the complete bid tabulations for the top three (3) bidders, can be inspected by others when requested in writing pursuant to the Maryland Public Information Act.

ALTERNATIVE SOURCES OF CONTRACT BONDS: In the event your company is unable to qualify for bonding through a traditional commercial surety company, you may qualify for the required bonds through the State of Maryland, Department of Commerce (DOC). The **Maryland Small Business Development Financing Authority (MSBDFA, pronounced Mis-Bid-Fa)**, an agency of DOC, operates a Surety Bond Program designed to assist small businesses, based in Maryland, that are unable to obtain adequate bonding on reasonable terms in the commercial marketplace. MSBDFA provides bid, payment and performance bonds for contracts funded by government agencies, regulated utilities and private entities. The penal sums of the bonds are limited to the aggregate amount of \$2,500,000 and companies may pre-qualify for multiple bonds within pre-approved terms and conditions. MSBDFA also provides lines of credit, term loans and loan guarantees to help qualified businesses purchase equipment and real property, make improvements to leased property, refinance existing debt and assist them with their working capital needs. For more information on how to apply, you may contact: Meridian Management Group, Inc. (MMG), (the Program's Manager), 826 E. Baltimore Street, Baltimore, Maryland 21202, Telephone: (410) 333-4270. Or visit their website at www.mmcapitalgroup.com for information, applications and a checklist of required documents and reports that must accompany the application.

S E C T I O N I I

SPECIAL PROVISIONS

MAINTENANCE BOND

Per the Baltimore County Department of Public Works and Transportation September 2023 Standard Specifications for Construction and Materials, Section GP – 4.10 (C) states, the contractor is required to post a maintenance bond in the amount of five (5) percent of the total cost of the contract or withhold five (5) percent retainage for two (2) years from the date of Final Acceptance.

BALTIMORE COUNTY, MARYLAND

BOND NO. _____

CONTRACT NO. _____

MAINTENANCE BOND

THIS MAINTENANCE BOND is entered into on this _____ day of _____, 20____, by and between _____, as principal ("Principal") and _____, a business entity that is authorized to transact business in the State of Maryland and is organized and existing under the laws of the State of _____, as surety ("Surety"), are held and firmly bound unto Baltimore County, Maryland, a body corporate and politic of the State of Maryland ("County"), as Obligee.

WHEREAS, the above-named Principal has entered into a written contract known as Contract Number _____ dated _____, 20____ with Obligee for _____ (the "Agreement"), the terms of which are hereby incorporated by reference; and

WHEREAS, Principal has completed construction under the Agreement; and

WHEREAS, the Agreement includes a warranty on the quality of the Work performed that runs for a period of two (2) years from the date of the County's final acceptance and that runs for two (2) additional years beyond the repair date if any repair is done during the warranty period; and

WHEREAS, Principal is required to cause this instrument to be executed and delivered to Obligee as security for maintenance during the warranty period in an amount equal to 5% of the total value of the Contract.

NOW, THEREFORE, the Principal and Surety are held and firmly bound unto the Obligee in the sum of \$ _____ Dollars (\$ _____), lawful money of the United States of America, for the payment of which sum of money the Principal and Surety do bind themselves and their personal representatives, legal representatives, successors, and assigns, jointly and severally, firmly by this maintenance bond.

The conditions of this bond are as follows:

1. The Principal shall, for a period of two (2) years from and after the date of completion and acceptance of same by Obligee, replace all defects arising in the Work, whether resulting from defective materials, equipment, design furnished or workmanship. After such period, this obligation shall be null and void; otherwise it shall remain in full force and effect.

2. In the event of a default on the part of the Principal that may be the subject of a claim under this bond, Obligee shall mail, by certified mail, to Surety at the address listed below, a written statement that a claim is being made under the bond and, with substantial accuracy, the amount of the claim. Surety shall have no obligation to Obligee under this bond until the notice of claim is mailed.
3. When the Obligee has satisfied the condition of Paragraph 2 that a notice of claim be mailed, the Surety shall promptly and at the Surety's expense send an answer to Obligee within 30 days after the date of the claim. The answer shall state the amounts that are undisputed and the basis for challenging any amounts that are disputed. The answer shall be accompanied by payment (or arrangements for immediate payment) of any undisputed amounts.
4. Surety expressly waives any right to receive notice of extensions of time or alterations or modifications to the Agreement that may be granted by Obligee and agreed upon by Principal, and any such extensions, alterations, or modifications shall not affect the obligation of the Surety under this bond.
5. This bond is a specialty governed by the twelve-year statute of limitations period set forth in the Annotated Code of Maryland Courts and Judicial Proceedings §5-102.

WITNESS OR ATTEST:

(Principal – Contractor Name)

By: _____

Type Name: _____

Type Title: _____

Date: _____

(Surety)

By: _____

Type Name: _____

Type Title: _____

Type Address: _____

Date: _____

SPECIAL PROVISIONS

*BALTIMORE COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
BUREAU OF ENGINEERING AND CONSTRUCTION*

WATER MAIN REPLACEMENT – PHASE 5 YORK ROAD – MD ROUTE 45 (FROM WIGHT AVENUE TO SHAWAN ROAD)

BALTIMORE COUNTY CONTRACT NO. 24125 W XO
BALTIMORE COUNTY J.O. 231-203-0050-0466
WORKDAY PROJECT NO. 030500466



TABLE OF CONTENTS

General Special Conditions.....	N/A
Fixed Price Contingent Items.....	Section 109
Water Main Construction.....	Section 351
Water Valves and Vaults	Section 352
Water House Services, Water Meter Settings and Vaults.....	Section 353
Fire Hydrants	Section 354
Four-Inch Dewatering Valve & Vault	Section 355
Air Release Valve & Vault	Section 356
Abandonment of Water Mains and Water Appurtenances	Section 359
Corrosion Control For Ductile Iron Piping.....	Section 372
Curb, Combination Curb and Gutter, and Monolithic Median.....	Section 609
Miscellaneous	Section 921
APPENDIX A – GEOTECHNICAL EVALUATION REPORTS	
APPENDIX B – CONTRACTOR SHUTDOWN REQUEST FORM	
APPENDIX C –UTILITY WORK NOTIFICATION AND WATER SHUTDOWN NOTICE	
APPENDIX D – MD DEPT. OF TRANSPORTATION STATE HIGHWAY ADMIN. DOCUMENTS	
• MDOT SHA UTILITY PERMIT • PROJECT INFORMATION FORM • 2025 UTILITY PERMIT GENERAL PROVISIONS • 2025 ACKNOWLEDGEMENT OF GENERAL PROVISIONS • UTILITY MASTER AGREEMENT FORM • TRAFFIC CONTROL PERMIT APPLICATION	
APPENDIX E – MDE CONSTRUCTION PERMIT	
APPENDIX F – HOLIDAY DETECTION DAILY FIELD REPORT	
APPENDIX G – TEST HOLE REPORTS	
APPENDIX H – CATHODIC PROTECTION REPORT	
APPENDIX I – CONSTRUCTION SITE SIGN	
APPENDIX J – BALTIMORE COUNTY GRADING PERMIT	

GENERAL SPECIAL CONDITIONS**1. Location and Description of the Water Main Work**

The work to be completed under this Contract includes all labor, materials, and equipment necessary to furnish and install various diameter ductile iron water mains along York Road (MD Route 45) from Wight Avenue to Shawan Road and along Shawan Road from York Road (MD Route 45) to Hyland Avenue, including valves, valve vaults and manholes, connections and isolation, fire hydrants, thrust blocks, corrosion protection system, earthwork, sheeting, trench and roadway pavement restoration, pipe fittings; small (≤ 2 -inch) and large (> 2 -inch) service transfers; tie-ins to existing water mains; and all other work required to complete the supply water main, as shall be indicated, shown, specified or required to complete the work in strict conformity with the Contract Documents. The work also includes all specified, indicated and shown accessories, tests, dewatering, chlorination and de-chlorination, permits and material as shall be necessary and required for a completely operable water main installation satisfactory to the County. As part of the work, all existing lead and galvanized service connections that are currently served from the existing water main in York Road and Shawan Road (and side streets) shall be replaced from the new replacement water main to the existing meter boxes. The Engineer on the job site will determine whether to use the existing meter vault or replace it, depending on its condition. All other service connections shall be reconnected to the new main as shown on the Contract Drawings. After the installation of the water main connections and services, the existing water main in York Road will be abandoned in place. The site is in the northern part of Baltimore County along York Road (MD Route 45) White Avenue to Shawan Road and along Shawan Road from York Road (MD Route 45) to approximately 460 feet west of Hyland Avenue in the Cockeysville area. The project includes, but is not limited to, the construction of the following water mains and appurtenances:

- 3,038 linear feet of 24-inch water main
- 694 linear feet of 12-inch water main
- 69 linear feet of 10-inch water main
- 29 linear feet of 8-inch water main
- 427 linear feet of 6-inch water main
- Nine (9) 6-inch fire hydrants
- 6-inch through 24-inch gate valves and vaults
- Thirteen (13) 3/4-inch water service reconnections
- Three (3) 1-inch water service reconnections
- Seven (7) 2-inch water service reconnections
- 324 linear feet of 3/4-inch copper water service pipe
- 78 linear feet of 1-inch copper water service pipe
- 251 linear feet of 2-inch copper water service pipe

Payment for the first 4-inches below the pipe, where sand backfill will be required as bedding, will not be paid as a Borrow Item. These 4-inches of sand bedding up to 6-inches of sand backfill above the pipe, for the entire width and length of the trench, are considered incidental to the water main bid price items.

Sand used for backfill in the pipe embedment zone must meet ALL of the following conditions:

1. Sand must meet the grading requirements for ASTM C-33 Fine Aggregate Concrete Sand. AASHTO M-6 gradation is also acceptable.
2. Limestone based products are not acceptable. If the material is white or gray in color, it is likely not acceptable.
3. Sand must be clean. Natural, unwashed sand deposits may not be used. Likewise, sand that has become contaminated by improper storage or installation practices will be rejected.

All ductile iron water main pipe and fittings and all connected ductile iron fire hydrant leads and ductile iron service connections and ductile iron tie-ins (regardless of diameter) on York Road and Shawan Road shall have restrained joints and shall have bonded coatings and full cathodic protection. Cathodic protection will be installed as shown on the plans and as specified in Section 372 "Corrosion Control". The cost for coating system and cathodic protection shall be included in the prices bid for the proposed ductile iron water main pipe items.

All ductile iron water main pipe shall be special thickness class 54 in accordance with the latest ANSI/AWWA C151/A21.51. Ductile iron fittings shall meet the latest ANSI/AWWA C110/A21.10 and ANSI/AWWA C153/A21.53. Interior surfaces of all ductile iron pipe and fittings shall be cleaned and cement-mortar-lined at the pipe casting facility with the double thickness cement-mortar lining applied in conformance with the ANSI/AWWA C104/A21.4, latest revisions.

Contract incorporates the use of insulating corporation stops for all service connections 3/4-inch through 2-inches in diameter and ductile iron insulating couplings for tie-ins to existing water mains and service connections.

Tapping machines used for corporation service installations shall be secured to the pipe using wide belt slings, padded chains, or by inserting several layers of asphalt mastic board between the coated pipe and the chains. Under no circumstances shall the chains or other metallic securing devices come into direct contact with the coated pipe.

The prime contractor must be a County prequalified F2 contractor.

All final paving must be done by a County prequalified A2 subcontractor.

Two (2) project notification signs will be required on this project as shown in the appendix.

2. Engineer

REMOVE the definition of “Engineer” in General Provision GP-1.05 “Definitions” listed in the Baltimore County “Standard Specifications for Construction and Materials” and REPLACE with the following:

Engineer – Unless an official is expressly identified in writing by the County or expressly stated in the Contract Documents, Engineer means any one of the following:

*Director of the Department, or his authorized delegated representative,
Deputy Director of the Department (if applicable),
Chief, Division of Construction Contracts Administration of the Department,
Chief, Bureau of Engineering & Construction of the Department or
A Representative of the MD State Highway Administration, as applicable
to the roadway jurisdiction and applicable permit/s*

Any delegation of the Engineer’s authority must be authorized in writing by any one of the above listed officials or expressly stated in the Contract, and such delegation of authority will pertain only to the specific Contract and/or Contracts as expressly stated in the authorization.

If the Engineer’s authority is delegated as specified above to another County department or office, “Department” shall mean the County department or office delegated such authority, and any references to a director, deputy director, chief, division, or bureau shall mean the corresponding official, employee, division, bureau or office of the County department delegated such authority, as applicable and appropriate; provided that, any references to “Department” rules, lists, or published and/or adopted materials shall continue to refer to the County Department of Public Works and Transportation.

3. Preconstruction Survey

ADD the following to Category 300 “Drainage & Utility Construction” listed in the Baltimore County “Standard Specifications for Construction and Materials”:

300.02 PRE-CONSTRUCTION SURVEY. Prior to the pre-construction meeting, the Contractor shall perform a video survey of all curbs & gutters, all inlets, all manholes, all valves, all sidewalks, all roadway, etc. located within the roadway right-of-way along the entire project limits. The video survey shall be made available to the Engineer at the Pre-Construction Meeting. A copy of the video survey shall also be submitted by the Contractor to the MD DOT State Highway Administration prior to starting any work. All costs associated with the survey shall be considered incidental to the Utility Bid Items and no additional payment shall be made.

4. Contractor Staging Area(s)

All staging area(s) shall be obtained by the Contractor at his expense. No separate payment will be made for the costs associated with the Contractor staging area(s). All work, materials, labor, etc. required for this item will be considered incidental to the work required under this Contract.

5. Specifications

All water main and services work on this project shall conform to the Baltimore County Department of Public Works and Transportation "Standard Specifications for Construction and Materials" and "Standard Details" dated September 2023, and the Special Provisions included in this Contract book.

In any and all cases of conflict between the Standards and the Contract Documents, the Contract Documents shall govern but only to the extent of such conflict. Any reference in the water main portion of the Contract Documents made to a Standard Number shall refer to Baltimore County's Book of Standards unless otherwise noted.

Any discrepancies found between the Contract Drawings and the Specifications or any inconsistencies in the Contract Drawings or Specifications shall be reported immediately to the Engineer, in writing who promptly will correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his/her discovery of such inconsistencies, discrepancies, or ambiguities prior to corrections directed by the Engineer, will be done at the Contractor's risk. In case of discrepancy or omission, the Engineer will determine the intent of the design in issuing clarifying or corrective instructions.

All materials and coatings that come in contact with drinking water shall be tested and certified to NSF/ANSI 61 Drinking Water System Components-Health Effects and certified to be lead free in accordance with NSF/ANSI 61 – Annex G.

6. Existing Water Service Connection Pipe Materials

As part of the work noted in "Contract As-Built Drawings" the Contractor shall document the existing pipe material (i.e., lead, galvanized steel, pvc, etc.) for all water service connections on the final as-built drawings.

7. Sheeting and Shoring

No separate payment will be made for the cost of furnishing, installing, and removing build-in-place support of excavation system. All work, materials, labor, etc. associated with furnishing, installing, and removing built-in-place support of the excavation system will be considered incidental to the work required under this Contract. Sheeting and shoring may be left in place at 2-feet below finished grade on County roads. The MD State Highway

Administration does not allow shoring to be left in place and all shoring must be removed before restoration. In addition, no separate payment will be made for the cost of temporary or permanent supporting and/or protecting of any existing utilities within the excavation.

8. Construction Stakeout

The Contractor shall retain a surveyor licensed in the state of Maryland to furnish, set and maintain all construction stakeout associated with this project as required to establish proper line and grade for the proposed water mains and interconnections. Survey controls, survey control sketches, and stakeout data for the water main are to be provided upon the Engineer's request to the Contractor. A lump sum payment item is included in the proposal for Construction Stakeout.

Construction Stakeout will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work. Payment of the Contract lump sum price will be prorated and paid in equal amounts on each monthly estimate. The number of months used for prorating will be the number estimated to complete the work.

9. Fire Hydrants

All hydrants shall meet the requirements of the State's ADA requirements. Contractor shall coordinate the ultimate location with respect to the face of curb for each fire hydrant with the Engineer. The Engineer shall approve every hydrant location prior to work being carried out.

On new hydrant installations, a new swivel tee shall be installed. The 6-inch hydrant lead, valve and the hydrant shall be restrained to each other with restraining glands.

10. Service Connections

At the beginning of the project, the Contractor shall coordinate with the Engineer to carry out a field survey of all existing water service connections as shown on the Contract Drawings. All existing water service connections shall be replaced in their entirety from the new service corporation on the new water main to the existing meter vault with copper pipe of like size (min. 3/4 - inch through 2 - inch), or ductile iron pipe of like size (4-inch through 8-inch). Existing meter vaults, frames and covers, and meter settings affected by the renewal of service connections shall be replaced only when directed by the Engineer. Existing water services shall be abandoned. Services may be renewed by either "open-cut" or "trenchless" construction methods.

All service transfers shall be done at night between 9:00 P.M. and 5:00 A.M. unless otherwise directed by the Engineer.

The costs associated with the abandonment of the existing water mains shall be considered incidental to this work, and shall be at no additional cost to the County. This shall include the abandonment of existing valves and vaults with compacted graded aggregate base (GAB) and surface restoration.

The Contractor shall provide the Engineer with five (5) Reed Tool MKF2 Meter Curb Box Keys prior to the start of construction, at no additional cost. At the end of the project, these meter curb box keys shall remain Baltimore County's property.

11. Sequence of Construction and Valve Shutdowns

A suggested sequence of construction is shown on the Contract Drawings. The Contractor shall submit a sequence of construction operations for review and approval prior to the start of construction. All water valve closures must be coordinated with the Baltimore City Department of Public Works and the City's current designated Contractor (i.e., Wachs Water Services). The Contractor must work with the Baltimore County Inspector and the Baltimore City Inspector to complete the valve shutdown request form which is included as part of the Appendices to these Special Provisions.

Only Baltimore City or the City's current designated Contractor (i.e., Wachs Water Services) shall operate valves to shutdown water mains. The Contractor shall submit the "Contractor Shutdown Request Form" as per the instructions in the attached form, at least seven (7) working days in advance of any necessary valve operations.

The Contractor must be aware that the City of Baltimore cannot and will not guarantee a watertight shut down. It may be necessary for excavations to be pumped to maintain a reasonable amount of water, in the excavation, to allow the construction to take place. All costs associated with coordination with the City, Wachs, etc. and pumping/dewatering shall be included in the appropriate bid items, as it will be considered incidental to the work. All chlorinated water pumped out of any excavation must be routed to a sanitary manhole or de-chlorinated for disposal.

12. Maintenance of Traffic

Refer to the MD State Highway Administration (SHA) Utility Permit and the *Utility Permit General Provisions* dated 01/01/22, which are included as an appendix to these Special Provisions for all special conditions and requirements for work in York Road. A copy of the Complete Authorized Utility Permit must always be on the job site during the performance of all work. A copy of the Work Zone Traffic Control Plan approved by SHA shall always be attached to the Complete Authorized Utility Permit. For all work located inside the SHA right-of-way, the requirements noted in the SHA Utility Permit (and the SHA Utility Permit General Provisions) shall take precedence in cases of any conflict with these Special Provisions

The Contractor shall notify Todd Robertson, the MDOT State Highway Administration District Utility Inspector, at 443-863-0158, 48 hours prior to commencement of any activities related to the SHA utility permit.

The Contractor shall notify Keith Lathe (Baltimore County Highways), at 410-887-4306, 5 working days prior to construction on any Baltimore County maintained roadways (i.e., Shawan Road).

The Contractor shall notify Alvin L. Bess (Senior Transit Service Planner) for the Maryland Transit Administration (MTA) Office of Service Development at 410-454-7182, 10 days prior to working in the area of a bus stop.

The Contractor shall be responsible for the fabrication, installation, and maintenance of all traffic control devices. Said devices shall be in accordance with the Maryland Manual on Uniform Traffic Control Devices (MdMUTCD). The Contractor shall also be required to furnish additional signs should condition warrants at no additional cost to the County.

Lane closures on MD SHA roadways (in this project area) are typically limited to the hours of 9:00 PM to 5:00 AM (Sunday through Thursday night), upon approval by the SHA Utility Inspector. All tie-in work shall be scheduled during nighttime hours. No additional payment will be made to the Contractor for limited daytime hours, nighttime hours, or weekend hours.

Once the Contractor has received the Notice-to-Proceed, The Baltimore County Division of Traffic Engineering shall inventory the existing permanent traffic control devices throughout the construction area on Baltimore County roads. Should it be necessary for devices to be removed by Contractor's forces and/or his/her sub-contractor during construction, the Contractor shall be responsible for the storage of these devices. Should they become damaged, defaced, lost, etc. the Contractor will be billed for the replacement of these permanent devices. The Contractor will also be responsible for the re-installation of any permanent devices removed during construction.

The following conditions will apply to the project areas on all Baltimore County roadways during construction:

- a) A minimum single lane of traffic shall be maintained at all times.
- b) At the end of each workday, the Contractor is required to complete the following:
 - i. Backfill and/or plate over all open excavations so that two lanes of traffic are maintained.
 - ii. Remove all equipment and material from the traveled portion of the roadway. All equipment and materials shall be stored in such a manner as to not obstruct sight distance at any driveway or intersecting road.
 - iii. Cover or remove all signs referring to single-lane operation. It may be necessary for the Contractor to provide "STEEL PLATES AHEAD" signs on each approach to the construction area, if appropriate, or as directed by the inspector for the project.
- c) All steel plates must have identification on them.

- d) Within County's Right-of-Way, if steel plates are to be left in any roadway longer than seven (7) calendar days, the steel plates will be recessed as to be flush with the riding surface.
- e) If steel plates are laid side by side for any reason, they shall be tack welded together, as directed by the County Inspector.

If steel plates are installed within SHA Right-of-Way, the following additional conditions will apply during construction:

- a) All steel plates shall be flat, shall be at least one (1) inch thick, and shall be held in place with pins. Steel plates shall be large enough to allow a minimum of one (1) foot of bearing on the sides of the trench or open cut excavation. Steel plates shall be welded along abutting edges if required by the Engineer.
- b) All steel plates shall be recessed in order that the plate surface is flush with the road surface. No cold mix will be placed around steel plates at any time. There shall be no lateral movement of the individual steel plates when vehicles cross the plates.
- c) If the Contractor elects to bridge a trench or open cut excavation within paved areas of the construction area with steel plates, the Contractor shall notify the Engineer forty-eight (48) hours in advance of placement of any steel plates. If multiple plates are required to cover an open cut excavation, the Contractor shall also submit a detailed plan to the Engineer showing the placement of all steel plates and the proposed support system if required. The Engineer shall approve this detailed plan prior to any installation or use of steel plates by the Contractor. The County reserves the right to require that a registered Professional Engineer, licensed in the State of Maryland, sign and seal the plan. Steel plate locations in public roads shall be subject to speed restrictions as directed by SHA depending on the roadway jurisdiction.
- d) The Contractor shall place appropriate signs at the locations of all steel plates. These signs shall conform to MD MUTCD specifications. Spacing of these signs shall be approved by the Engineer and shall be determined by field conditions.
- e) The Contractor shall be responsible for maintaining the surface of steel plates in the case of wet or slippery weather. At the direction of the Engineer, the Contractor shall spread sand and/or salt to maintain tire traction on the surface of the plates.
- f) The Contractor shall provide the Engineer with the names and phone numbers of at least two (2) contact persons who shall be available for the duration of the steel plate installation to respond to problems or emergencies involving the steel plates or its support system. If a problem or an emergency occurs with a steel plate in a public road that requires immediate attention, SHA and/or County forces will

correct the issue. The County shall withhold payment to the Contractor for related items to compensate for any costs incurred by the SHA and/or the County.

- g) Inspections of steel plates must occur twice-daily using approved SHA inspection report.
- h) The maximum consecutive length of steel plates shall not exceed 100 feet.
- i) Any steel plate placed between December 1 - March 30 must have pre-approval from SHA and paving restoration plan must be in place.
- j) Refer to the SHA Utility Permit General Provisions appended to these Special Provisions.

All existing driveway access must always be maintained. Access to all businesses shall be maintained during the specific business hours for each one.

Unless otherwise noted and directed by the Engineer, all existing pavement markings shall remain in place during and after construction or it shall be replaced immediately in-kind. This will include both temporary and permanent pavement markings required. All costs associated with temporary markings are to be included in the bid item for Maintenance of Traffic. Permanent pavement markings are to be paid as separate bid items.

All traffic signal systems shall remain in place and operational during and after construction. SHA shall operate and maintain the traffic signals, loop detectors and traffic cameras as required. Care shall be exercised when working adjacent to traffic signal facilities. The MDOT SHA Office of Traffic and Safety Signal Operation Section having jurisdiction over the traffic signals involved must be notified a minimum of three (3) business days before the start of construction work in order to coordinate any work to be performed near MDOT SHA traffic signal facilities. The Contact number for the MDOT SHA Office of Traffic and Safety Signal Operation Section is 410-787-7650. Refer to the SHA Utility Permit and the Utility Permit General Provisions (appended to these Special Provisions). All loop detectors shall be replaced once paving is complete by a qualified SHA traffic signal contractor at no additional cost as this work is considered to be incidental to the item listed for Maintenance of Traffic.

13. Payment for Maintenance of Traffic

The Bid Item for Maintenance of Traffic (MOT) shall include all engineering and work which is related to the development and application of Traffic Control Plan(s) as well as all related items of work (including: furnishing, placement, maintenance, removal and relocation of devices and the necessary labor, tools, equipment, and incidentals such as lighting, drums, cones, barricades, STOP/SLOW paddles, flags, vest, and Traffic Manager) for which a specific Bid Item has not been established to ensure the desired result of a safe and efficient work zone area. Temporary traffic signs shall be included in the Bid Item for Maintenance of Traffic. All work associated with the pavement marking plan, removal of existing pavement markings, and temporary/permanent pavement markings shall be

included in this Bid Item. All provisions stated in the SHA Utility Permit and the Utility Permit General Provisions shall be complied with at no additional cost to the County.

a) Traffic Manager

The Contractor shall designate a Traffic Manager for this Contract. The Traffic Manager shall be responsible for properly implementing traffic control devices and for maintenance surveillance on all aspects of traffic control safety and/or directed by the Engineer and in accordance with the Traffic Control Plans included with the Contract Drawings and the Maryland Manual on Uniform Traffic Control Devices (MD MUTCD) 2011 Edition and all supplements and revisions. The work zone traffic control crew shall have the MD State Highway Association Traffic Manager certification.

14. Trench and Paving Restoration

Refer to the MD State Highway Administration (SHA) Utility Permit and the *Utility Permit General Provisions* dated 01/01/22, which are included as an appendix to these Special Provisions for all special conditions and requirements for work in York Road. A copy of the Complete Authorized Utility Permit must always be on the job site during the performance of all work. The requirements noted in the SHA Utility Permit and the SHA Utility Permit General Provisions shall take precedence in cases of any conflict with these Special Provisions for all work inside the SHA right-of-way.

The Contractor shall carry out the following requirements while carrying out the Trench and Paving Restoration:

- Graded Aggregate Base (GAB) shall meet the SHA Standard Specification for Construction and Materials Section 901 "Aggregate".
- Geotextile filter fabric shall be placed between the sub-base material and the GAB in accordance with the SHA Standard Specification for Construction and Materials Section 211 "Geosynthetic Stabilized Subgrade Using Graded Aggregate Base". Geotextile filter fabric shall be Class SE as specified in Section 921 "Geotextiles".
- Cold patch will not be allowed on this project, unless authorized by the Engineer.
- Place and compact temporary patching for maintenance of traffic on a daily basis except when otherwise directed to use methods judged reasonable by the Engineer. Give minimal regard to seasonal constraints, recognizing the nature of a temporary patch and its relation to the early restoration of traffic. All temporary repairs shall be maintained at the Contractor's expense until permanent pavement restoration is completed and accepted by the Engineer.
- All costs associated with handling, stockpiling, transporting, placing, and compacting all backfill materials (both GAB and native material around anodes) shall be considered incidental to all appropriate utility bid items in this Contract and no separate payment will be made.

- All costs associated with the furnishing and installation of Aggregate used for maintenance of traffic shall be considered incidental to all appropriate utility bid items in this Contract and no separate payment will be made.
- The Contractor shall obtain written approval from the Engineer prior to beginning any permanent patching.
- If pavement is wet, the Contractor shall work at his/her own discretion on Baltimore County roadways, however no work shall occur on MDOT SHA roadways if the pavement is wet.
- The excavation and the refill required to locate a connection to an existing utility shall be paid for under the Contract Bid price/s for the contingent Test Pit Excavation item/s.
- For temporary trench repair the Contractor shall install Hot Mix Asphalt Superpave 19.0 mm – PG64S-22, Level 2 Low ESALs. Depth of temporary repair shall be as shown on the Temporary Trench Repaving Detail on the Contract Drawings.
- For permanent trench repairs the Contractor shall install Hot Mix Asphalt Superpave 19.0 mm – PG64S-22, Level 2 Low ESALs. Depth of permanent repair shall be as shown on the MDOT SHA Standard Detail MD 578.01 on the Contract Drawings and in accordance with the SHA Permit. Contractor shall mill and overlay with 2” of Hot Mix Asphalt Superpave 12.5 mm – PG64S-22, Level 2 Low ESALs as shown on the Contract Drawings.
- No separate payment will be made for the removal of existing pavement markings and placement of temporary pavement markings associated with the water work. All costs associated with this work shall be considered incidental to the bid item for Maintenance of Traffic. Permanent pavement markings are to be paid as separate bid items.
- Steel plates are considered incidental to any Contract Construction and/or Work and shall not be measured for payment. No payment shall be made to the Contractor for the use or installation of any steel plates and their support system or for any temporary or permanent trench or paving repair/s required by the County and/or SHA that is related to the use of steel plates.
- The County will not pay for saw cutting and removal of existing pavement, subgrade, and/or concrete base material beyond the limits shown on the Contract Documents, as applicable. In addition, there will be no additional payment for GAB material and asphalt pavement due to an increase in the limits of restoration caused by improper use of the Contractor’s equipment and/or methods. However, subject to approval by the Engineer, the County will pay for these materials under Contingent Items (as applicable) only when there is no fault and/or or neglect by the Contractor.
- In cases where water service connections cannot be placed by trenchless methods and where any excavation that crosses more than one lane of traffic, the Contractor shall

mill and over lay 5 feet on both sides of the trench. In cases where two or more road crossings are within 50 feet or less apart in the existing paved area, the Contractor shall mill and overlay the existing paved surface in a homogeneous area to encompass all such crossings. Refer to the Pavement Restoration plans in the Contract Documents for the extents of the mill and overlay.

15. Contingent Bid Items

Bid items that are identified as “Contingent Bid Items” are established for the sole purpose of obtaining unit costs on pay items that may be incorporated into the project. The Engineer shall have sole discretion in determining whether and to what extent such items will be incorporated into the project. The Engineer may order incorporation of such items at any location within the Contract and at any time during the work. Neither the Contractor nor his/her subcontractor shall make claims for additional compensation because of any increase/decrease in quantities, or the complete elimination of such items.

16. Contingent Bid Item for Class III Excavation

All existing soil (either suitable or unsuitable) shall be removed to a depth of 4-inches below the pipe invert elevation and be replaced with compacted Graded Aggregate Base (GAB) at no additional cost. This aggregate will not be a pay item. If unsuitable soil needs to be removed at greater depths at the direction of the Engineer, then the Contractor will be paid for Class III Excavation with Selected Backfill and proper disposal of excavated material at an approved offsite location. Class III Excavation with Select Backfill and Proper Offsite Disposal of Unsuitable Material will be measured and paid at bid item price per cubic yard of material removed, on a contingent basis as directed by the Engineer.

17. Contingent Bid Item for Trench Rock Excavation with Proper Disposal

The Contractor shall consider the presence of rock materials when developing his/her bid prices. For the purposes of classified excavation, trench rock shall be defined as material encountered in trench excavation larger than 1 cubic yard that cannot be excavated in a trench using a Caterpillar Model 325D hydraulic excavator or equivalent with a rock bucket.

There is one (1) geotechnical report provided as part of the Contract Documents. Contractor shall make his/her own interpretation as to the presence of rock based on those reports. Contractor shall include the costs associated with the rock excavation as part of the water installation (as they are considered incidental to the Bid Item) in those areas

identified in the Contract Documents. No separate payment will be made for the removal of rock where records indicate the presence of rock.

If the Contractor finds rock, as defined herein, at locations where no reasonable indication for the presence of rock exists as identified by the geotechnical reports, then the excavation, removal and disposal of the rock material will be paid under the Contingent Bid Item.

Trench rock excavation includes up to 6 inches over-excavation below the required excavation depth. Rock shall be quantified by measuring the extent of rock in the trench, not by measuring the volume of removed rock. This definition of trench rock does not include materials such as hardpan, loose rock, concrete, or other materials that can be removed by means other than drilling and blasting, but which for reasons of economy in excavating the Contractor chooses to remove by drilling and blasting. In any event, the work will be performed only upon the written direction of the Engineer.

Trench Rock Excavation with Proper Disposal (Contingent) will be measured and paid at the contingent bid item price per cubic yard of material removed and disposed of, on a contingent basis. Payment will be full compensation for material, equipment, and work required for drilling, blasting, excavating, loading, hauling, and disposal of the rock material.

18. Estimated Quantities

With the exception of those items identified as “Contingent” Bid Items, the quantities shown for all unit bid items are based upon the best information at the time of bidding and are established for the purpose of obtaining a bid price. The quantities for all items may be increased or decreased or eliminated without any adjustments to the Contract unit price bid and shall not be considered as a basis of claim by the Contractor against Baltimore County resulting from any quantity changes.

19. Acceptable Resilient Wedge Gate Valves 4-inch through 24-inch

Manufacturer	Valve
American Flow	Series 2500
Kennedy Valve Co.	Ken-Seal NRS
M&H	Style 4067 NRS (4-inch to 12-inch) Style 7000 NRS (14-inch to 24-inch)
Mueller	A-2361 Model
U.S. Pipe	A-USP2 NRS (4-inch to 12-inch) A-USP1 NRS (14-inch to 24-inch)
Clow	F 6100 Series

20. Number of turns and orientation for Resilient Wedge Gate Valves

Valve Size	Number of Turns
4, 6, 8, 10 and 12-inches (Vertical)	Three (3) times the nominal diameter plus three (3) turns
16-inches (Vertical)	50-51 (No Gearing)
20-inches (Vertical)	62-63 (No Gearing)
24-inches (Vertical)	95-155 (Gearing)

21. Acceptable Coupling Manufacturers:

- | | |
|----------------------|---|
| a) Krausz USA | Hymax® Coupling (6"-24") |
| b) Mueller Co. | MaxiFit – MFC Coupling (4"-12") |
| c) Smith-Blair, Inc. | Quantum – 461 Series Coupling (4"-12") |
| d) Smith-Blair, Inc. | Pipe-Lock – 471 Series Coupling (14"-24") |

22. Curbs, Driveways, Pedestrian Ramps, and Sidewalks

Concrete sidewalks, curbs and gutters, and driveways shall be removed to the nearest contraction or expansion joint. Care shall be used to avoid damage to sidewalks, curbs and gutters, and driveways that are to remain in place. All new concrete shall tie-in to the nearest sound surface of existing concrete, or as directed by the Engineer.

Concrete sidewalks and driveway aprons shall be replaced with the same material, construction, and finish as the originals. All disturbed sections, concrete blocks, and driveways aprons shall be replaced in their entirety. Any expansion joint material removed shall be replaced at the original locations. Existing concrete edges shall be cleaned prior to placement of concrete. The finished concrete elevation, texture, and color shall conform to the adjacent concrete surfaces.

Unless otherwise directed, curb and gutter shall be replaced with new concrete curb and gutter of the same cross-section and at the same top of curb elevation and flow line as that removed. Any expansion joint material removed shall be replaced at the original locations. Existing concrete edges shall be cleaned prior to placement of concrete. The finished curb and gutter cross-section, elevations, texture, and color shall conform to the adjacent concrete surfaces.

Removal and Replacement of Concrete sidewalks, and driveways will be measured for payment by the square foot, complete in place. Sidewalk and driveway removal and replacement will be paid for at the contract unit price per square foot, which price will be full compensation for removal and disposal of sidewalk or driveway; preparing the subgrade; and placing, finishing, curing and protection of concrete, complete in place.

Removal and Replacement of Concrete Curb and Gutter will be measured for payment by the linear foot, complete in place. Curb and gutter removal and replacement will be paid for at the contract unit price per linear foot, price will be full compensation for removal

and disposal of curb and gutter; preparing the subgrade; and placing, finishing, curing and protection of concrete, complete in place.

23. Removal and Replacement of Concrete Sidewalk & Curb and Gutter

Concrete sidewalks & curbs and gutters shall be removed to the nearest contraction or expansion joint. Care shall be used to avoid damage to sidewalks & curbs and gutters that are to remain in place. All new concrete shall tie-in to the nearest sound surface of existing concrete, or as directed by the Engineer.

Concrete sidewalks shall be replaced with the same material, construction, and finish as the originals. All disturbed sections shall be replaced in their entirety. Any expansion joint material removed shall be replaced at the original locations. Existing concrete edges shall be cleaned prior to placement of concrete. The finished concrete elevation, texture, and color shall conform to the adjacent concrete surfaces.

The following applies to sidewalks located in MD State Highway Association right-of-way:

- a. Any sidewalk disturbance during construction shall have a suitable material/surface in place to maintain ADA access.
- b. Maintain a 60-inch wide sidewalk when adding (or replacing) fire hydrants.

Unless otherwise directed, curb and gutter shall be replaced with new concrete curb and gutter of the same cross-section and at the same top of curb elevation and flow line as that removed. Any expansion joint material removed shall be replaced at the original locations. Existing concrete edges shall be cleaned prior to placement of concrete. The finished curb and gutter cross-section, elevations, texture, and color shall conform to the adjacent concrete surfaces.

Sidewalk removal and replacement will be measured and paid for at the contract unit price per square foot, which price will be full compensation for removal and disposal of existing concrete sidewalk; preparing the subgrade; and placing, finishing, curing and protection of concrete, complete in place.

Removal and Replacement of Concrete Curb and Gutter will be measured for payment by the linear foot, complete in place. Curb and gutter removal and replacement will be paid for at the contract unit price per linear foot, which price will be full compensation for removal and disposal of existing concrete curb and gutter; preparing the subgrade; and placing, finishing, curing and protection of concrete, complete in place.

24. Non-Detectable Tape for Restrained Joint Pipe

On all new ductile iron pipe with restrained joints, including any 6" hydrant lead line, the Contractor shall install new non-detectable tape on the top of pipe and in accordance with the following specifications and requirements. The Contractor must submit the shop drawings for approval prior to ordering.

All costs associated with the furnishing and installation of such non-detectable tape shall be considered incidental to all appropriate utility bid items in this Contract and no separate payment will be made.

Restrained Joint Pipe Tape

- a) Description
 - i. Material: Non-detectable type, low density, virgin grade polyethylene, acid and alkali resistant; minimum wetting tension: 35 dynes/cm, ASTM D2578.
 - ii. Tape size: 6-inch width, 4 mils thickness.
 - iii. Printing: Two lines with minimum 1-inch height letters with “No-Dig Symbol” following each cycle of text.
 - 1. First Line: “CAUTION-RESTRAINED JOINT PIPE” repeated every 20 to 24 inches.
 - 2. Second line: “CALL DPW AT 410-396-7870.”
 - iv. Colors:
 - 1. Tape: APWA Red.
 - 2. Lettering: Permanent Black.
- b) Approved manufacturers:
 - i. Empire Level Manufacturing Corporation, Utility Products Division, Shieldtec Underground Warning Tape.
 - ii. Blackburn Manufacturing Co., Inc., Non-Detectable Underground Utility Warning Tape.
 - iii. Reef Industries Inc., Terra Tape Standard Non-Detectable.
 - iv. Mutual Industries, Non-Detectable Underground Marking Tape.
 - v. Pro-line Safety Products (A Division of Pro-Pak Ind., Inc.), Standard Non-Detectable.
 - vi. Or Approved Equal.

25. Chlorination and Field Testing of Water Mains

All mains will be chlorinated prior to placing them to service. The Engineer will perform the chlorination test. The Engineer shall determine the length/limits of water mains to be chlorinated at any time and shall reserve the right to separate the installation into several sections. The Engineer will collect water samples and will provide for their analysis for bacteriological quality. Since the water samples must be taken to the laboratory no later than four (4) hours after sampling, chlorination testing will only be performed between the hours of 7:30 AM and 12:00 PM. The actual bacteriological tests and report data are typically obtained two (2) days after submittal. If the results are satisfactory, further tests will not be conducted. All tests shall comply with the ANSI/AWWA standard for disinfecting water mains, Standard C 651.

All bacteriological test results shall be submitted to Baltimore City for approval before the water main is put into service. It is required that two (2) consecutive sets of samples be

taken at least 24 hours apart and deemed acceptable by Bacteriological Standards before a water main can be placed into service.

All requests for chlorination testing of water mains must be made in writing to Baltimore County's Bureau of Engineering and Construction, Construction Contacts Administration Division, at least three (3) working days prior to date of the test. A three (3) day advance notice shall be given prior to charging water main.

Chlorination for disinfection is NOT to be accomplished against closed valves. The termination points and side connections are to be temporarily cut and capped for chlorination. The Contractor is to submit for approval to the Engineer his/her preference of capping or laying temporary main on dead-end streets.

26. Contract As-Built Drawings

(a) Contract and As-Built Drawings. The Contractor shall have contract drawings showing the location, dimensions and sizes of the materials, on the lines and slopes, at the depths, with the connections and the manner in which they are to be placed as called for by the Specifications. The Contractor shall also maintain a complete set of these contract drawings showing As-Built construction changes for use in maintaining a permanent record of the completed construction that shall become the property of Baltimore County at the completion of the Contract.

The Contractor shall provide the Engineer with "As-Built" survey data for new items installed per Contract and for existing items directly impacted by the Contract work. These items include but are not limited to the following:

- (1) direct-buried: horizontal bends, vertical bends, crosses, horizontal tees, vertical tees, caps/plugs, horizontal wyes, vertical wyes/precast sanitary sewer wye blocks, pipeline closure pieces, corporation stops, sleeves/couplings, tapping sleeves (if not directly coupled to tapping valves), pipe anchors/thrust blocks, reducers, line stops (permanent or temporary), insertion valves, valves left direct buried, pipe connections, pipe boots, insulating flanges, anode bed limits, cathodic protection electrical separators, clay trench plugs, steel sheet piling left in place, pile ends/caps, casing/tunnel terminus points, storm drain inverts, sanitary sewer inverts, underdrain inverts, anti-seep collars, lateral seals, siphons, grease interceptors, bend structures, junction chambers, top of water mains along with their material(s) of construction, and top of sanitary sewer force mains along with their material(s) of construction.
- (2) frames and covers, caps, lids, or hatches for: main valves, tapping valves, bypass valves, water meters, blow-off valves, dewatering valves, air release/relief valves, air/vacuum valves, grinder pumps, isolation valves, check valves, backflow preventers, curb stops, wells, special purpose corporation stops, sump pumps/pits, manway accesses/manholes, hand holes, clean-outs, dismantling joints, electric/fiber optic/communication junction boxes, and cathodic protection test stations.

- (3) at grade, above-grade, or otherwise exposed appurtenances: fire hydrants (top of operating nut), sign posts, guard rail terminus points, traffic calming devices, bollards/guard posts, crash barriers, headwalls, end support walls, endwalls, end sections, inlets/combination inlets, grates, surface trench drains, inlet caps, gabion velocity breakers, check dams, trash rack/anti-vortex devices, and horizontal draw-down devices.
- (4) items removed/replaced or removed/relocated as a direct result of utility construction: property corners, survey markers, utility poles, transformer pads, card reader/communication pedestals, rectifier/electric panelboards, fence corner posts, gate posts, bike racks, monuments, and septic tanks.

Survey data shall consist of horizontal positions based upon the Contract drawing datum, or as directed by the Department of Public Works and Transportation, and shall be accurate to 0.1 feet. Vertical datum shall be based upon the Contract drawing datum, or as directed by the Department of Public Works and Transportation, and shall be accurate to 0.1 feet. As-Built positions and elevations shall be certified and sealed by a Maryland Licensed Property Line Surveyor or Professional Land Surveyor.

At the Contractor's option, the required "As-Built" survey data, as described above, may be provided on either individual sketches or on the "red-lined" As-Built drawings that he is to supply to the Engineer at the completion of the Contract.

Items to be verified and included on the As-Built drawings shall be based on As-Built checklists to be provided by Baltimore County.

Final payment shall not be made and/or Contract acceptance shall not be given until the Contractor provides an acceptable As-Built plan and survey.

(b) Digital As-Built Submission.

Final As-Built drawings shall be submitted in a digital format approved by Baltimore County. The drawings shall consist of the original Contract Drawing in black with all As-Built changes clearly noted in red. In addition to the digital As-Built drawings, a digital text file indicating the horizontal and vertical positions and the descriptions of the items indicated in paragraphs (a)(1) through (a)(4) shall be provided. The digital text file shall be in a format approved by Baltimore County.

(c) Ground Profiles.

- (1) The ground profiles shown on the drawings represent the finished grade elevations along the centerline of the trenches, unless otherwise noted in the Contract Documents. Existing grades along utility trenches also shall be shown if changes are proposed to the existing ground. No additional payment is made on lump sum bids where the actual elevations of the ground or surface over the structure differ from those shown on the profiles for pipe trenches.

27. Pipe Wrap Tape for Service Lines

If damage or coating abrasion occurs and is repairable, repair following approved manufacturer's recommendations.

Tapping machines used for corporation service installations shall be secured to the pipe using wide belt slings, padded chains, or by inserting several layers of asphalt mastic board between the coated pipe and the chains. Under no circumstances shall the chains or other metallic securing devices come into direct contact with the coated pipe.

When connecting to existing polyethylene encased cast or ductile iron water main, Contractor shall wrap water service connection pipe 3 feet from main (including corporation stop and saddle) with polyethylene encasement following AWWA C105. Contractor shall seal polyethylene with minimum 2 layers of tape.

Should the Contractor elect to substitute the use of polyethylene encasement for service lines with the use of Pipe Wrap Tape, the Contractor shall apply tape in a spiral form allowing for a minimum of 1-inch overlap. The tape shall contain stabilizers and inhibitors to resist the destructive effects of ultra-violet light. The tape shall have the following properties:

Tape thickness	mm/mils	0.25 / 10	ASTMD-1000
Adhesion to steel	kg/cm ,	0.23 / 20	ASTMD-1000
Adhesion to backing	kg/cm ,	0.23 / 20	ASTMD-1000
Elongation at break	%	200	ASTMD-1000
Tensile strength	kg/cm ,	4.6 / 25.7	ASTMD-1000
Dielectric strength	volts/mil	1250	ASTMD-1000

28. Insulating Coupling

The Contractor shall use insulating couplings when connecting the new cathodically protected ductile iron pipe to the existing water mains and large (i.e., > 2") service connections in York Road and Shawan Road. The insulating coupling shall include an insulating gasket and a "full boot" plastic tubular inside the middle ring to prevent contact of pipe ends isolated from one another. Insulation shall be provided to both ends of the coupling.

The coupling shall meet specifications set forth in the AWWA Standard C219. The end rings and center rings shall be manufactured from ductile iron meeting or exceeding ASTM A536. The gaskets shall be fabricated from Styrene Butadiene Rubber (SBR) compounded for water service in accordance with ASTM D200 MBA 710.

The insulating coupling boot shall be fabricated from virgin Ethylene Propylene Diene Monomer (EPDM) compounded for water service, and for insulating purposes, in accordance with ASTM D2000 MBA 715.

Bolts and nuts shall be Type 304 stainless steel, and the coupling shall be provided with a fusion bonded epoxy coating in accordance with AWWA C213.

29. Connections

The Contractor shall make connections to existing work when and as directed by the Engineer. On being notified by the Engineer, the Contractor shall notify the consumers in the area to be affected by the shut-off. Baltimore City forces shall operate all valves involved in the work. The Contractor must complete the connections with the greatest possible speed in order to minimize public inconvenience. When the Contract Documents require that connections be made at night and/or during the weekend, the costs to make such connections shall be included in the original Price Bid and no additional compensation will be provided. If the Contractor must remove existing buttresses in order to make connections, he/she shall do this work without additional compensation.

30. Buttresses, Anchorages and Thrust Blocks

Where restrained joints are not used, place buttresses behind all caps, horizontal bends and branches unless otherwise directed by the Engineer. Anchorages shall be placed beneath vertical bends. Place thrust blocks at reducers, as required by the Contract Documents. Buttresses, anchorages, and thrust blocks must be of concrete and steel, as required. Extend them to solid, undisturbed soil and construct in accordance with the Standard Details or as shown on the Contract Drawings.

The Contractor shall coat bare steel shapes, plates, and bars with two (2) coats of heavy mastic containing synthetic elastomeric additives in a mixed solvent. The mastic shall bond firmly to dry, clean and contaminant-free steel surfaces (to be wire brushed before coating) without the use of a primer; shall have high electrical resistance; and shall be totally resistant to aliphatic hydrocarbons. Apply the first coat of mastic to a dry film thickness of 10-12 mils. Allow this coat to dry for one hour, or until it is dry to the touch. Apply a second coat to the same dry coat thickness as the first. Backfill only after the second coat is dry to the touch.

31. Soil Borings

The Engineer has conducted subsurface test borings in the area where the work will be performed. Resultant data obtained from these borings along with the full geotechnical evaluation report is included as part of the Appendices for these Special Provisions.

It shall be understood that this information was obtained and prepared for design purposes and is not guaranteed to be more than a general indication of the material likely to be found adjacent to the bore holes, and that the County does not warrant that material encountered beneath the ground surface is homogenous or uniform. This report is for informational purposes only and shall not be considered as part of the contract documents. The data in this report may not be adequate for the Contractor's estimating purposes. All bidders are advised to independently evaluate, or to have the data and interpretations independently

evaluated by someone qualified in this technical field before using for bidding purposes because the bidder is solely responsible for this evaluation. Conclusions and recommendations included in the geotechnical information are not intended to restrict the Contractor from selecting the methods for dewatering, excavating, removal of rock, refill and compaction and/or sheeting and shoring. The Contractor is solely responsible for selecting/utilizing the appropriate methods for this work.

Bidders shall determine to their own satisfaction the actual subsurface conditions including the character and type of soil, rock, and other material he/she will encounter in the conduct of the work at no additional cost to the County. Information and data, and any reference to information and data, in these Contract Documents are available for the Contractor's information and for whatever use the Contractor may find therefore. The subsurface and other physical data, such as those mentioned herein and contained in the Contract Documents, or otherwise made available to the Contractor by the Engineer, are not intended as representations or warranties. It is expressly understood that neither the County nor the Engineer will be responsible for the completeness or accuracy thereof, or for any deductions, interpretations, or conclusions drawn thereof.

No extra payment will be given for any rock excavation or blasting above the bottom of the proposed water supply main pipe, as shown on the Contract Drawings. This will be considered unclassified excavation.

32. Existing Utilities

All known subsurface lines, pipes, conduits, and structures are shown on the Contract Drawings. These utilities are shown based upon the best available plans and maps. The locations have not all been verified by test pits and Baltimore County assumes no responsibility for the accuracy of the Contract Drawings. In any area where the Contractor must make connections to or cross existing subsurface facilities, it shall be his/her responsibility to test pit the utilities and verify the locations, sizes, clearances and elevations to his/her satisfaction. In the event that utilities are not found located as shown on the Contract Drawings, the Contractor shall notify the Engineer so that an evaluation can be made as to the magnitude and methods of any adjustments on the Contract Drawings. The Test Pit reports are included as part of the Appendices for these Special Provisions as information only, subject to field verification by the Contractor.

The Contractor shall be solely responsible for all damage to underground and aboveground utilities encountered in any manner during construction. When crossing and working near existing utilities, it shall be the Contractor's responsibility to properly support and maintain the operation of the utilities. Extreme care shall be exercised in excavation and backfill operations. The Contractor shall correct at his own expense all damage caused to existing utilities.

The Engineer may direct placement of additional fittings in addition to those shown on the Contract Drawings as required to avoid existing utilities or obstructions encountered when opening the trench. Compensation for this work will be paid under the appropriate

contingent bid item listed. Restrained joints shall be included in this item. This item is for 24" diameter mechanical joint 45-degree bends which may become necessary to complete the installation.

33. Submittals

Ten days after notice to proceed, the Contractor shall submit a submittal schedule listing as near as practicable by specification section number, all submittals required, and approximate date submittal will be forwarded. The Engineer will not review submittals until the submittal schedule has been submitted and approved.

Submittals are generally defined as all drawings, diagrams, illustrations, catalog cut sheets, product data sheets, brochures, schedules, bills of material, and other data, certified correct for construction, which are prepared by the Contractor, his/her subcontractors, suppliers or distributors, or equipment fabricators or manufacturers, and which illustrate the manufacture, fabrication, construction, installation of the work, or a portion thereof.

The Contractor's attention is specifically directed to the fact that shop drawing submittal drawings are required in advance, and shall be submitted for each and every element of the work including, but not limited to, the following:

- Couplings
- Cathodic Protection
- Valves
- Vaults
- Manholes
- Frames and Covers
- Graded Aggregate Base
- Concrete Mix Designs
- #57 Aggregate
- Bituminous Concrete
- Pipe Layout
- Pipe Coatings
- Pipe Fittings
- Pipe Closures
- Pipe Supports
- Fire Hydrants
- All Piping and Fittings (regardless of type or size or whether fabricated on or off the project site)
- Pipe Restraints
- Non-Detectable Pipe Tape

Each submittal shall be assigned a sequential number; Submittal No. 1, 2, 3, 4, etc. for purposes of easy identification, and shall retain its assigned number, with appropriate subscript, on all required resubmissions. Changing manufacturers or models during the

course of the submittal process shall not be cause for assigning a new submittal number. Once an item of work has been assigned a submittal number, that item of work shall retain the same number, for the duration of the project. The following stamp shall be affixed to each submittal and appropriately completed.

CHECKED AND APPROVED FOR SUBMISSION (CONTRACTOR'S NAME) JOB _____ CONTRACT NO. _____ DATE _____ BY _____ SUBMITTAL NUMBER _____ ITEM _____ CONTRACT REFERENCES: SPECIFICATION _____ DRAWINGS _____
--

Resubmittals shall be labeled with the letter "R" followed by the number of the resubmission. Example: The Contractor's tenth submittal, being resubmitted for the first time shall be numbered Submittal No. 10R1, resubmitted for the second time shall be numbered Submittal No. 10R2, etc.

All shop drawings shall be in conformity with the Contract Drawings and Special Provisions. All shop drawings except diagrams, illustrations, brochures, and schedules shall be to appropriate scale, but in no case smaller than 1/4-inch equals 1 foot, and shall give all dimensions required for manufacture, fabrication, assembly, installation, and incorporation in the work. All shop drawings shall be complete, accurate, and distinct, and shall show outline and section views, details, kinds of materials to be used, the kind of machine work and finish to be applied, and the installed locations of the said materials, equipment, accessories, appurtenances, and related items.

Diagrams, illustrations, brochures, schedules, and other data may be prepared and executed, complete, on sheets measuring 8 1/2 inches by 11 inches. Shop drawings submitted other than as specified herein will be returned for resubmittal without being reviewed.

After checking and verifying all field measurements, the Contractor shall submit the submittals to the Engineer for approval (via email). All submittals shall be checked by and stamped with the approval of the Contractor prior to submission, and identified as shown herein. The information shown on the submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other requirements as specified or shown in the Contract Documents to enable the Engineer to review the information as required. Machinery outline drawings alone are not acceptable. At the time of each

submission, the Contractor shall call to the Engineer's attention, in writing, any deviations that the submittals may have from the requirements of the Contract Documents.

The Engineer will check submittals with reasonable promptness, but his/her checking and approval shall be only for conformance with the design concept of the project and for compliance with the information given in the Contract Documents. The approval of a separate item as such shall not indicate approval of the assembly in which the item functions. The Contractor shall make any corrections required by the Engineer and shall resubmit the submittal until approved. The Contractor shall direct specific attention to revisions called for by the Engineer on previous submissions.

The Engineer's approval of submittals shall not relieve the Contractor from his/her responsibility for any deviations from the requirements of the Contract Documents unless the Contractor has in writing called the Engineer's attention to such deviations at the time of submission and the Engineer has given written approval to the specific deviation, nor shall any approval by the Engineer relieve the Contractor from responsibility for errors or omissions in the submittals. Submittals shall be submitted with sufficient time provided for checking, return to the Contractor, and/or resubmission as required. The words "APPROVED" or "APPROVED AS NOTED" or words of similar import placed by the Engineer on a submittal means that all items and details of the submittal are fully approved with the exception of those items or details that are specifically marked for further action. When the submission is marked "RESUBMIT" it means that the material or product can probably fulfill the intent of the Contract Documents but that enough questions or comments have arisen to require a corrected or updated submission. If the material submitted represents a product that is totally unsatisfactory and probably will not under any circumstances meet Contract requirements, it will be marked "REJECTED" and will not be reconsidered by the Engineer. The withholding of an approval by the Engineer of any submittal in its entirety, including required certifications, shall under no circumstances constitute a basis for delay in arranging for and proceeding with the manufacturing, fabricating, delivering, and installing, in accordance with the Contract, of those items or details in such submittals which may have been approved.

The Contractor's attention is specifically directed to the fact that no work shall be fabricated, nor materials ordered, nor any construction performed, prior to approval by the Engineer of submittals applicable thereto.

Construction performed in violation of this requirement will be neither approved nor certified for payment until applicable submittals have been approved. If the Engineer so directs, the Contractor shall disassemble, raze, and remove any such construction performed prior to approval by the Engineer of submittals applicable thereto, and the Contractor will be allowed neither additional compensation nor extension of Contract time thereto.

If the Contractor orders or causes to be ordered or delivered any material in violations of this requirement, he/she does so at his/her own risk, and such equipment, machinery or

materials shall neither be installed in the work nor stored on the site of the work. If, after submission and review of applicable submittals, the Engineer determines that any such materials do not meet the requirements of the Contract Documents, such materials will be rejected, and the Contractor shall be allowed neither additional compensation nor extension of time, therefore.

The Contractor's attention is specifically and especially directed to the fact that because manufacturer's standards and procedures are subject to unilateral changes over which the County has no control, the stipulations herein are applicable, and will be enforced, even for those elements of materials which may be specified by manufacturer and model or catalog number in these Contract Documents.

34. Certification of Materials and Installations

The Contractor shall furnish certification for the following items:

- a) Gate valves
- b) Fire hydrants
- c) Automated air release valves
- d) Pipeline Coating and/or wrapping
- e) Pipe

Certification shall be provided from each manufacturer, or from an approved testing laboratory, that all material used in the work is in accordance with these and all referenced specifications.

CATEGORY 100
PRELIMINARY

SECTION 109 – FIXED PRICE CONTINGENT ITEMS

109.01 DESCRIPTION.

ADD: The following after the first paragraph:

Referring to all test pit excavation fixed price contingent items, payment for test pits shall be limited to the following:

- Contract tie-in locations
- Utilities not shown on the Contract Drawings, locations identified by the Contract Documents, and locations as directed by the Engineer.

Test pits performed by the Contractor: to identify the location of sewer house connections, water services, water service reconnections, utilities (including buttresses), test stations, traffic signal appurtenances, pilings, or miscellaneous structures; or to identify pavement or subsurface composition; shall not be measured but shall be considered incidental to the Contract.

CATEGORY 300
DRAINAGE & UTILITY CONSTRUCTION

SECTION 351 – WATER MAIN CONSTRUCTION

ADD the following after the end of section **351.03.02 General Installation of Water Mains**.

22. Where proposed water mains on the plan are shown with less than 10-foot horizontal separation (measured edge to edge) with existing sanitary sewer, the new water mains and fittings shall be installed with all restrained joints.

23. Locate all pipe joints a minimum of five (5) feet, measured horizontally, from sewer mains at all crossings.

DELETE **351.04 MEASUREMENT AND PAYMENT** in its entirety and **REPLACE** with the following:

351.04 MEASUREMENT AND PAYMENT.

A. Water Mains

Measurements for payment shall be made horizontally along the centerline of the trench through all fittings and valves except between vertical bends where measurement is made along the center of the pipe, including all fittings. The list of pipe and fittings shown on the Contract Drawings (i.e., Bill of Materials) is for convenience only. In case of discrepancy between this list and the Contract Drawings, the Contract Drawings shall govern.

Water Mains are paid for at the Contract unit price per linear foot for the particular size and type of pipe specified on the Contract Drawings or directed by the Engineer. The Contract price bid shall include: the bonded coating and full cathodic protection of all ductile iron pipe and fittings; test pitting seven (7) working days in advance of laying the pipe; saw cutting of pavement; removal and disposal of existing pavement and concrete sub-base; unclassified excavation and refill; furnishing and placing sand backfill in the pipe bedding and embedment zone; removal, storage and re-handling of excavated material; bracing; pumping and other disposal of water; furnishing and placing of pipe; concrete anchors; joint restraints; buttresses, fittings and appurtenances exclusive of valves, vaults and fire hydrants; mechanical jacks; restraining glands; insulating couplings; installation of non-detectable tape, backfill and compaction; documentation of water main installation, as-built drawings, contract tie-in operations, chlorination and field testing, abandonment and/or removal of existing valves, water service connections and water mains, and all labor, equipment and work necessary to complete the work and all necessary GAB to refill the trench.

Concrete encasement of existing sanitary sewers (as shown on the Drawings) shall be paid for under the Item listed for contingent Mix No. 1 Concrete. Price shall include excavation, backfill and compaction, dewatering, shoring/support of the existing sanitary sewer,

formwork, concrete, finishing, restoration and all work necessary for the encasement of the existing sanitary sewer/s.

Furnishing and installing Graded Aggregate Base (GAB) shall not be measured separately, but shall be considered incidental to the items listed in the bid for the water main installations.

All costs associated with the maintenance of traffic for the water main and water service installations shall be included in the price bid for Maintenance of Traffic.

The excavation and the refill necessary to locate the end of an existing water main for a tie-in shall be paid for under the applicable Bid Item/s for contingent **Test Pit Excavation**.

Restoration of the surface shall be paid under the items bid for seed and mulch, bituminous concrete for temporary and permanent trench repair, milling and overlay, concrete sidewalk, curb and gutter, etc. as applicable. All driveway restoration work shall not be measured and paid separately, but will be considered incidental to the items listed in the bid for the water main installations.

Furnishing and installing all corrosion components and full cathodic protection for new ductile iron pipe and fittings (as outlined in the General Special Conditions) shall not be measured and paid separately, but will be considered incidental to the items listed in the bid for the water main installations.

Encasement and/or dielectric wrapping of service lines, the required overlapping, any necessary wrapping or repair will be considered incidental to the service line bid items.

The relocation and/or bracing of some of the existing BGE utility poles shall be performed by others engaged by BGE (as shown on the Contract Drawings). Baltimore County will coordinate with BGE, and no guarantees are provided on the schedule for relocation and/or bracing. Accordingly, delays related to this will come at no additional cost to Baltimore County.

The cost for the polyethylene encasement (as applicable for connections to existing polyethylene encased water mains and service connections) shall be included in the prices bid for the proposed ductile iron water main pipe items.

A contingent item has been set for additional 24" diameter restrained ductile iron mechanical joint 45 degree pipe fittings for cases where the Engineer directs the Contractor to install additional pipe fittings as required to avoid existing utilities or other conflicts. This item shall be measured and paid for on a case-by-case basis as approved by the Engineer.

B. Permanent Caps, Jack and Buttress

Permanent Caps, Jack, and Buttress shall not be measured separately but will be considered incidental to the appropriate ductile iron pipe bid item in this Contract. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

CATEGORY 300
DRAINAGE & UTILITY CONSTRUCTION

SECTION 352 – WATER VALVES AND VAULTS

DELETE 352.03.03 Vaults Around Valves in its entirety and **REPLACE** with the following:

- (a) **General.** Erect and construct vaults around all valves according to the Standard Plates or Contract Drawings. Precast concrete vaults as shown on the Standard Detail Plates are to be used unless otherwise noted on Contract Drawings or directed by the Engineer.

The MD State Highway Administration (SHA) **does not allow** the use of sectional vaults within its Right-of-Way. However, should a manhole or vault not fit within the roadway, sidewalk, etc. the Contractor shall install a screw type roadway valve box and cover in accordance with the following:

- (1) Screw type roadway valve boxes and covers shall be made of gray iron conforming to the requirements of ASTM A48, Class 35B, as noted in section 3.1 of AASHTO M306 and shall meet the dimensional and marking requirements indicated on the Standard Details. The iron material used in products provided shall have a minimum recycled material content of seventy-five percent (75%). The recycled materials shall consist of post-consumer material.
- (2) All casting manufacturers shall be approved suppliers of cast iron products to the Maryland Department of Transportation and City of Baltimore. All manufacturers shall be able to demonstrate that there is an acceptable quality control program at the producing foundry and upon request shall furnish a quality control manual. As part of the quality control program the producing foundry shall be made available for the purpose of conducting an audit prior to supplying casting. All valve box parts shall be manufactured at the same producing facility.
- (3) Castings shall be of uniform quality, free from sand holes, gas holes, shrinkage, cracks, and other surface defects. Castings shall be reasonably smooth and well cleaned by shot blasting. Surfaces of the castings shall be free from burned on sand and shall be reasonably smooth. Runners, risers, fins, and other cast on pieces shall be removed from the castings and such areas ground smooth. Bearing surfaces between covers and top sections shall be cast or machined with such precision that uniform bearing shall be provided throughout the perimeter area of contact. As cast dimensions may vary within accepted foundry tolerances as outlined in the Iron Castings Handbook published by the American Foundrymen's Society, Inc. Nominally, casting dimensional tolerances shall be

plus or minus one-sixteenth of an inch ($\pm 1/16"$) per foot. All published casting weights are average and approximate values and shall vary plus or minus five percent ($\pm 5\%$). Casting dimensions and specific tolerances are identified on the associated casting drawings. Castings shall meet the meet weight and dimensional criteria as shown on the associated drawings. All castings shall fit together properly and be fully interchangeable.

- (4) All gray iron valve boxes shall be rated for traffic service.
- (5) Inspections shall be in accordance with 9.1.2 of AASHTO M306. Results of these tests shall be furnished to the purchaser upon request. The heat or production date and product numbers, as cast on the casting shall be the basis of traceability and recording of the tests.
- (6) A foundry certification shall be furnished to the purchaser stating that each lot meets the requirements of this Specification. Applicable documentation shall be made available to the purchaser upon request.
- (7) Each casting shall be identifiable and show, at a minimum, the following: name of the producing foundry, country of manufacture (such as "Made in USA"), ASTM A48, CL 35B, individual part number, cast or heat date. All castings shall be marked in accordance with all applicable laws and/or regulations. Castings shall include all lettering as shown on the Specification Drawings.
- (8) The purchaser may conduct random checks on the castings. These random checks shall be conducted in accordance with AASHTO M306, Section 6.0 guidelines.
- (9) Refer to the following list of Baltimore City Department of Public Works Bureau of Water and Wastewater, Utility Engineering Division's at the Water Engineering Office approved suppliers of cast iron roadway boxes:

Manufacturer	Model
Bingham and Taylor	4905 Series
East Jordan Iron Works, Inc	8550 Series
Tyler	6850 Series

- (10) Refer to the Baltimore City Department of Public Works Standard Details shown on the Contract Drawings.

- (11) Measurement and payment for Contingent Screw Type Roadway Valve Boxes and Covers shall be made on a per each basis for each valve box and cover which is furnished, installed, and accepted by the Engineer. Payment shall be considered full compensation for all labor, equipment, and materials.

Valves 12" and Smaller. Erect a 48-inch precast concrete manhole with doghouse opening, in accordance with Standard Detail Plates S-4 and S-15. Pipe layouts must be such that a bell end joint falls within 12 inches of the outside face of the manhole with the bell end looking out. The placement and consolidation of the required bedding under the unit shall be a minimum 6 inches of No. 57 aggregate unless otherwise directed by the Engineer.

(b) **Valves 16" and 20".** Erect a precast concrete vault in accordance with Standard Detail W-16A. Pipe layouts must be such that a bell end joint falls within 12 inches of the outside face of the vault with the bell end looking out. The placement and consolidation of the required bedding under the unit shall be a minimum 6 inches of No. 57 aggregate unless otherwise directed by the Engineer.

(c) **Valves 24" and 30".** Erect a precast concrete vault in accordance with Standard Detail W-16. Pipe layouts must be such that a bell end joint falls within 12 inches of the outside face of the vault with the bell end looking out. The placement and consolidation of the required bedding under the unit shall be a minimum 6 inches of No. 57 aggregate unless otherwise directed by the Engineer.

DELETE 352.04 MEASUREMENT AND PAYMENT in its entirety and **REPLACE** with the following:

352.04 MEASUREMENT AND PAYMENT. *Gate Valve and Vault (Vertical or Horizontal)* are measured based on the number of each type and size built or replaced as shown on the Contract Drawings or as directed by the Engineer.

Valves and vaults are paid for at the contract unit price bid per each for the particular type and size installed or replaced, the bid price shall include all unclassified excavation and refill; compaction; removal, storage and re-handling of excavated material; bracing; pumping or other disposal of water; corporations when called for; corporation saddle, vault work, and all materials, tools and labor necessary to complete the work.

1. For tapping gate valves, price shall also include cost to measure diameter of parent pipe prior to tapping; cost of furnishing and installing tapping saddle; cost of tapping operations and equipment; pressure testing; disinfection; and all costs associated with hiring tapping specialists and/or pipeline representatives. Test pits for accessing the parent pipeline prior to tapping to determine pipeline diameter and location of existing joints and fittings shall be paid for as part of the fixed price contingent items for Test Pit Excavation and shall be performed only with the prior approval of the

Engineer.

2. For replacing existing gate valves, price shall also include the pipe stub, restrained joints, restrained coupling or equivalent, cutting and removal of existing pipe, preparation of existing pipe for re-connection, rigging and all vault work.

Furnishing and installation of Graded Aggregate Base (GAB) shall not be measured separately but will be considered incidental to the appropriate utility bid items in this Contract.

Payment for installed gate valves and vaults installed, payment for tapping gate valves and vaults installed and payment for replacing existing gate valves shall not be made until the Contractor demonstrates to the Engineer the following:

- (a) That each valve and vault has been properly installed and the operating nut is fully accessible from above. For those locations where corporations are called for, operating key shall also be accessible from above.
- (b) That valve extension stems and stem guides function properly and with minimum effort.

Any shutdown of existing or new installed valves must be done by Baltimore City or Wachs. Shutdown requests must be done 10 days prior to the scheduled shutdown. Requests can be made by filling out the Wachs shutdown request form found in the appendix. No extra payment will be made for coordinating this shutdown work.

**CATEGORY 300
DRAINAGE AND UTILITY CONSTRUCTION**

**SECTION 353 – WATER HOUSE SERVICES, WATER METER SETTINGS AND
VAULTS**

ADD the following to **SECTION 353.01 DESCRIPTION:**

All existing lead and galvanized service connections that are currently served from the existing water main in York Road and Shawan Road (and side streets) shall be replaced from the new replacement water main to the existing meter boxes. The Engineer on the job site will determine whether to use the existing meter vault or replace it, depending on its condition. All other service connections shall be reconnected to the new main.

ADD the following to **SECTION 353.04 MEASUREMENT AND PAYMENT:**

Furnishing and installation of Graded Aggregate Base (GAB) shall not be measured separately but will be considered incidental to the appropriate utility bid items in this Contract.

Restoration of the surface shall be paid under the items bid for seed and mulch, bituminous concrete for temporary trench repair, hot mix asphalt surface SF, concrete sidewalk, etc. as applicable.

CATEGORY 300
DRAINAGE & UTILITY CONSTRUCTION

SECTION 354 – FIRE HYDRANTS

ADD the following to **SECTION 354.01. DESCRIPTION:**

When hydrants are to be installed within the State Rights-of-Way, the locations shall meet the requirements of the State's ADA requirements. Fire hydrants shall be installed and restrained in accordance with Standard Detail Plate W-3A. Contractor shall coordinate the ultimate location with respect to the face of curb for each fire hydrant with the Engineer. Engineer shall approve every hydrant location prior to work being carried out.

ADD the following to **SECTION 354.03. CONSTRUCTION REQUIREMENTS:**

354.03.05 Removing Existing Fire Hydrant and Abandonment of Valve. This work consists of removing existing fire hydrant, and properly abandoning existing hydrant lead valve and 6-inch hydrant lead line, and restore the area.

1. See Section 354.03.03, item 1 for requirements prior to removing hydrant.
2. The Contractor shall remove the entire hydrant, abandon the existing 6-inch valve, and abandon existing 6-inch water main as required, and shall restore the area. This item does not include removing existing fire hydrant tee at the parent water main. Refer to the appropriate section of these specifications for abandonment of existing valve and water main.

ADD the following to **SECTION 354.04 MEASUREMENT AND PAYMENT:**

Furnishing and installation of Graded Aggregate Base (GAB) shall not be measured separately but will be considered incidental to the appropriate utility bid items in this Contract.

Restoration of the surface shall be paid under the items bid for seed and mulch, bituminous concrete for temporary trench repair, hot mix asphalt surface SF, concrete sidewalk, etc. as applicable.

All costs associated with the removal of hydrants to be abandoned and the removal of frame and covers on abandoned valves, and any other work necessary to properly abandon these appurtenances shall be incidental to the Work and be included in the appropriate unit prices bid for the new ductile iron pipe and/or new fire hydrant.

CATEGORY 300
DRAINAGE & UTILITY CONSTRUCTION

SECTION 355 – FOUR-INCH DEWATERING VALVE & VAULT

ADD the following to **SECTION 355.03 CONSTRUCTION**:

5. Erect a 60-inch precast concrete manhole with doghouse opening, in accordance with Standard Detail Plate W-2. Pipe layouts must be such that a bell end joint falls within 12 inches of the outside face of the vault with the bell end looking out. The placement and consolidation of the required bedding under the unit shall be a minimum 6 inches of No. 57 aggregate unless otherwise directed by the Engineer.

CATEGORY 300
DRAINAGE & UTILITY CONSTRUCTION

SECTION 356 – AIR RELEASE VALVE & VAULT

ADD the following to **SECTION 356.03 CONSTRUCTION**:

5. Erect a 60-inch precast concrete manhole with doghouse opening, in accordance with Standard Detail Plate W-8. Pipe layouts must be such that a bell end joint falls within 12 inches of the outside face of the vault with the bell end looking out. The placement and consolidation of the required bedding under the unit shall be a minimum 6 inches of No. 57 aggregate unless otherwise directed by the Engineer.

**CATEGORY 300
DRAINAGE & UTILITY CONSTRUCTION**

**SECTION 359 – ABANDONMENT OF WATER MAINS AND WATER
APPURTENANCES**

ADD the following to **SECTION 359.04 MEASUREMENT AND PAYMENT:**

6. Furnishing and installation of Graded Aggregate Base (GAB) shall not be measured separately but will be considered incidental to the appropriate utility bid items in this Contract.

CATEGORY 300
DRAINAGE & UTILITY CONSTRUCTION

ADD: The following:

SECTION 372
CORROSION CONTROL
FOR DUCTILE IRON PIPING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Installation of corrosion control components shall be in accordance with the following specifications and details. All installation practices and components shall be approved by the Engineer.
- B. The corrosion control system for all ductile iron pipe (this includes all piping, joints, valves, fittings, etc.) will include an external protective coating in accordance with the below specifications, electrical continuity (joint bonding), electrical isolation (insulating flanges, insulating couplings, and insulating corporation valves), sacrificial (magnesium and zinc) prepackaged anodes, and corrosion control test facilities.
- C. Upon completion of the work, the Engineer shall test, operate, inspect, and survey the installed work. Any and all repairs or replacement of defective or improperly installed corrosion control/corrosion monitoring systems shall be corrected by the Contractor at no additional cost to the Owner.

1.02 REFERENCES

The following is a list of the Standards referenced in this Section.

- A. American Society for Testing and Materials (ASTM) International
 - 1. ASTM A48: Specification for Gray Iron Castings
 - 2. ASTM D149: Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
 - 3. ASTM D257: Test Methods for D-C Resistance or Conductance of Insulating Materials
 - 4. ASTM D471: Test Method for Rubber Property-Effect of Liquids
 - 5. ASTM D570: Test Method for Water Absorption of Plastics

6. ASTM D638: Test Method for Tensile Properties of Plastics
7. ASTM D1000: Test Methods for Pressure-Sensitive Adhesive Coated Tapes Used for Electrical and Electronic Applications
8. ASTM D1505: Test Method for Density of Plastics by the Density-Gradient technique
9. ASTM G8: Test Method for Cathodic Disbonding of Pipeline Coatings
10. ASTM G14: Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test)
11. ASTM G95: Test Method for Cathodic Disbonding of Pipeline Coatings (Attached Cell Method)

B. Society for Protective Coatings (SSPC)

1. SSPC SP3: Surface Preparation Specification No. 3, Power Tool Cleaning
2. SSPC SP5: Surface Preparation Specification No. 5, White Metal Blast Cleaning

C. NACE International (NACE)

1. RP0274: High Voltage Electrical Inspection of Pipeline Coatings Prior to Installation
2. SP0169: Control of External Corrosion on Underground or Submerged Metallic Piping Systems
3. SP0188: Discontinuity (Holiday) Testing of Protective Coatings

D. American Water Works Association (AWWA)

1. AWWA C210: Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines
2. AWWA C214: Tape Coating Systems for the Exterior of Steel Water Pipelines
3. AWWA C216: Heat Shrinkable Cross-Linked Polyolefin Coatings for Steel Water Pipelines

- 4. AWWA C222: Polyurethane Coatings for the Interior and Exterior of Steel Water Pipelines
- E. NSF International
 - 1. NSF61 Drinking Water System Components - Health Effects
- F. US Department of Transportation
 - 1. US DOT H-20: Roadway Delineation Practices Handbook

1.03 SUBMITTALS

- A. Catalog cuts of all materials to be installed shall be required and shall be submitted for approval.
- B. Pipe and casing pipe coating, handling, and testing procedures, and quality assurance procedures shall be required and shall be submitted for approval.

1.04 DOCUMENTATION OF CATHODICALLY PROTECTED WATER MAIN INSTALLATION

- A. For this project, the corrosion control for all ductile iron pipe (this includes all piping, joints, valves, fittings, etc.) will include an external protective coating in accordance with the specifications, electrical continuity (joint bonding), electrical isolation (insulating flanges, linked rubber seals, and insulating corporation valves), sacrificial (magnesium) prepackaged anodes, sacrificial zinc ribbon anodes, and corrosion control test facilities.
- B. It is important for the County to ensure that new cathodically protected water mains and service lines are constructed in strict accordance with the requirements and practices specified in the Contract Documents and as approved by the Engineer. Even small variations between the execution of the work and that which is specified could have detrimental effects on the cathodic protection system's ability to perform its designed function.
- C. Before any work is performed, the Contractor shall schedule a demonstration session of all cathodic protection practices to be implemented while executing the work. The demonstration session shall be scheduled during regular office hours and must include the personnel responsible for the work as assigned by the Contractor. All installation practices and components shall be witnessed and approved by the Engineer and his/her designated representative. The demonstration session shall go over but not be limited to the following:
 - 1. Hoisting of pipe

2. Holiday testing,
 3. Coating repair in pipe body,
 4. Bell and spigot joint field coating,
 5. Mechanical joint field coating,
 6. Insulating flange field coating,
 7. Polyethylene mesh separator pad,
 8. Thermite welds,
 9. ≤ 2 -inches service connection coating,
 10. Insulating flange and insulating corporation electrical insulation test
- D. To verify that cathodically protected water mains have been properly installed, color photographs shall be taken by the Contractor to document the installation of cathodically protected water mains prior to backfilling operations. Each element shall have corresponding station marked up with light or dark colored crayon as applicable.

Separate photographs shall be provided for each of the following:

1. Joints:
 - a. One image below the joint after application of filler material, but prior to installation of shrink-wrap sleeve.
 - b. One image of exposed metal at bonding site directly after bonding cables, but prior to application of primer and bonding caps.
 - c. One image of joint with bonding caps in place.
 - d. One image above coated joint, complete with bonded cables and tape wrap.
 - e. One image below coated joint, complete with bonded cables and tape wrap.
2. Mechanical Joints and Appurtenances:
 - a. One image with exposed metal and cables in place, bonded, but prior to placement of the bonding caps.
 - b. One image of bonding caps in place over bonded ends.
 - c. One image after filler material application but prior to tape being applied.
 - d. One image above the complete joint with all tape in place.
 - e. One image below the complete joint with all tape in place.
3. Coupling Insulating Joints:
 - a. One image of insulating boot in place, prior to center ring being installed.
 - b. One image of joint, assembled.
 - c. One image after filler material application but prior to tape being applied.
 - d. One image above the completed joint with all tape in place.
 - e. One image below the completed joint with all tape in place.
4. Flange Insulating Joints:
 - a. One image of joint, assembled, prior to any cathodic protection being installed.
 - b. One image of joint with filler in place prior to applying tape system.
 - c. One image above the completed joint with all tape in place.

- d. One image below the completed joint with all tape in place.
5. Service Connections (≤ 2 -inches):
 - a. One image after installation, showing corporation with insulating component.
 - b. One image with filler (if applicable) prior to tape installation.
 - c. One image of insulated corporation, complete with all tape in place.
6. Test Stations:
 - a. Cathodic Protection System to be tested after the project. Any test stations not properly in place or not functioning properly will be discovered and corrected as necessary.
7. Anode Stations:
 - a. One image per anode and electrode as installed to include the weld points to main.
8. Structures:
 - a. Piping arrangement inside the structure is visible during installation and during installation of photos for cathodic protection. In addition, field inspectors should check for penetration through vault walls, and during final inspection of the project.

Additionally, photographs shall be taken at 40-foot intervals (maximum) along pipe centerline (upstream or downstream) showing the progression of pipe laying operations immediately prior to backfilling.

Contractor shall provide photographs as cut and paste files onto a Word document (maximum 4 images to a page). Digital photography shall be 2.1-megapixel density or greater. Contractor shall save digital page files in PDF format. On each page of photos, provide the following information:

1. Name of Project
2. Submittal Sequential Numbering (i.e., 20001 WX0 DWI 0001, 2000 I WX0 DWI 0002, etc.)
3. Station Range (water centerline stationing)
4. Orientation of View
5. Date & Time image was taken: unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph
6. Service size, station, and address (when applicable)
7. Type of appurtenance and station (when applicable)
8. Type of Fitting and station (when applicable)
9. Type of Joint and station (when applicable)
10. Name of individual who took photograph

Frequency: The Contractor shall take photographs daily while water line work is being carried out, with a cutoff date associated with each application for payment. No payment will be processed without the submittal of applicable progress photographs for the corresponding period. Along each respective Application for Payment, the Contractor shall submit the following to the inspector:

1. A complete set of digital image electronic files of the Progress Record Documentation (PRD) on a CD-ROM corresponding for the payment period, identifying the electronic media with date photographs. (i.e., PRD 06.01.24 through 06.30.24)
2. Two hard copies of files bound in two (2) 3-in three-ring binders each printout inside three-holed plastic sleeves.

Measurement and Payment: There will be no separate measurement or payment for the Documentation of Water Main Installation. The cost will be incidental and shall be included in the unit prices bid per linear foot of the various sizes of pipe laid as provided for in the Bid Schedule for this Contract.

PART 2 - EXTERNAL COATING SYSTEM FOR DUCTILE IRON PIPE

2.01 GENERAL

- A. External pipe surfaces (this includes all piping, joints, valves, fittings, hydrant piping, etc.) are to be coated. Predominant method to be shop application. The piping shall receive an exterior coating in the pipe manufacturer's shop or at a separate applicator's facility.
- B. All components of the coating system shall be manufactured by a single supplier to assure compatibility of individual components.
- C. Field applied coatings to be limited to repairing damage to shop coating; coating exposed metal at joints, fittings, valves, bond, and test wire connections; and other appurtenances that are not shop coated.
- D. Extent of piping to be shop coated and extent to be field coated to be clearly identified in Contractor's material and quality assurance submittals. Quality assurance submittals shall include pipe coating, handling, and testing procedures.
- E. All coatings used on project shall be as specified herein, unless otherwise approved by the Engineer prior to bidding. All products comprising completed coating system to be compatible and the same products to be used throughout the project. Pipe surfaces that will come in contact with potable water inside the pipeline (e.g., spigot ends of bell and spigot joints) to be coated with materials having NSF-61 certification.

2.02 SHOP APPLIED MATERIALS FOR DUCTILE IRON PIPE

The external coating for the ductile iron pipe shall be one of the following coating systems:

- A. Three layer tape wrap system with the following minimum properties, or approved equal:
1. Primer: A liquid primer composed of butyl, tackifiers, and other ingredients to protect against soil oxidation and bacteria growth. Total solids shall be 20% (plus or minus 2%) by weight.
 2. Innerwrap: A two component extruded black tape consisting of polyethylene and butyl rubber adhesive specially designed to conform to the particular pipe material being coated. The innerwrap shall have the following properties:
 - a. Thickness: 20 mils (9 mils polyethylene backing, 11 mils butyl rubber adhesive).
 - b. Adhesion to primed steel: 20 oz/in width (ASTM D1000).
 - c. Tensile strength: 30 lbs/in width (ASTM D1000).
 - d. Water vapor transmission rate: $<0.2 \text{ gm}/100 \text{ in}^2/24 \text{ hr}$.
 - e. Dielectric strength: 21 kV (ASTM D149).
 - f. Insulation resistance: 1,000,000 M Ohms (ASTM D257).
 - g. Tape width: As recommended by coating manufacturer.
 3. Middlewrap: A two component extruded grey tape consisting of polyethylene and butyl rubber adhesive. The middlewrap shall contain stabilizers and inhibitors to resist the destructive effects of ultra-violet light. The middlewrap shall have the following properties:
 - a. Thickness: 30 mils (25 mils polyethylene backing, 5 mils butyl rubber adhesive).
 - b. Adhesion to backing: 45 oz/in width.
 - c. Tensile strength: 60 lbs/in width (ASTM D1000).
 - d. Abrasion resistance: Excellent (ASTM D1000).
 - e. Water vapor transmission rate: $<0.2 \text{ gm}/100 \text{ in}^2/24 \text{ hr}$.
 - f. Dielectric strength: 23 kV (ASTM D149).
 - g. Insulation resistance: 1,000,000 M Ohms (ASTM D257).
 - h. Tape width: As recommended by coating manufacturer.
 4. Outerwrap: A two component extruded white tape consisting of polyethylene and butyl rubber adhesive. The outerwrap shall contain stabilizers and inhibitors to resist the destructive effects of ultra-violet light. The outerwrap shall have the following properties:

- a. Thickness: 30 mils (25 mils polyethylene backing, 5 mils butyl rubber adhesive).
 - b. Adhesion to backing: 45 oz/in width.
 - c. Tensile strength: 60 lbs/in width (ASTM D1000).
 - d. Abrasion resistance: Excellent (ASTM D1000).
 - e. Water vapor transmission rate: <0.2 gm/100 in²/24 hr.
 - f. Dielectric strength: 23 kV (ASTM D149).
 - g. Insulation resistance: 1,000,000 M Ohms (ASTM D257).
 - h. Tape width: As recommended by coating manufacturer.
 5. Coating system shall be YGIII as manufactured by Seal for Life Group or approved equal.
- B. Polyolefin (extruded butyl rubber adhesive with polyethylene top coat) system with the following minimum properties, or approved equal:
1. Compounded butyl rubber adhesive coating with less than 0.1% water absorption. Nominal thickness 10 mils.
 2. Top coat: High density polyethylene resin top coat that is spirally extruded onto adhesive coating in multiple layers to form a seamless bonded coating. The polyethylene top coat shall have the following properties:
 - a. Nominal thickness: 40 mils.
 - b. Density: >0.95 (ASTM D1505).
 - c. Elongation: >600% (ASTM D638).
 - d. Tensile strength: <2800 psi (ASTM D638).
 3. Total coating system shall have the following properties:
 - a. Thickness: 50 mils (40 mils polyethylene top coat, 10 mils butyl rubber adhesive).
 - b. Impact resistance: >60 inch lbs (ASTM G14).
 - c. Cathodic disbandment: 6 mm radius (ASTM G8 OR G95).
 - d. Water absorption: 0.06% (ASTM D570).
 4. Coating system shall be Pritec as manufactured by Liberty Coating Company or approved equal.

2.03 APPLICATION OF SHOP APPLIED MATERIALS TO DUCTILE IRON PIPE

The coating applicator, regardless of the location where the coating is applied, shall be certified as qualified by the coating manufacturer. The coating applicator must abide by and follow all manufacturer's application specifications for the coating system. All components of the coating system shall be manufactured by a single supplier to assure compatibility of individual components.

2.04 SURFACE PREPARATION PRIOR TO COATING

The exterior surface of the piping shall be cleaned in accordance with the coating manufacturer's recommendations.

2.05 CERTIFICATION OF EXTERNAL COATING

The pipe or fitting manufacturer or coating applicators, as appropriate, will test and certify the exterior coating prior to shipping to the project site. When the pipe or fitting arrives at the job site, the Contractor shall visually inspect the pipe or fitting, and repair any and all damage as directed by the coating manufacturer and in accordance with these specifications.

2.06 INSPECTION OF EXTERNAL COATING

Immediately prior to installation of the pipe or fitting, the Contractor shall visually inspect all exterior coatings on pipe, fittings, specials and closures for holidays and other defects. All holidays and defects shall be repaired by the Contractor as directed by the coating manufacturer and in accordance with this specification, and to the satisfaction of the Engineer. The coating shall then be electrically tested for flaws in the coating with a holiday detector by the Contractor. The electrical test shall be in accordance with NACE RP0274 or SP0188 as recommended by the coating manufacturer and must be witnessed by the County Inspector. Holiday detectors shall be manufactured by Tinker and Razor or approved equal. All holidays shall be immediately repaired by the Contractor. The repaired coating shall be rechecked by the Contractor with a holiday detector. Once the coating is verified to be free of holidays, the piping or fitting may be installed in the trench.

The Contractor shall ensure that he coordinates with the County Inspector to complete the Holiday Detection Daily Field Report for each segment of pipe to be tested. Failure to do so may result in the stoppage of the Work. The Holiday Detection Daily Field Report is included in the appendix to these Special Provisions.

All payment for this holiday testing shall be incidental and be included in the price bid per linear foot for the various sized ductile iron pipe items.

2.07 FIELD APPLIED MATERIALS FOR COATING REPAIRS

Shop applied coatings that are damaged in transit or during handling shall be repaired prior to backfilling. The field applied repair coatings shall be as recommended by the shop applied coating manufacturer and shall be entirely compatible with the original coating system. The field coating repairs shall be performed in accordance with all recommendations of the coating manufacturer.

2.08 FIELD APPLIED MATERIALS FOR COATING DUCTILE IRON PIPE JOINTS

- A. The field applied materials for coating ductile iron pipe joints shall be one of the following coating systems:
1. Joint Wrap and Repair Tape: A two component extruded tape consisting of polyethylene and butyl rubber adhesive in accordance with AWWA C209. The tape shall contain stabilizers and inhibitors to resist the destructive effects of ultra-violet light. The jointwrap and repair tape (Polyken 934 or approved equal) shall have the following properties:
 - a. Thickness: 35 mils (7 mils polyethylene backing, 28 mils butyl rubber adhesive).
 - b. Adhesion: 225 oz/in width (ASTM D1000).
 - c. Tensile strength: 15 lbs/in width (ASTM D1000).
 - d. Water vapor transmission rate: 0.05 gm/100 in²/24 hr.
 - e. Dielectric strength: 23 kV (ASTM D149).
 - f. Insulation resistance: 1.4 x 10⁷ M Ohms (ASTM D257).
 - g. Tape width: As recommended by the coating manufacturer.
 - h. The filler tape (Polyken 939 or approved equal) recommended by the jointwrap tape manufacturer shall be used to fill uneven areas at the pipe joint to assure a smooth application of the jointwrap tape.
 2. Heat-shrinkable sleeves specifically designed for corrosion protection of water pipelines that utilize a crosslinked polyolefin backing coated with a protective, heat activated adhesive for bonding to metallic substrates and pipeline coatings in accordance with AWWA C216. The heat-shrinkable sleeves (Canusa CPS Aqua-Shield or approved equal) shall have the following minimum properties:
 - a. Tensile strength: 2,200 psi
 - b. Elongation: 400 %
 - c. Volume resistivity: 10¹⁴ ohm-cm
 - d. Dielectric strength: 400 V/mil
 - e. Water vapor transmission: 0.05
 - f. Adhesion to steel: 25 N/cm

- g. Lap shear: 12 psi
- h. Impact: 25 in.-lbs
- i. The filler material recommended by the heat-shrink sleeve manufacturer shall be used to fill uneven areas at the pipe joint to assure a smooth application of the heat-shrink sleeve.

2.09 PROTECTION OF COATING SYSTEMS DURING CONSTRUCTION

- A. At all times during construction of the pipeline, the Contractor shall take every precaution to prevent damage to the protective coating. No metal tools or heavy objects shall be permitted to come into contact unnecessarily with the finished coating. Workmen shall not be permitted to walk on the coating, except when absolutely necessary and approved by the Engineer, in which case, they shall wear shoes with rubber or composition soles and heels or other suitable footwear which will not damage the coating.
- B. Externally coated pipe shall be hoisted from the trench side to the trench by means of a minimum of two 18-inch wide belt slings of sufficient strength to handle the weight of the piping safely.
- C. Any and all coating damage shall be repaired with specified coating repair materials prior to installation.

2.10 TRANSPORTATION, HANDLING AND STORAGE OF COATED PIPE

- A. Pipe shall be handled in accordance with AWWA C214 and in such a manner as to protect the pipe and the coating from damage.
- B. At the pipe coating plant, if forklifts are used, all bearing surfaces of a forklift apparatus must be padded with suitable padding material. Web slings may also be used at the pipe manufacturer's plant.
- C. At the project site, the pipe shall only be handled with slings. Metal chains, cables, tongs, forklifts or other equipment likely to cause damage to the coating, will not be permitted. Web slings shall be a type that will not damage the coating. When pipe is handled with slings, there should be a minimum of two slings. Slings should be a minimum of 18 inches wide and of sufficient strength to handle the weight of the pipe safely. Slings shall not pass through the pipe. Hooks on the end of the pipe will not be allowed. Handling equipment, materials, and procedures shall be submitted to the Engineer for approval. If possible, the pipe should be handled from cutback ends.

- D. Storing of the coated pipe shall be on padded 12-inch wide (minimum) skids or select loamy or sand dirt berms, or suspended from cutback ends, where possible. In urban areas, the pipe should be suspended on padded skids or skids placed at cutback areas. Where skid chucks are used in contact with coated pipe, they should be padded with several layers of carpeting. Padded chucks should be placed such that coated pipe is nested on the skid rather than the chuck. Coated pipe shall not be laid on pavement without benefit of padding at contact points. In preparation for transporting pipes, the use of web slings is necessary for tie downs.
- E. If cables or chains are used during transportation, they must be properly padded with approved, suitable material as required to protect the coating from damage while in transit. Use of a padded horizontal separator strip between successive rows of pipe is necessary to prevent damage to the pipe coating. i.e.: strips of rug material over all contact areas where pipe will rest.

PART 3 - CORROSION CONTROL MATERIALS

3.01 PREPACKAGED MAGNESIUM ANODES

- A. Anode weight shall be specified in design plans.
- B. Composition of the anode shall be as follows:
- | | |
|-----------|-----------------|
| Aluminum | 0.010% Maximum |
| Manganese | 0.50 to 1.30% |
| Copper | 0.02% Maximum |
| Nickel | 0.001 % Maximum |
| Zinc | 0.05% Maximum |
| Iron | 0.03% Maximum |
| Silicon | 0.05% Maximum |
| Other | 0.05% Each |
| Magnesium | Remainder |
- C. The anodes shall be vibratory packaged in permeable cotton bags.
- D. The backfill material shall have the following composition:
- | | |
|-----------------|-----|
| Hydrated Gypsum | 75% |
| Bentonite | 20% |
| Sodium Sulfate | 5% |
- E. The anode and backfill shall be prepackaged into a single unit, in a vibrated cotton bag as described above. The anode shall be in a centered position surrounded fully by the special backfill. A minimum of 10 feet of AWG No. 12 stranded copper wire with TW insulation (black) shall be attached to the anode. Wire to anode attachment shall be by silver solder and sealed to prevent any moisture penetration.

3.02 PREPACKAGED ZINC ANODES

- A. Anode weight shall be specified in design plans.
- B. The zinc alloy shall meet the requirements of ASTM B418, Type II with a minimum potential of 1.10 volts to a copper/copper sulfate reference electrode. The anode shall conform to the following composition:

Aluminum	0.005% Maximum
Cadmium	0.003% Maximum
Copper	0.002% Maximum
Iron	0.0014% Maximum
Lead	0.003% Maximum
Other	0.001% Maximum total for all others
Zinc	Remainder

- C. The anodes shall be vibratory packaged in permeable cotton bags.
- D. The backfill material shall have the following composition;

Hydrated Gypsum	75%
Bentonite	20%
Sodium Sulfate	5%

- E. The anode and backfill shall be prepackaged into a single unit, in a vibrated cotton bag as described above. The anode shall be in a centered position surrounded fully by the special backfill. A minimum of 10 feet of AWG No. 12 stranded copper wire with TW insulation (black) shall be attached to the anode. Wire to anode attachment shall be by silver solder and sealed to prevent any moisture penetration.

3.03 TEST BOXES

The flush mount test box shall consist of a nonconductive terminal board mounted in a locking cast iron lid and collar (suitable for placement in heavy traffic areas) and a plastic shaft. The test box shall pass U.S. DOT H-20 roadway load test. The cast iron of the lid and collar shall meet or exceed ASTM A48 Class 25 specification. The test box lid to be made of cast iron with "BC-DPW CP TEST" cast into the lid design and painted blue as shown on flush-mounted test station detail shown on the Drawings. The lid shall feature a cast-in pentagonal bolt to lock into the cast iron cover. The cast iron collar to be at least 2.75 inches high with lugs cast inside to accept the locking lid and to accept a 1 inch cast iron repaving adapter with original lid. The plastic shaft is to be made of ABS (acrylonitrile butadiene styrene), 18 inches long with a flared bottom to resist sinking in soil. The plastic shaft shall have a 5 inch inner diameter. The plastic shaft is to be riveted to the cast iron collar. The test block shall be made of nonconductive PVC (polyvinyl chloride) plastic. The terminal board shall contain a minimum of seven terminals, using 0.25 inch by 20

thread nickel-plated machine screws and nuts. The terminal board shall fit into the lid using hangers cast inside the lid. (C.P. Test Services, Inc. or approved equal).

3.04 TEST STATION CONCRETE

Concrete for the flush-mounted test station slabs shall be Baltimore County Mix No.2 in accordance with the Standard Specification, Section 902, Table 902A.

3.05 TEST STATION TERMINAL LUGS

Test station terminal lugs shall be one-hole, compression terminal lugs for 0.25 inch bolt size.

3.06 CURRENT MEASURING SHUNT

Test station shunts shall be constructed to fit the terminal posts for the specified test station. The resistance shall be 0.01 ohm with a current capacity of 8 amperes. The shunt shall be manufactured by Con Manufacturing Company Model "Yellow" or approved equal.

3.07 REFERENCE ELECTRODES

The reference electrode shall be a permanent copper/copper sulfate reference electrode designed for a minimum 20 year life. The electrode shall have a 2 inch diameter by 8 inch long, schedule 80 PVC body or a 2 inch diameter by 7 inch long, high impact resistant Lexan tube, and a minimum overall package size of 6 inch diameter by 10 inch long. The reference electrode shall be prepackaged in a permeable cloth bag with special copper/copper sulfate reference electrode backfill. Lead wire shall be of sufficient length to reach the test station terminals without splicing. The lead wire shall be AWG No. 14 stranded copper wire with either HMWPE or RHH-RHW insulation. The wire insulation shall be black. The lead wire shall be attached to the electrode core with the manufacturer's standard connection. The connection shall be stronger than the wire. No splicing of the reference electrode lead wire shall be permitted under any circumstances.

3.08 WIRE

- A. All wiring, excluding wire provided with magnesium anodes or reference electrodes, shall be stranded copper wire of the AWG wire size and color shown in the Details.
- B. Wire for bonded joints shall be single conductor, stranded copper with high molecular weight polyethylene (HMWPE) insulation (black). Wire size shall be AWG No. 2 for piping larger than 36-inch, AWG No. 4 for 16-inch through 36-inch piping, and AWG No. 6 for piping smaller than 16-inch.
- C. Wire for test stations shall be single conductor, stranded copper wire with 600-volt HMWPE or THWN insulation as required (colors as shown in the Details).

- D. Anode header cables shall be single conductor, stranded copper with high molecular weight polyethylene (HMWPE) insulation (black). Wire size shall be AWG No. 8.

3.09 THERMITE WELD EQUIPMENT

Thermite weld molds and charges shall be suitable for the sizes and types of materials and shapes encountered; Adapter sleeves shall be utilized for all thermite welds.

3.10 COATING FOR THERMITE WELDS

- A. Thermite welds to cast and/or ductile iron are to be coated with a prefabricated assembly specially designed for covering cathodic protection wire connections to piping and fittings. The prefabricated assembly shall consist of the following components:
 - 1. Top plastic sheet formed with an igloo shaped dome and entry tunnel for the lead wire.
 - 2. A special elastomeric compound in the plastic dome firm enough to resist flow at normally encountered application and operating temperatures, but soft enough to mold itself around and completely cover the irregular welded profile.
 - 3. A double row of parallel, flexible serrations on either side of the dome to assist with conforming around small diameter pipe.
 - 4. A base of black unbacked elastomeric tape with exceptional adhesive properties for bonding firmly to a surface when wed with the appropriate primer.
- B. Caps shall be manufactured by Royston Laboratories Division, Model Handy- Cap or approved equal. The appropriate primer as required by the elastomeric cap manufacturer shall be used. Primer for the Royston Handy-Cap shall be as manufactured by Royston, Model Roybond 747 Primer.

3.11 INSULATING FLANGE COMPONENTS

Insulating materials shall include an insulating gasket, insulating sleeves and insulating washers. The insulating gasket shall be "Linebacker" Type "E" with a G-10 retainer and nitrile "quad" ring seal. The insulating sleeves shall be 1/32 inch thick spiral wound mylar sleeves. The insulating washers shall be G-10 and installed on both sides of the flange. Steel washers shall also be used between the insulating washers and the bolts and nuts. The

pressure rating for the insulating flange materials shall be greater than the design pressure of the piping.

3.12 INSULATING COUPLINGS

The insulating materials shall include an insulating gasket and a "full boot" plastic tubular insulator inside the middle ring to prevent contact of pipe-ends isolated from one another. Insulation shall be provided to both ends of the coupling.

3.13 INSULATING CORPORATION VALVES

The insulator for water services less than 4 inches in diameter shall consist of a brass fitting with a nylon insulator. The insulating corporation valve shall be manufactured by Mueller Company, Model 300 Corporation Ball Valve or approved equal.

3.14 EXTERNAL COATING SYSTEM FOR INSULATING FLANGES, INSULATING COUPLINGS, AND INSULATING CORPORATION VALVES

A. Insulating flanges, insulating couplings, and insulating corporation valves shall receive an exterior tape wrapping in the field. The coating applicator must abide by and follow all manufacturer's application specifications for the coating system. All components of the coating system shall be manufactured by a single supplier to assure compatibility of individual components. The coating system shall be manufactured by Trenton Corporation or an approved equal.

B. Materials

1. Primer: A blend of microcrystalline wax, plasticizer, and corrosion inhibitors having a paste-like consistency, designed to displace moisture, penetrate rust, and wet the surface, ensuring adhesion of the tape. The primer shall be Trenton Wax-Tape Primer or approved equal.
2. Filler Putty: A cold applied anti-corrosive moldable filler material used to even the contours of irregular fittings and surfaces. The filler putty shall have the following properties:
 - a. Specific gravity: 1.15.
 - b. Density: 24 cu in/lb.
 - c. The filler putty shall be Trenton Fill-Putty or approved equal. Filler putty shall be used at all irregular surfaces to provide a smooth surface for the application of the innerwrap and outerwrap.
3. Innerwrap: A non-woven, non-stitch bonded synthetic fabric saturated with a blend of microcrystalline wax, plasticizer, and corrosion inhibitor (no clay fillers). The inner tape shall have the following properties:

- a. Thickness: 70 to 90 mils.
 - b. Dielectric strength: 170 volt/mil.
 - c. The innerwrap shall be Trenton #1 Wax-Tape or approved equal.
4. Outerwrap: A woven, resin coated, woven fiberglass fabric. The outerwrap shall have the following properties:
- a. Thickness: 0.005 inch.
 - b. Tensile strength (per one inch width): 85 lb min.
 - c. Tape width: 6 inches.
 - d. The outerwrap shall be Trenton Glas-Wrap or approved equal.

3.15 POLYETHYLENE MESH SEPARATOR PAD

The mesh separator pad shall be a medium density flexible polyethylene mesh pattern webbing pad, nominal thickness 160 mils. Separator pad shall be manufactured by Stuart Steel Protection Company Model Stuart Diamond Rockstop or approved equal.

3.16 COMPRESSION CONNECTORS

Compression connectors shall be specially manufactured for splicing copper cables together. The connectors shall be copper and shall be Type YC-C as manufactured by Burndy Corporation or approved equal.

3.17 ELECTRICAL TAPE

Conformable water tight sealant having a dielectric strength not less than 15kV for a 1/8 inch thick layer. Tape shall be Scotch 88 Vinyl Tape and Scotch C130 Rubber Tape or approved equals.

3.18 LINKED RUBBER SEAL

The linked rubber seal shall consist of a belt of interconnected rubber links connected together with zinc plated carbon steel hardware. The linked rubber seal shall be manufactured by Thunderline Corporation or an approved equal.

PART 4 - EXECUTION

4.01 THERMITE WELDING

- A. All thermite welds shall be made as shown on the Drawings and in accordance with the manufacturer's recommendations using the proper combination of equipment for the pipe and wire size being welded. All welding materials and equipment shall be the product of a single manufacturer.

- B. Assure that the area where the attachment is to be made is absolutely dry. Remove mill coating, dirt, grime and grease from the pipe or fitting surface at the weld location by wire brushing or by the use of suitable safety solvents. Clean a 2.5 inch square area of the pipe or fitting surface at the weld location to a bright shiny surface, free of all serious pits and flaws by use of a mechanical grinder.
- C. Prepare the wire for welding by assuring that the cable is absolutely dry. The cable shall be free of dirt, grease, and other foreign products. Cut the cable in such a way as to avoid flattening or forcing out of round. To prevent deformation of the cable. Cut the cable with cable cutters. Remove the insulation in a manner that will avoid damage to strands. Install adapter sleeves for all bonds and test wires prior to welding. Either prefabricated factory sleeved joint bonds or bond wire with formed sleeves made in the field are acceptable. Hold the cable at an approximate 30 degree angle to the pipe surface when welding.
- D. When the weld has cooled, remove the weld slag, and test the weldment for strength by striking a sharp blow with a two pound hammer while pulling firmly on the wire. Reweld unsound welds and retest weldments. Thoroughly clean mold and mold covers after completion of each weld to assure that no slag will penetrate into the next weld.
- E. After soundness of the weld has been verified, thoroughly clean with a stiff wire brush and coat with a plastic cap filled with elastomeric material. The elastomeric cap shall extend on all four sides beyond the cleaned area. Apply primer over the entire weld area and over the entire area where the elastomeric cap will be placed. Push the dome of the prefabricated cap containing elastomeric material firmly into the weld area. Lift the wire away from the pipe and apply the elastomeric material completely around and underneath the wire. Push the wire back down on the pipe. Follow all manufacturers' instructions for installing prefabricated caps. Repair the pipe coating in accordance with the pipe coating manufacturer's recommendations.

4.02 BONDED JOINTS

- A. All new ductile iron pipeline joints, including those on pipe, fittings, valves, and branch connections, except those specified to be insulated, shall be bonded as shown on the Drawings. All bond cables shall be thermite welded to the pipe or fitting as described above.
- B. All joints are to be bonded with two HMWPE insulated copper cables. Wire size shall be AWG No.2 for piping larger than 36-inch, AWG No.4 for 16-inch to 36-inch piping, and AWG No.6 for piping smaller than 16-inch.

4.03 PREPACKAGED MAGNESIUM AND PREPACKAGED ZINC ANODES

- A. Prepackaged magnesium and prepackaged zinc anodes shall be installed where indicated. Prior to installation, remove all shipping covers from the anode (the

prepackaged cotton bag for zinc anodes or prepackaged cardboard box for magnesium anodes shall not be removed). Install the anodes in existing soils (free from rocks, roots, organic material, trash, or other debris) and backfill with a minimum of 6 inches of existing soil (as described above). Do not install the anode in sand, rock or gravel backfill. Provide a minimum anode spacing of two feet from other pipelines. Pre-soak the anode with 5 gallons of water after placement, but prior to backfilling.

- B. At anode test stations, anode lead wires shall be buried a minimum of two feet below grade. Handle wire with care. Splice the AWG No. 12 solid copper wire supplied with the anode to an AWG No.8 HMWPE stranded copper cable through the use of a compression connector as shown. Tape the splice with three layers of high voltage rubber splicing tape (50% overlap), followed by three layers of vinyl electrical tape (50% overlap). Terminate the ends of the AWG No. 8 anode header cable in the test boxes utilizing the terminal lugs and shunts as indicated.
- C. At fire hydrant test stations, anode lead wires shall be buried a minimum of two feet below grade. Handle wire with care. Route the AWG No. 12 solid copper wires supplied with the anodes to the test box as shown. Terminate the ends of the anode lead wires in the test boxes utilizing the terminal lugs and shunts as indicated.

4.04 TEST STATIONS

- A. Install test stations at the locations indicated. Test boxes are to be located directly over the pipeline except in areas that would place the test station in a roadway. Locate these test stations to the closest point just off the edge of the road.
- B. Attach test wires as indicated using the proper thermite welding equipment and charges specified for the wire size and respective pipe material. Follow all procedures as outlined above.
- C. All test station wires shall be routed a minimum of two feet below finished grade. Maintain sufficient slack in the test wires so that the wires can extend a minimum of 18 inches from the test box. Connect the test wires to the test station terminal block with one-hole, compression terminal lugs for 0.25 inch bolt size. Install a shunt and a copper shorting strap to connect the anode leads to the pipe lead where indicated on the Drawings.
- D. The test boxes shall be set in poured concrete, two feet on each side and six inches thick reinforced with 4 inch by 4 inch - W2.1 by W2.1 welded wire fabric. The flush mounted test box lids shall be free of concrete and not cemented over.
- E. The test wires shall be routed under the roadway to the test box through conduit.

4.05 REFERENCE ELECTRODES

Install reference electrodes at the test stations indicated. The reference electrode shall be installed at an approximate depth of six inches below the bottom of the pipe trench. Native trench material shall be used to backfill the reference electrode for a minimum of six inches. Prior to installation, remove the plastic shipping cover from the reference electrode. The cloth bag containing the special backfill shall remain intact.

4.06 CLEARANCE TO OTHER STRUCTURES

Twelve inches of natural clearance shall be maintained to other structures, where possible. When 12 inches of clearance cannot be maintained, install a flexible polyethylene mesh webbing pad around the new piping and secure with non-metallic tape.

4.07 INSULATING FLANGES, INSULATING COUPLINGS, AND INSULATING CORPORATION VALVES

Insulating flanges, insulating couplings, and insulating corporation valves shall be installed where shown on the Drawings. The Contractor shall carefully align and install the insulating components according to the insulator manufacturer's instructions. Before backfilling. The Contractor shall test each insulator for electrical insulation. If the insulator is not properly isolated, the Contractor shall, at his expense, repair or replace all defective components. The Contractor shall test the repaired insulator. This process will continue until the insulator is tested to be properly isolated.

4.08 COATING OF INSULATING FLANGES, INSULATING COUPLINGS, AND INSULATING CORPORATION VALVES

- A. The insulating flanges, insulating couplings, and insulating corporation valves, including all isolation components shall be fully coated for a minimum of 12 inches on either side of the flange, coupling, or corporation stop. The insulator shall be coated after verification of proper electrical isolation. The insulator shall be coated as described below.
1. Clean the surface of the insulator, and all of its components by power tool cleaning in accordance with the SSPC SP3. Follow all surface preparation recommendations of the coating manufacturer.
 2. Apply a uniform coat of the primer to the external surface of the insulator, and all of its components including bolts, nuts, etc. The primer shall extend a minimum of twelve inches on either side of the insulator.
 3. Apply filler mastic to all irregular surfaces of the insulator to assure a smooth profile for application of the inner tape coating.
 4. Apply innerwrap to the insulator, and its components in a spiral fashion with a minimum overlap of 55%. The innerwrap shall extend a minimum of twelve inches on either side of the insulator.

5. Apply outerwrap to the insulator, and its components in a spiral fashion with a minimum overlap of one inch. The outerwrap shall be applied with sufficient tension to provide continuous adhesion of the outerwrap tape.
6. Install test facilities at the insulating flanges and insulating couplings as shown on the Drawings.

4.09 CONCRETE BUTTRESSES, SUPPORT BLOCKS, ANCHOR BLOCKS, AND OTHER CONCRETE STRUCTURES

Position reinforcing steel used in the construction of support blocks, anchor blocks, and any and all other concrete structures so that they are not in contact with the piping. Maintain a minimum of 2 inches of clearance between the piping and all reinforcement steel or other metallic components. Under no circumstances shall metallic pipe be in contact with reinforcing steel.

4.10 PENETRATION OF CONCRETE STRUCTURES

When penetrating a concrete slab (wall or floor), install a linked rubber seal between the pipe and the concrete slab sleeve. Install the linked rubber seal in accordance with the manufacturer's recommendations. The linked rubber seal is to be installed to isolate the piping from direct contact to the concrete and to seal the area of the pipe penetration from water intrusion. Under no circumstances shall metallic pipe be in contact with reinforcing steel.

PART 5 - POST INSTALLATION TESTING

5.01 TESTING

Prior to substantial completion, the Engineer will perform post installation testing of all corrosion control/corrosion monitoring systems. The repair or replacement of any defective or improperly installed systems shall be the sole responsibility of the Contractor. Any and all repairs or replacement of defective or improperly installed corrosion control/corrosion monitoring systems shall be performed by the Contractor at no additional cost to the Owner.

5.02 PAYMENT FOR PIPE COATINGS AND CATHODIC PROTECTION

The Contractor shall include the cost for all coatings and the cathodic protection system for all the ductile iron pipe in the price bid per linear foot for the various sized ductile iron pipe items.

END OF SECTION

**CATEGORY 600
SHOULDERS**

**SECTION 609 – CURB, COMBINATION CURB AND GUTTER, AND
MONOLITHIC MEDIAN**

609.04 MEASUREMENT AND PAYMENT.

INSERT: The following:

609.04.08 Removal and Replacement of Existing Curb and Gutter will be measured per linear foot along the face of the curb for the entire length of the work including portion of curb shaped for handicap ramps and through driveways.

Payment: Removal and Replacement of Existing Curb and Gutter will be paid for at the contract unit price bid per linear foot. This price shall include all labor, equipment, and material for excavation, removal, and disposal of existing concrete, backfilling, stone bedding, expansion material, formwork, finishing, curing, etc. for a complete in place installation and installed at the locations as shown on Standard Plates R-20B, R-21 and/or as directed by the Engineer.

CATEGORY 900
MATERIALS

SECTION 921 – MATERIALS

INSERT: The following:

921.14 PITCHER FILTERS

Pitcher filters and replacement cartridges shall be provided to customers where a non-copper (lead, brass, galvanized, etc.) water service is replaced and comply with the following requirements:

- a) Water pitchers must be at minimum two (2) quart volume for home use with internal water filtration system with replaceable filter cartridges.
- b) Water pitcher must have a minimum of a six (6) month limited warranty.
- c) Water pitcher must have a built-in filter change indicator.
- d) Filter must have a minimum of forty (40) gallon filter life.
- e) Water pitcher and filter must be Certified NSF/ANSI Standard 53: Cadmium, Lead, Mercury and VOCs and Standard 42: Aesthetic Effects (class I particulate removal)

921.14.01 MEASUREMENT AND PAYMENT

PITCHER FILTER WITH SIX MONTHS OF REPLACEMENT CARTRIDGES – will be measured and paid for at the Contract unit price per each. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work. This includes reproducing and distributing the educational materials to be provided to the customer. All items shall be provided to customers at the same time and neatly in an appropriate bag or box.

APPENDICES

APPENDIX A

Geotechnical Evaluation Reports



ISO 9001:2015 CERTIFIED

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

936 Ridgebrook Road • Sparks, MD 21152 • Phone 410-316-7800 • Fax 410-316-7817

To: Ms. Erin McKenna-Streyle, PE, Chief
Baltimore County Department of Public Works and Transportation
Bureau of Engineering & Construction
Water Design Section
County Office Building Room 219
111 West Chesapeake Avenue
Towson, Maryland 2120

Cc: John Blondell, PE (KCI-Water/Wastewater)

Date: October 18, 2024

Subject: ***Geotechnical Subsurface Investigations Report***
York Road (MD Route 45) Water Main Replacement - Phase 5
(From Wight Ave to Sahwan Rd)
Baltimore County J.O. 231-203-0050-0466
Baltimore County Contract No. 2019-01
On-Call Potable Water Pipeline Design Services, Tier 2
Baltimore County, Maryland
KCI Project No. 132201868.05 (Dynamics 00002056_00002.004)

As requested, KCI Technologies, Inc. (KCI) has completed the geotechnical engineering evaluations for the proposed York Road 24" Water Main Replacement project from Wight Avenue to Shawan Road in Cockeysville, Baltimore County, Maryland. We have shown the site vicinity map on the attached Figure 1 (Appendix A).

The attached report presents a review of the project information, a description of the anticipated site and subsurface conditions, as well as geotechnical evaluations and earthwork recommendations for the design and construction of the proposed water main replacements. Reference the *2014 Geotechnical Evaluation Report* prepared by The Robert B. Balter Company.

PROJECT INFORMATION AND UNDERSTANDING

Our understanding of the project is based on discussions with, and information provided to us by John Blondell of KCI. The provided project information included:

- 90% CD – Water Main Replacement – Phase 5, York Road – MD Route 45 (From Wight Avenue to Shawan Road) (dated 09/09/2024) by KCI Technologies, Inc.
- Geotechnical Evaluation, 24-inch Water Main, York Road between North Park Drive and Cockeysville Road (dated 09/08/2014) by The Robert B. Balter Company (or Balter).

We understand that the existing water mains are beyond their useful life and this project is proactive in advance of any planned MD State Highway improvements along York Road. The project consists of

replacing approximately 3,000 linear feet of the existing 24" diameter water main between approximate Sta. 232+38 to Sta. 261+37 along York Road (MD Route 45) near Hunt Valley from Wight Avenue to 580 ft north of Shawan Road. Additionally, proposed replacement includes installation of 12-inch water main to replace approximately 640 linear feet of the existing 12" water main along Shawan Road (York Rd Sta. 255+60 to Shawan Rd Sta. 6+42) from York Road to 40 ft west of Hyland Road. Proposed construction will include installation of branch connection piping (6" to 24" diameter), ancillary structures and accessories such as manholes, valves, fittings, fire hydrants, fire hydrant tees and valves. Proposed inverts for the new water main will range from approximate El. 283.0 to El. 316.9 along York Rd, and between approximate El. 300.3 and 320.7 on Shawan Rd, with about 4.0 to 8.0 feet below the existing ground surface, and 4-foot minimum cover over the piping.

The scope of work includes design and construction phase services for the water main replacement, noted above, which will be completed in accordance with the Baltimore County Design Manual and Standard Specifications and Details for Construction (2021; and all amendments thereof). Due to proposed alignment shifts and/or additional structures incorporated into the design based on any additional existing utility conflicts, KCI will perform supplemental geotechnical evaluations for design and construction of the water main replacement.

SCOPE OF PROFESSIONAL SERVICES

A Geotechnical Evaluation Report was previously performed by formed by Balter in 2014 along the proposed watermain alignment. The 2014 geotechnical investigations included test borings and Seismic Refraction Geophysical survey. Based on proposed alignment shifts and additional structures, the current geotechnical scope is to evaluate the 2014 subsurface data with respect to the revised water main alignment and determine potential subsurface data gaps for the proposed structures and recommend if additional or supplemental test boring program will be needed for this project.

The purpose of the geotechnical evaluation is to determine if the existing 2014 subsurface data adequately characterizes the site-specific subsurface soil types and characteristics, depth to bedrock, and groundwater levels along the water main alignment. The scope of the services included:

- Review site geologic conditions;
- Evaluate and summarize subsurface conditions (soil and rock strata and groundwater conditions) along the water main and at ancillary structures based on the 2014 data;
- Identify subsurface data gaps for the proposed structures and any alignment shifts and determine the need for supplemental geotechnical investigations;
- Identify geotechnical risks and issues that will impact pipe design and construction including estimated depths to bedrock (if any), and physical rock properties including rippability;
- If needed, KCI will arrange for the drilling of up to five (5) soil borings for the proposed water main along York Road and Shawan Road to fill in subsurface data gaps;

SITE GEOLOGIC SETTING

Our review of the *Physiographic Provinces and Their Subdivisions in Maryland* (2001) indicates that the project area is located within the Upland Section of the Piedmont Plateau Physiographic Province. The Piedmont Plateau Physiographic Province consists of crystalline metamorphic and igneous rock. Bedrock in the eastern part of the Piedmont consists of schist, gneiss, gabbro, and other highly metamorphosed sedimentary and igneous rocks of probable volcanic origin. Soils of the Piedmont Plateau are typically

developed from materials weathered in place from igneous and metamorphic rocks.

According to the *Geologic Map of the Cockeysville Quadrangle* (1975), the geologic units underlying the general project are Layered Metadolostone Member (cld) of the Cockeysville Marble Formation. The Cambro-Ordovician-aged Layered Metadolostone Member (cld) of the Cockeysville Marble typically consists of “Pure, white metadolostone interlayered on a scale of several decimeters with dark metadolostone containing silicate minerals, mainly diopside, tremolite, phlogopite, and quartz.”

Soil Series: According to the *NRCS Web Soil Survey*, the site soils are mapped as Urban Land (Ur). The Urban Land soils consist of nearly level to strongly sloping, human transported fill materials. These soils are classified as USDA Hydrologic Soil Group (HSG) “D” and are non-hydric.

The presence *existing fills* (urban land or human transported or man-made or artificial fill materials) are due to heavy urban environment with previous and continuing site developments and construction activities.

EXISTING 2014 SUBSURFACE DATA

We have reviewed existing subsurface information including published site geologic mapping, and the *Geotechnical Evaluation, 24-inch Water Main, York Road between North Park Drive and Cockeysville Road* (dated 09/08/2014) prepared by The Robert B. Balter Company (Balter). Balter’s report indicates the water main replacement consists of approximately 6,000 linear feet of new 24-inch water main along York Road between North Park Drive and Cockeysville Road with an extension about 600 feet west along Shawan Road. Reference Balter’s *2014 Geotechnical Evaluation Report* for details on the subsurface exploration program and results including boring logs, lab testing data, geophysical survey results, and recommendations.

Summary of As-Drilled Borings: In July 2014, Balter performed subsurface investigations consisting of 17 standard penetration test (SPT) borings (designated as SB-1 through SB-17) to depths between 9 and 15.5 feet (typically at about 15 feet) below ground surface. *Note that borings SB-1 through SB-9 fall within the current project limits* (attached Figure 2). We have provided a summary of the as-drilled boring data in Tabel 1 below.

Table 1: Summary of As-Drilled 2014 Test Borings Performed by Balter					
Location	Boring No.	Ex. GS Elev. (ft)*	Boring Depth (ft)	Groundwater Depth at Completion (0-hr) (ft)	Cave-in Depth at Completion (0-hr) (ft)
York Rd	SB-1	312	15.0	NE	12.9
York Rd	SB-2	304	15.0	NE	12.4
Shawan Rd	SB-3	323	15.0	NE	13.3
York Rd	SB-4	311	15.0	NE	12.6
York Rd	SB-5	322	12.0	NE	11.4

Table 1: Summary of As-Drilled 2014 Test Borings Performed by Balter

Location	Boring No.	Ex. GS Elev. (ft)*	Boring Depth (ft)	Groundwater Depth at Completion (0-hr) (ft)	Cave-in Depth at Completion (0-hr) (ft)
York Rd	SB-6	321	15.0	NE	12.3
York Rd	SB-7	318	15.0	NE	12.6
York Rd	SB-8	315	15.0	NE	13.2
York Rd	SB-9	287	15.0	NE	13.0
York Rd	SB-10	282	15.0	NE	13.0
York Rd	SB-11	268	15.0	NE	12.8
York Rd	SB-12	248	15.0	11.4	7.8
York Rd	SB-13	251	15.0	9.0	10.8
York Rd	SB-14	263	9.0	NE	7.1
York Rd	SB-15	280	15.0	NE	6.8
York Rd	SB-16	286	15.0	NE	13.3
York Rd	SB-17	300	15.5	NE	11.7
NOTES: NE = Not Encountered.					

EXISTING PAVEMENT STRUCTURE

The 2014 borings were drilled through the existing asphalt paved roadways along York Road and Shawan Road. They reported a total pavement thickness on York Rd of about 14 to 21 inches, and about 18 inches on Shawan Road. The existing pavement structure consisted of about 4 to 10-inches of asphalt pavement over 2 to 14-inches of graded aggregate base. Locally, about 7 to 9 inches of concrete was encountered below 4 inches of asphalt.

SUBSURFACE CONDITIONS

Subsurface Conditions: The 2014 test borings generally encountered existing Fill materials overlying Natural Soils, completely weathered rock (CWR) and bedrock within the boring termination depths as depicted on attached Figures 3A& 3B. These major soil strata are described below in order of decreasing depth:

- **Stratum I: Existing FILL / Possible FILL (SM/SC, GC, ML, CL):** Fill materials exist below existing asphalt pavement structure to depths ranging from 4 to 12 feet. Existing Fill materials consisted of a heterogeneous mixture of moist, brown, tan, dark gray, white, Silty SAND (SM) and Clayey SAND (SC) with varying amounts of rock fragments; moist, red-brown Clayey Rock Fragments (GC) with Sand; moist, red-brown, Sandy CLAY (CL) with varying amounts of rock fragments, with large wood fragments locally; and moist, brown, Sandy SILT (ML).

The SPT-N values for the granular or non-cohesive soils ranged from 5 to over 100 blows per foot (bpf) characterized by spoon refusal (e.g., 50/5”), indicating loose to very dense compaction or relative density. The SPT-N values for the cohesive soils ranged from 3 to over 100 bpf (characterized by spoon refusals), indicating soft to hard consistency. Note, however, that the elevated SPT N-values were likely due to the presence of rock fragments within the fill matrix. Pocket penetrometer values of cohesive indicated shear strength ranging from 0.8 to 1.8 tons per square foot (tsf).

- **Stratum II: Residual Soils — SAND (SM, SC-SM, SW-SM), SILT (ML) and CLAY (CL, CL-ML):** Natural residual soils were encountered below existing Fill (Stratum I) to depths ranging from 4 to 15 feet bgs. Residual soils consisted of moist to wet, brown, reddish brown, gray, brown, tan, Silty SAND (SM) with varying amounts of rock fragments and mica (trace mica to micaceous); moist, red-brown, Silty Clayey SAND (SC-SM); wet, brown, Well-Graded SAND with Silt and Rock Fragments (SW-SM). The SPT-N values for the non-cohesive soils ranged from 2 to over 100 bpf characterized by spoon refusal (e.g., 50/3”), indicating very loose to very dense compaction.

In addition, residual soils included moist to wet, red-brown, Sandy CLAY (CL); and moist, brown, reddish brown, SILT (ML) with varying amounts of Sand, rock fragments, and trace mica to micaceous; moist, red-brown, Silty CLAY (CL-ML), little Sand. The SPT-N values for the cohesive soils ranged from 2 to 19 bpf, indicating very soft to very stiff consistency. Pocket penetrometer values shear strength ranging from 1.0 to 1.6 tsf.

- **Stratum III: Completely Weathered or Decomposed Rock — Silty SAND (SM/SP-SM):** Locally, at four boring locations (SB-4, SB-5, SB-9, and SB-12), decomposed rock was encountered below residual soils to depths of between 12 and 15 feet. The decomposed rock consisted of moist, tan, white, Silty SAND (SM) with none to little rock fragments; and moist, tan, Poorly-Graded SAND with Silt (SP-SM). The SPT-N values ranged from 47 to greater than 100 bpf (e.g., 50 blow per 4 inches of penetration), indicating very dense compactness.
- **Stratum IV: Weathered Rock — Silty SAND (SM):** Weathered Rock was encountered locally to a depth of about 9 feet at boring SB-14. The natural highly weathered rock soils consisted of moist, tan, Silty SAND (SM). The SPT-N value was greater than 100 bpf (50 blows per 3 inches of penetration), indicating very dense compactness or relative density.
- **Stratum V: Bedrock -** Rock was not cored; however, the estimated top of rock occurred at approximate **EL. 310** (depth of 12-ft) at boring SB-5, and **EL. 272** (depth of 15-ft) at boring SB-9

Groundwater and Cave-in Conditions: Short-term groundwater levels during the fieldwork was encountered locally at borings SB-12 and SB-13 at depths of 11.4 and 9.0 feet respectively, corresponding to approximate El. 236.6 and El. 242.0 feet above Mean Sea Level (MLS). Note that these two borings were located near the Beaverdam Run.

The water levels in the boreholes are not the only indication of the groundwater levels. If the borehole has caved after removing drilling augers, the depth to the collapsed region may have been caused by collapse of loose/soft soils and saturated soils conditions such as running sands, and/or could be due to groundwater and perched (or trapped) water conditions. The elevations of the caved depths of certain borings may be consistent with groundwater table elevations at the site. Cave-in occurred in each borehole at depths varying between 7 and 13 feet below the existing ground surfaces at completion of drilling operations.

Fluctuations in the groundwater and perched water conditions will occur seasonally and due to in-situ soil types, site topo, ground cover and/or surficial site conditions, water levels on adjacent SWM facilities or water bodies, variations in rainfall, evaporation, surface runoff, infiltration, construction activity and other site-specific factors were not present at the time of drilling.

GEOPHYSICAL SEISMIC REFRACTION RESULTS

Balter's subconsultant, Envirosan, Inc., performed a seismic refraction survey between August 24 and 26, 2014 along the water main alignment. Details and results are provided in Balter's 2014 Geotechnical Report. However, we understand that the seismic refraction study was not performed in the roadway intersections, or along an approximately 600-foot stretch from Shawan Road south to boring SB-5. The purpose of the seismic refraction survey was to attempt to map the top of bedrock surface along York Road and Shawan Road.

Refraction is a seismic method that measures the time it takes for compressional waves (P-waves) to travel through layers of soil to a density contrast in the subsurface, often the top of bedrock, where the waves are refracted along the density contract and then back to the surface where they are detected by geophones. The surveys were performed along straight lines of varying lengths. Based on the shear wave velocities, three major subsurface soil strata with gradual changes between layers were identified. These major soil strata are described below in order of decreasing depth:

- **Stratum I: Unconsolidated Sediments:** Unconsolidated sediments (including existing Fill and natural residual soils and portion of CWR), characterized as having shear wave velocities between 0 to 5,000 feet per second (fps), were inferred to occur within the upper 20 feet. Locally, north of Wight Avenue, unconsolidated soils varied from about 10 to 50 feet; and south of Wight Avenue Stratum I varied from about 2 to 40 feet below ground surface.
- **Stratum II: CWR and Weathered Rock:** Weathered rock is characterized as having shear wave velocities between 5,000 and 10,000 fps and occurred at depths of about 2 to greater than 60 feet. In general, the thickness varies from about 2 to 25 feet thick.
- **Stratum III: Bedrock:** Competent rock was inferred below weathered rock at depths of about 13 to greater than 60 feet, corresponding to shear wave velocities greater than 10,000 fps.

GEOTECHNICAL EVALUATIONS AND RECOMMENDATIONS

The geotechnical recommendations are based on the proposed construction, the 2014 subsurface data, and our experiences with similar site and subsurface conditions.

GEOTECHNICAL RISKS

We have identified the following geotechnical risks and issues along the proposed water main replacement on the basis of the described project characteristics and subsurface conditions encountered during the 2014 subsurface explorations by others, and our experience with similar projects. The geotechnical issues are discussed with recommendations below:

- Subsurface Data Gaps
- Existing FILL Materials
- Residual Site Soils with moderate to high fines Content and Micaceous
- Potential weathered rock and bedrock subgrade at Proposed Pipe Inverts
- Weak Subgrade Soils at Proposed Pipe Inverts
- Existing Utilities
- Temporary Excavation Support System

Subsurface Data Gaps: We have identified two areas with subsurface data gaps as follows:

1. Area #1: Sta. 246+44 to Sta. 246+75 at the York Rd/Schilling Rd intersection
2. Area #2: Sta. 253-30 to Sta. 254+46 at the York Rd/Shawan Rd intersection

We noted, however, that drilling would be difficult since the Area #1 falls entirely within the intersection at Schilling Road, and Area #2 appears to be very close to (or possibly partly within) the intersection at Shawan Road. Therefore, we do not recommend performing supplemental borings at this time.

Existing Fill Materials: As previously discussed, Fill materials exist below asphalt pavement and along the pipe alignment to depths ranging from 4 to 12 feet. Existing Fill materials included a heterogeneous mixture of Silty SAND (SM), Clayey Rock Fragments (GC) with varying amounts of rock fragments; and Sandy CLAY (CL) and Sandy SILT (ML) with varying amounts of rock fragments, and wood fragments. We do not have fill placement records; however, fill materials were likely placed as part of the previous site developments and urbanization including installation of buried utility mains in the general project area.

Typically, fills will likely contain localized undesirable materials such as organics, pockets of voids, and weak or unstable zones characteristic of inadequate compaction. Problems associated with uncontrolled fill include unpredictable and potentially excessive settlements and sudden collapse, potential for corrosion of metallic and steel structures, and unknown contaminants. However, we anticipate that as a matter of course, major portions of existing fill materials will be removed during construction to achieve proposed pipe inverts. Where encountered at pipe bearing levels, existing fill should be evaluated by the Geotechnical Engineer, and undercut as needed and replace with engineered fill.

Residual/Micaceous Site Soils: We encountered residual soils with moderate to high fine contents and varying amount of micaceous nature within portions of the proposed pipe/structure invert levels. Site soils

with elevated fines soils and micaceous nature are likely be residual types derived from weathering and decomposition of the underlying bedrock. Such soils are typically prone to disturbance with significant strength degradation if exposed to prolonged moisture conditions and construction traffic. Thus, the Contractor should implement appropriate measures including over excavating and replacement with engineered fill, and providing drainage and temporary water controls during excavations to protect exposed subgrade soils to minimize exposure to moisture and adverse weather conditions.

In addition, micaceous soils as well as soils with high fines are difficult to place and compact if reused as backfill materials. Excavated site soils desired to be re-used as compacted backfill should be evaluated and tested to meet the project requirements. The Contractor should implement appropriate protective measures for on-site soil stockpiles.

Weathered Rock and Bedrock Conditions: Based on the 2014 subsurface data, shallow CWR rock conditions could be encountered between borings SB-2, SB-4 and SB-5. At boring SB-4, the proposed pipe invert will occur with CWR zone. Estimated top of bedrock at boring SB-9 is at approximate El. 272. The proposed pipe inverts could be founded in variable subgrade conditions ranging from fill to residual soils, as well as CWR or decomposed rock, weathered rock, and bedrock at shallower elevations.

Standard rippability charts indicate that soils with velocities less than 6,000 fps would be easily rippable with a D9R multi- or single-shank No. 9 Ripper, if working space permits this method. Velocities between 6,000 fps and 10,000 fps would be marginally rippable. Excavation into dense CWR and weathered rock zones will require conventional excavation methods if rippable, or use of special excavation techniques including jack hammering or hoe ramming for marginal rippable materials. Those materials with velocities greater than 10,000 fps, such as large boulders or competent bedrock would be considered non-rippable, and thus other appropriate rock removal methods (blasting or non-explosive methods) should be considered. Also, since excavations in confined spaces such as trenching would be challenging due to site constraints, special methods such as hoe-ramming or non-explosive blasting could be required.

Weak Subgrade Conditions at Pipe Inverts: Loose/soft soil conditions could occur locally at proposed structure and pipe invert levels. Also, the recorded borehole cave-in occurred at depths between 7 and 13 feet, and could be indicative of potential weak soil zones. Weak subgrade soils are prone to excessive and differential settlements under new loads and are not suitable for direct bedding for the proposed new water main piping and ancillary structures or systems. If disturbed, loose/soft layers or disturbed pockets of soil are encountered at the proposed pipe invert subgrade levels, they should be improved/densified in-place (if feasible), and/or undercut and replaced with select backfill or No. 57 crushed stone aggregates to provide a firm subgrade along the pipe alignments.

Presence of Existing Buried Utilities: Existing utilities and substructures including underground water, sewer, gas mains and appurtenant structures are present along the proposed water main alignment. We recommend that all active utility lines on site be located and clearly identified prior to construction. The Contractor should provide approved means/methods and measures to remove, bypass or penetrate any inactive utilities and foundations and substructures if encountered during excavations work. In addition, all abandoned utilities left in place should be sealed using flowable backfill or cement grout.

Temporary Excavation Support: Based on our review of design plans, we anticipate that the proposed pipe inverts will range at depths between 4 and 10 feet bgs. Thus, we anticipate that construction will entail excavations in excess of 5 feet that will require temporary support systems. We understand that traditional cut-and-cover trenching construction is planned for this project. In general, major sections of the water

mains will be located primarily within natural residual soils (Stratum II) and completely weathered rock (CWR or Stratum III); and locally at/near base of the existing Fill (Stratum I). Excavations and cutbacks should conform to the project requirements discussed. We recommend that temporary excavation/earth support systems be designed by a Professional Engineer registered in the State of Maryland.

PIPE BEARING STRATA AND STRUCTURE FOUNDATIONS

Bearing Strata: As indicated by the test borings and depicted by the generalized geologic profiles depicted on Figures 2A and 2B, the project site is generally underlain by existing Fill (Stratum I) and inorganic natural Residual Soils (Stratum II), Completely Weathered Rock (Stratum III) and Weathered Rock (Stratum IV) and Bedrock (Stratum V). We have summarized the anticipated in-situ subgrade conditions that could be encountered along the pipe inverts and base of the proposed structures on the attached Summary Table.

Based on the proposed pipes inverts and depths to the base of structures, we anticipate that the water main will be located predominantly within natural SAND (Stratum II) and CWR (Stratum III). However, locally, piping will bear partially within new engineered structural fill (placed on firm/densified inorganic in-situ soils) or Weathered rock/bedrock (Stratum IV/V).

We recommend that the pipelines and ancillary structures, with the required thickness of compacted stone aggregate bedding, layer should be placed on undisturbed, firm or densified inorganic in-situ subgrade soils, and/or on compacted structural fill and/or No. 57 stone aggregate backfill placed on firm inorganic natural soils in accordance with approved design plans and/or Baltimore County Standard Specifications and Details. However, as discussed in the subgrade preparation section below, due to unpredictable bearing capacity and potential for long-term and differential settlements, we do not recommend placing structure and pipelines directly on existing Fill and/or cohesive soils such as Silt (ML) and Clay soils (CL), or disturbed micaceous soils without some improvement.

Subgrade Preparations: The pipe main bedding and subgrade preparations should conform to the requirements of *Drainage and Utility Construction* per the Baltimore County Standard Specifications for Construction and Materials (latest edition). The backfill materials should be placed with proper compaction and temporary water controls as discussed in this report and in accordance with project specifications and requirement. We recommend the following general guidelines for subgrade preparation:

- The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other disturbed or unsuitable soil is encountered along the pipe alignment, all such materials should be removed up to specified minimum depths, and replaced with engineered backfill compacted to provide adequate bearing support.
- If encountered at structure and pipe invert levels, we recommend partial removal of existing Fill materials and/or weak natural subgrades soils of a minimum of 12-inches below the inverts, and replacement with compacted structure backfill and/or No. 57 stone aggregates.
- Due to the presence of site soils with micaceous and high fine contents, prolonged exposure to moisture and adverse weather conditions will weaken the site soils at the bedding levels if the excavations remain open for a long time period. Therefore, the pipes should be laid and backfilled

after the trenches are excavated, preferably the same day. If the trench cannot be backfilled the same day as the excavation, then the excavation should be protected. If exposed soils are frozen or softened by water intrusion, it must be evaluated by a Geotechnical Engineer. If the soils are deemed disturbed or overly saturated, they should be removed from the excavation bottom and replaced with compacted No. 57 stone aggregate prior to placement of the pipes.

- Locate the water main pipes in firm soils with a minimum 6 inches of compacted No. 57 stone aggregate bedding. If loose/soft and disturbed zones or pockets of soil are encountered at the invert subgrade levels, they should be improved/densified in-place if feasible, and/or undercut and replaced with compacted backfill and/or compacted No. 57 stone aggregate materials to provide a firm subgrade.
- *Rock Subgrade:* We did not encounter bedrock during our explorations within the exploration depths which were consistent with the proposed pipe inverts. However, we encountered locally very dense completely weathered rock and/or weathered rock, classified as Silty Sand and Poorly-Graded Sands, and thus anticipated to be rippable. However, if the bottom of the trench locally encounters bedrock, the contractor should perform excavations and subgrade preparations in accordance the requirements of the Baltimore County Standard Specifications. Excavations should be extended a minimum of 6 inches below the specified subgrade with a minimum of 4 inches under bells. The trench bottom shall be restored to subgrade with earth or granular material as approved by the Engineer.
- *Groundwater Conditions and Construction Water Control:* Typically, the borings along the proposed water main alignment did not encounter groundwater in the boreholes during drilling in 2014. Construction excavations will likely not encounter groundwater at these locations. However, due the micaceous nature of site soils and the presence of high fines, perched or trapped water conditions can occur periodically and locally. Also, the recorded borehole cave-in (occurred at depths between 7 and 13 feet) could be indicative of the presence of saturated soils conditions and potential weak soil zones. Since perched water and/or groundwater could be encountered locally due to in-situ soil types, seasonal variations in rainfall and surface runoff and construction practices, the contractor should anticipate and provide positive drainage and dewatering measures to temporarily control surficial water and ground water to adequate depths below excavation levels.

The Contractor is responsible for controlling surficial water and groundwater (if encountered) conditions within the excavations. This will ensure that excavations are kept relatively free of standing or ponding water to prevent and/or minimize disturbance of the exposed subgrade soils. We anticipate that temporary dewatering can be handled with ditching, sumps, and pumping. Run-off from adjacent areas should be diverted away from the excavation to prevent ponding of water in the excavation.

LIMITATIONS

This report is subject to the limitations following the text.

CLOSURE

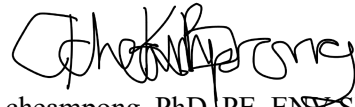
KCI appreciates the opportunity to provide geotechnical engineering consulting services for this project and looks forward to completing it successfully. Please contact us at phone number 410-316-7888 or via email at kofi.acheampong@kci.com if you have any questions regarding the information presented.

Very Truly Yours,

KCI TECHNOLOGIES, INC.



Dennis P. Coyle
Project Scientist



Kofi B. Acheampong, PhD, PE, ENV SP. BC.GE
Snr PM, Geotechnical Practice Leader (Acting)

“PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT
THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME,
AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE
NO.: 54247 EXPIRATION DATE: 12-18-2024”

Attachments:

Figure 1: Site Vicinity Map
Figures 2A & 2B: Boring Location Plans
Figures 3A & 3B: Subsurface Profiles

Summary Table of Foundation Subgrade Bearing Strata along Proposed Water Main Pipe & Structures

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GEOTECHNICAL LIMITATIONS

General

1. This report has been prepared to aid in the evaluation for the proposed water main replacement construction described in this report. Adequate recommendations have been provided to serve as a basis for design and preparation of plans and specifications. The opinions, conclusions, and recommendations contained in this report are based upon our professional judgment and generally accepted principles of geotechnical engineering. Inherent to these are the assumptions that the earthwork construction should be monitored and tested under the guidance of a geotechnical engineer licensed in the State of Maryland or his representative.

Explorations

2. The analyses and recommendations provided are, of necessity, based on project information available at the time of the actual writing of this report, including existing site, surface and subsurface conditions that existed at the time the 2014 exploratory borings were drilled by others. Further assumption has been made that the limited exploratory borings, in relation to both the lateral extent of the site and to depth, are representative of general conditions across the site.

The nature and extent of variations between these explorations may not become evident until further explorations and construction. If variations from anticipated conditions, then appear evident, it will be necessary to revise the recommendations in this report.

3. The generalized soil profiles described in the text and indicated on the subsurface profiles logs are intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. Refer to boring profiles log for specific information at the boring profile log.
4. Groundwater level readings have been made in the drill hole at times and under conditions stated on the boring profile log. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the ground water may occur due to variations in rainfall, temperature, and other factors occurring since the time measurements were made.

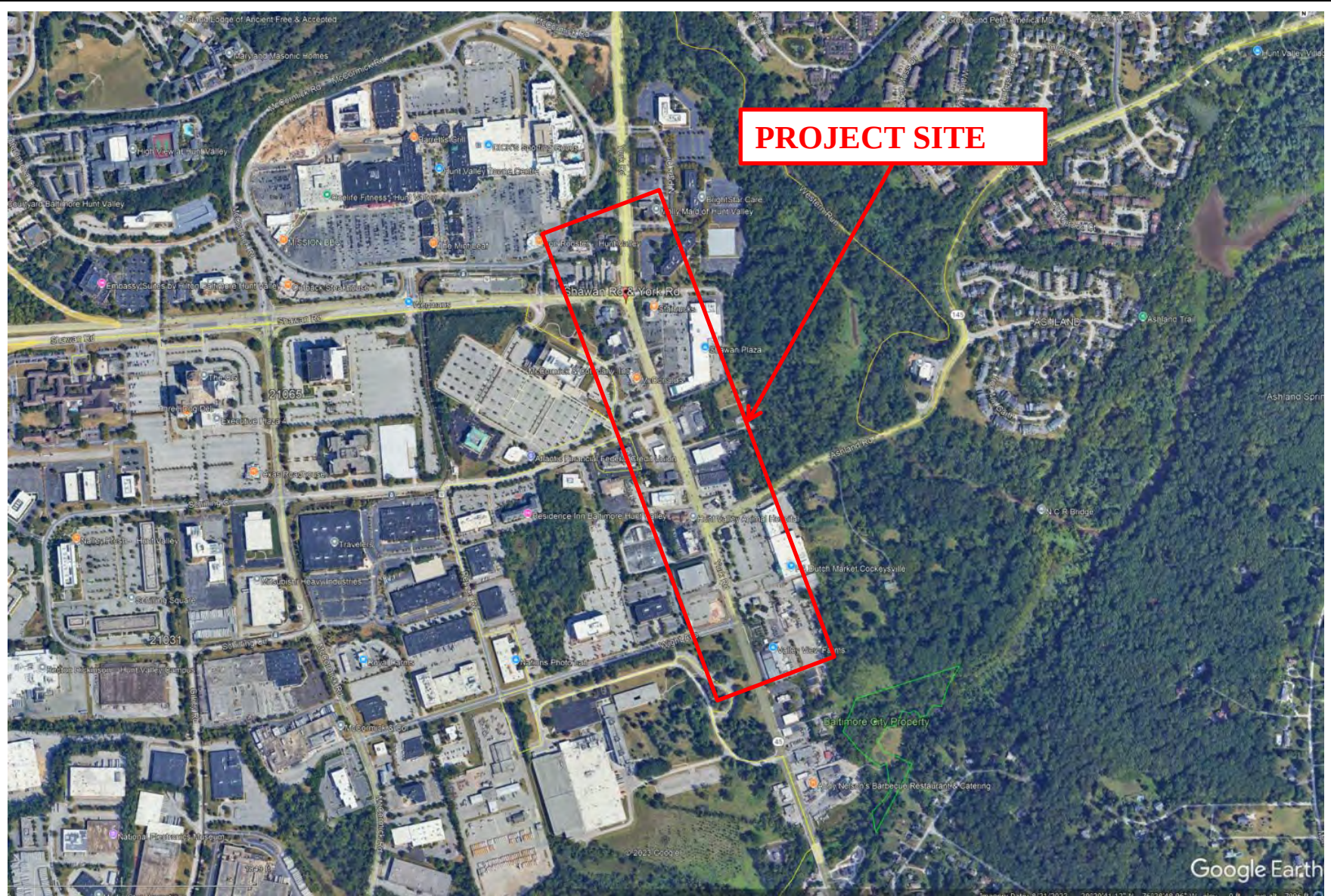
Review

5. This report has been prepared based on plans and description of the proposed construction cited herein. In the event that any changes in the nature, design or location of the proposed sewer main relocation are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by KCI.

Uses of Report

6. This report has been prepared for the exclusive use of Baltimore County DPW and other members of the design team for specific application to the proposed ***York Road (MD Route 45) Water Main Replacement Project – Phase 5 (from Wight Ave to Shawan Rd)*** in Cockeysville, Baltimore County, Maryland. Our professional services have been performed in accordance with generally accepted geotechnical engineering principles and practices; no other warranty, expressed or implied, is made. KCI assumes no responsibility for interpretations made by others on the work performed by KCI.
7. This report is for design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only. We recommend that this report be made available in its entirety including attachments and appendices to contractors for informational purposes only. The project plans or specifications should include the following note:

A geotechnical report has been prepared for this project by KCI Technologies, Inc. This report is for informational purposes only and shall not be considered as part of the contract documents. The opinions and conclusions of KCI represent our interpretation of the subsurface conditions and the planned construction at the time of the report preparation. The data in this report may not be adequate for contractors estimating purposes.



ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

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Sparks, MD 21152
410-316-7800 | Fax 410-316-7817

SITE VICINITY MAP

YORK RD WATER MAIN REPLACEMENT – PHASE 5 (FROM WIGHT AVE TO SHAWAN RD) COCKEYSVILLE, BALTIMORE COUNTY, MARYLAND

DRAWN BY
DPC

APPROVED BY
KBA **88**

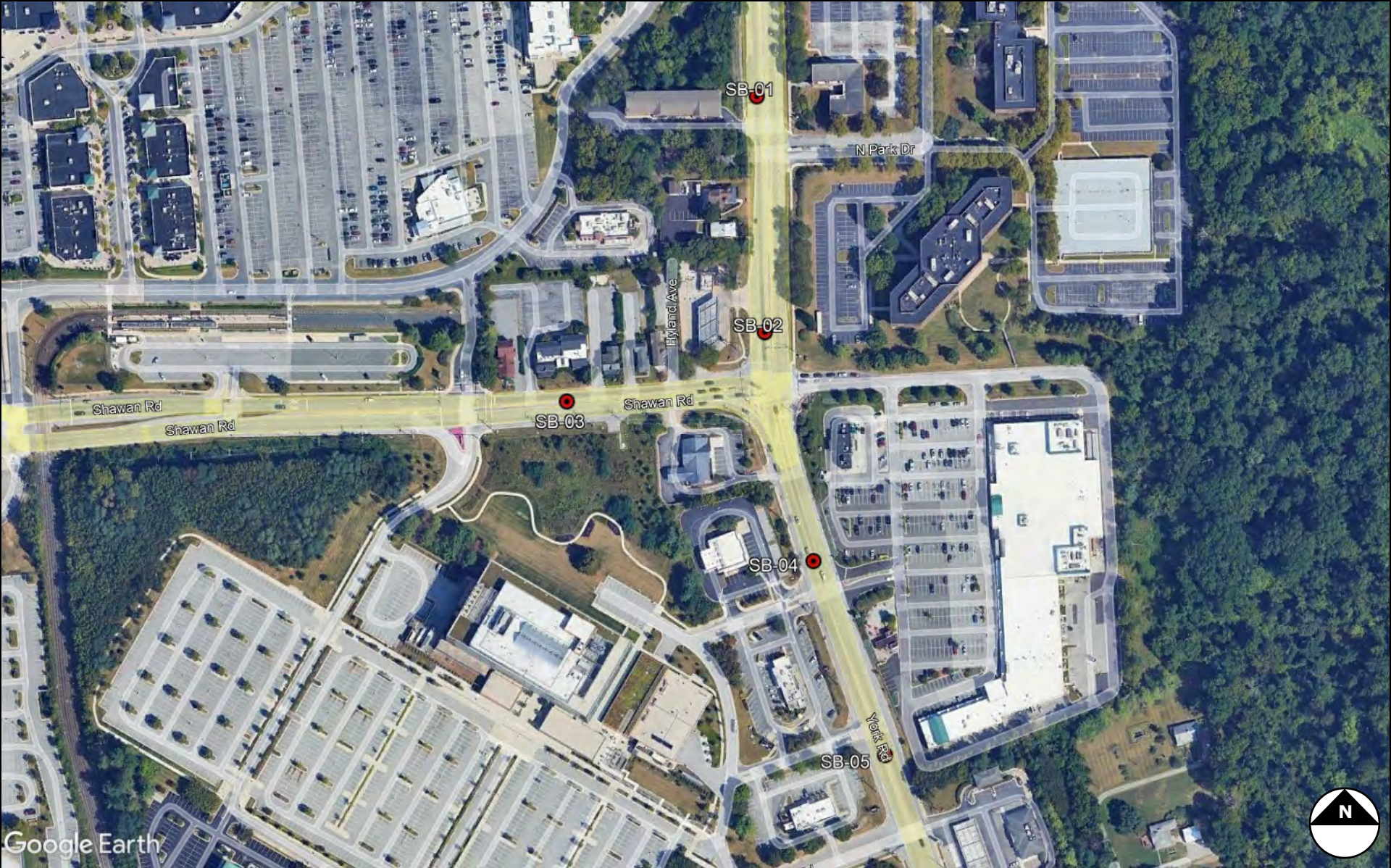
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DATE
OCTOBER 2024

Figure No.

1

KCI PROJECT NO.
132201868.05



Google Earth

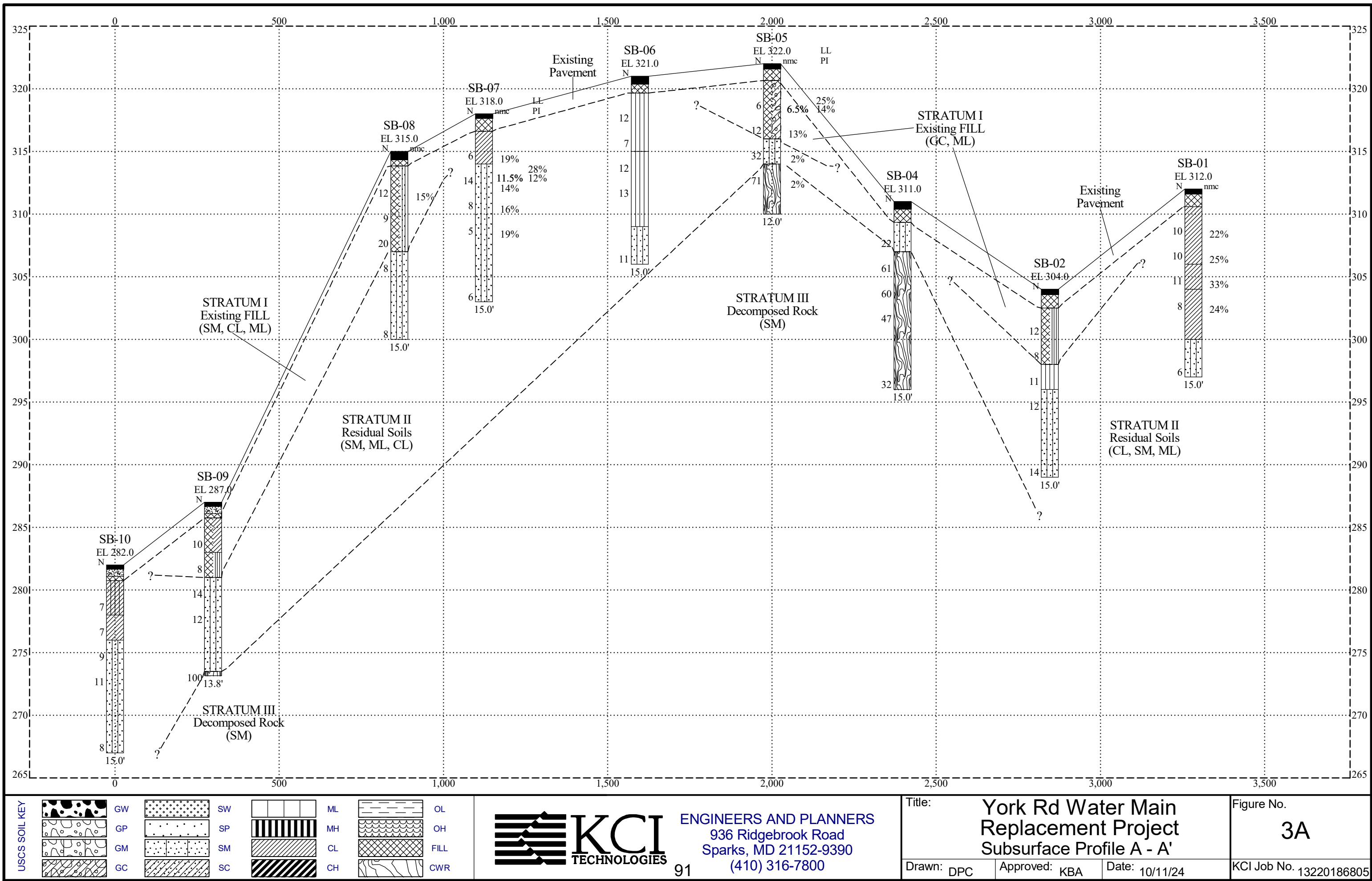


 ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS KCI TECHNOLOGIES 936 Ridgebrook Rd. Sparks, MD 21152 410-316-7800 Fax 410-316-7817	2014 BORING LOCATION PLAN YORK RD WATER MAIN REPLACEMENT – PHASE 5 (FROM WIGHT AVE TO SHAWAN RD) COCKEYSVILLE, BALTIMORE COUNTY, MARYLAND				Figure No. 2A
	DRAWN BY DPC	APPROVED BY KBA 89	SCALE NTS	DATE OCTOBER 2024	KCI PROJECT NO. 132201868.05



 ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS KCI TECHNOLOGIES 936 Ridgebrook Rd. Sparks, MD 21152 410-316-7800 Fax 410-316-7817	2014 BORING LOCATION PLAN YORK RD WATER MAIN REPLACEMENT – PHASE 5 (FROM WIGHT AVE TO SHAWAN RD) COCKEYSVILLE, BALTIMORE COUNTY, MARYLAND				Figure No. 2B
	DRAWN BY DPC	APPROVED BY KBA 90	SCALE AS SHOWN	DATE OCTOBER 2024	KCI PROJECT NO. 132201868.05

KCI 11X17 W/LOGO2 PLOG YORK RD - BALTER BORINGS.GPJ KCMOD_SHA_DF_US_STD_PLOG.GDT 10/11/24



ENGINEERS AND PLANNERS
936 Ridgebrook Road
Sparks, MD 21152-9390
(410) 316-7800

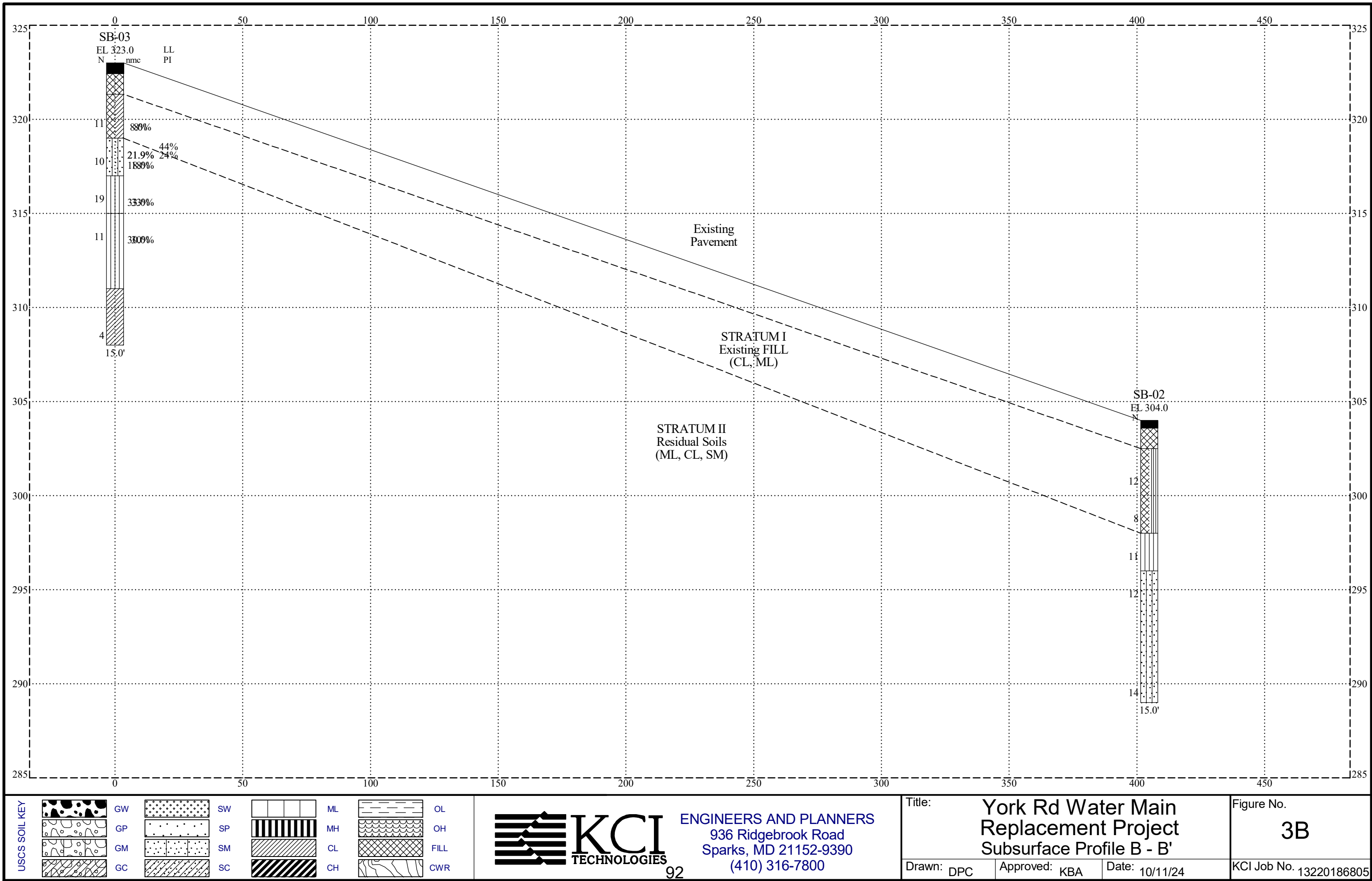
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Title: York Rd Water Main Replacement Project
Subsurface Profile A - A'

Drawn: DPC Approved: KBA Date: 10/11/24

Figure No. 3A
KCI Job No. 13220186805

KCI 11X17 W/LOGO2 PLOG YORK RD - BALTER BORINGS.GPJ KCI.MOD_SHA_DF_US_STD_PLOG.GDT 10/11/24



YORK ROAD WATER MAIN REPLACEMENT - PHASE 5 DESIGN
2019-01 ON-CALL POTABLE WATER PIPELINE DESIGN SERVICERS TIER 2, BALTIMORE COUNTY DPW

EXISTING 2014 BORING DATA BY ROBERT BALTER COMPANY							SUMMARY TABLE OF FOUNDATION SUBGRADE BEARING STRATA ALONG PROPOSED WATER MAIN PIPING AND ANCILLARY STRUCTURES						
											Anticipated Subsurface Conditions Below Proposed Inverts (Using 2014 Balter Test Boring Data & Geophysical Survey Results)		
Existing 2014 Boring No.	Station	2014 GS Elev. (ft)	As-Drilled Boring Depth (ft)	Est. Depth to Dec Rock/Bedrock (ft)	Est. Top Of Rock Elev.	Est. Distance between Prop Structures and 2014 Borings	Proposed Structure/ Watermain	Prop Station	Existing Street	Prop. Invert Elev. (ft.)	Soil Types (Existing Fill, Natural Soils, Completely Weathered Rock (CWR))	Decomposed Rock	Bedrock
												Yes or No	Yes or No
SB-09	231+08	287	15	Decomposed Rock at 13.5	272						Silty SAND (SM)	No	No
						128	Connection to Ex. 24" DIP WM	232+36	York Road	283.00	Silty SAND (SM)	No	No
						94	24"x6" F.H Tee, 6" Valve & 48" Doghouse MH	235+81	York Road	301.55	Silty SAND (SM)	No	No
						69	24"x6" F.H Tee, 6" Valve & 48" Doghouse MH	236+06	York Road	302.67	Silty SAND (SM)	No	No
SB-08	236+75	315	15			0	24" DIP WM	236+75	York Road	305.50	Silty SAND (SM)	No	No
						75	24" DIP WM	237+50	York Road	307.95	Silty SAND (SM)	No	No
						129	24"x6" F.H Tee, 6" Valve & Doghouse MH	238+29	York Road (Near Ashland Rd)	308.13	Silty SAND (SM)	No	No
						108	24"x6" F.H Tee, 6" Valve & Doghouse MH	238+50	York Road (Near Ashland Rd)	309.32	Silty SAND (SM)	No	No
						71	24"x12" F.H Tee, 12" Valve & Doghouse MH	238+87	York Road (Near Ashland Rd)	309.50	Silty SAND (SM)	No	No
SB-07	239+30	318	15			0	24" DIP WM			309.3	Loose, Silty SAND (SM)	No	No
						28	24" Valve & Vault (Baltimore Co Std Detail W-16)	239+58	York Road	309.17	Silty SAND (SM)	No	No
						144	24"x8" F.H. TEE; 8" Valve & Doghouse MH	240+74	York Road	308.79	Silty SAND (SM)	No	No
						206	24"x6" F.H Tee, 6" Valve & Doghouse MH	241+99	York Road	308.18	Silty SAND (SM)	No	No
SB-06	244+05	321	15			0	24" DIP WM			311.81	Moist, stiff SILT, little Sand, Clay (ML)	No	No
						145	24" DIP WM	245+50		314.43	Ex. FILL and/or Natural SILT (ML)	No	No
						228	24"X24" TEE	246+33	York Road/Schilling Rd Intersection	315.53	Ex. FILL and/or Natural SILT (ML)	No	No
						166	24"X1/8" UPPER Vertical Bend (UVB)	246+44	York Road/Schilling Rd Intersection	315.53	Ex. FILL Clayey GRAVEL (GC) or Natural SILT (ML)	No	No
						161	24"X1/8" Lower Vertical Bend (LVB)	246+49	York Road/Schilling Rd Intersection	310.93	SM or CWR (SM)	Yes	No
						141	24"X1/8" Lower Vertical Bend (LVB)	246+69	York Road/Schilling Rd Intersection	310.93	SM or CWR (SM)	Yes	No
						135	24"X1/8" UPPER Vertical Bend (UVB)	246+75	York Road/Schilling Rd Intersection	316.92	Ex. FILL and/or Natural Silty SAND (SM)	Possible below El. 314	No
SB-05	248+10	322	12 Refusal	Decomposed Rock at 8 - 12'	310	0	24" DIP WM			315.53	Silty SAND (SM) @ invert, CWR (SM) @ El. 314	Yes	No
						120	24"x6" F.H Tee, 6" Valve & Doghouse MH	249+30	York Road	313.12	SM or CWR (SM)	Yes	No
						107	24"x6" Tee, 6" Valve & Doghouse MH	251+96	York Road	305.62	CWR (SM)	Yes	No
						1	24"x6" F.H. TEE, 6" Valve & Doghouse MH	252+09	York Road	304.99	CWR (Silty SAND, SM)	Yes	No
SB-04	252+10	311	15	Decomposed Rock 4 to 15'	296	0	24" DIP WM		York Road	305.42	CWR (Silty SAND, SM)	Yes	No
						90	24" DIP WM	253+00	York Road	300.96	CWR (Silty SAND, SM)	Yes	No
						144	24"-1/8 UVB	253+24	York Road	299.93	CWR (Silty SAND, SM)	Yes	No
						123	24"-1/8 LVB	253+33	York Road	291.25	CWR (Silty SAND, SM)	Yes	Possible
						133	24"X10" Tee, 10" Valve & Direct Buried Vault	253+43	York Road	291.25	CWR (Silty SAND, SM)	Yes	Possible
						194	Dewatering Valve & Vault	254+04	York Road	291.25	CWR (Silty SAND, SM)	Yes	Possible
						231	24"-1/8 LVB	254+41	York Road	291.25	CWR (Silty SAND, SM)	Yes	Possible
						204	24"-1/8 UVB	254+46	York Road	295.93	Silty SAND (SM)	Possible	No
						90	24"x12" Tee and 12" Valve & Doghouse MH	255+60	York Road/Shawan Rd Intersection	294.87	Silty SAND (SM)	No	No
SB-02	256+50	304	15			0	24" Valve & Vault (Per Balt Co. Std Detail W-16)	256+50	York Road	294.49	Silty SAND (SM)	No	No
						150	24" DIP Watermain	258+00	York Road	301.34	FILL (Sandy SILT, ML) and/or Natural Sandy CLAY (CL)/ Sandy SILT (ML)	No	No
						122	24"X6" F.H. TEE; 6" Direct Buried Valve with Roadway Box	259+89	York Road @ North Park	307.81	Sandy CLAY (CL) / Sandy Silty CLAY (CL-ML)	No	No
						52	24"X10" Tee, 10" Valve & Doghouse MH	260+59		307.14	Sandy CLAY (CL) / Sandy Silty CLAY (CL-ML)	No	No
						10	24"X6" TEE; 6" Direct Buried Valve with Roadway Box	261+01		305.35	Sandy CLAY (CL) / Sandy Silty CLAY (CL-ML)	No	No
						5	24"-1/8 UVB	261+06		305.07	Sandy CLAY (CL) / Sandy Silty CLAY (CL-ML)	No	No
SB-01	261+11	312	15			0	24"-1/8 L.V.B.	261+11	York Road	300.72	Sandy CLAY (CL) over Loose, Micaceous Silty SAND (SM)	No	No
						6	24"X24" TEE	261+17		300.72	Sandy CLAY (CL) over Loose, Micaceous Silty SAND (SM)	No	No
						26	24" Cap With Buttress	261+37		300.72	Sandy CLAY (CL) over Loose, Micaceous Silty SAND (SM)	No	No
						315	12"x6" F.H. TEE, 6" Valve & Doghouse MH	0+80	Shawan Road	300.26	Ex. FILL - Sandy SILT (ML)	No	No
						195	12" DIP WM	2+00	Shawan Road	309.00	Soft Sandy CLAY (CL)	No	No
SB-03	3+95	323	15			0	12" DIP WM	3+95	Shawan Road	318.71	Medium Dense, Silty SAND (SM) / Very stiff Sandy Clayey SILT (ML)	No	No
						5	12" DIP WM	4+00	Shawan Road	318.71	Medium Dense, Silty SAND (SM) / Very stiff Sandy Clayey SILT (ML)	No	No
						131	12"X6" FH TEE, 6" Valve & Roadway Box	5+02	Shawan Road	320.7	Ex. Fill-Sandy CLAY (CL)	No	No
						189	12"X6" FH TEE, 6" Valve & Doghouse MH	5+84	Shawan Road	320.7	Ex. Fill-Sandy CLAY (CL)	No	No
						189	12"-1/8 H.B.	6+18	Shawan Road	320.7	Ex. Fill-Sandy CLAY (CL)	No	No
						189	12"-1/8 LVB	6+21	Shawan Road	317.35	Stiff Sandy Claye SILT (ML)	No	No
						247	Connection to Ex. 12" WM	6+42	Shawan Road	317.35	Stiff Sandy Claye SILT (ML)	No	No



September 8, 2014

Steven G. Zahn, P.E.
Project Manager
Michael Baker, Jr., Inc.
1304 Concourse Drive
Suite 200
Linthicum, MD 21090

**Re: Geotechnical Evaluation
24-inch Water Main
York Road between North Park Drive and Cockeysville Road
Baltimore County, Maryland
Baltimore County Project 02287
Job Order #231-203-0466
RBB Project No. 16571-0 MD**

Dear Mr. Zahn:

In accordance with your authorization, The Robert B. Balter Company (Balter) has completed our geotechnical evaluation for the subject project. The following report describes our procedures, provides our estimate of the subsurface conditions, and presents our geotechnical evaluation and recommendations for the project.

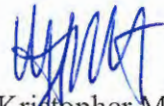
Project information provided to us helped form the basis for our recommendations. If any of the project information discussed in this report differs from the actual proposed construction, we should be contacted to re-evaluate the recommendations provided herein and provide revisions, if necessary.

We appreciate this opportunity to be of service. If you have any questions regarding this report, or if you would like any additional services, please do not hesitate to call our office.

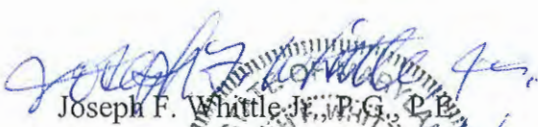
Sincerely,

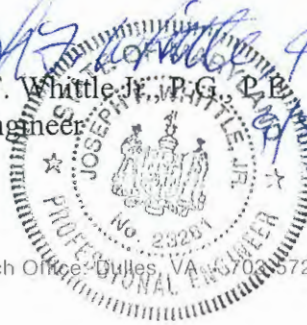
THE ROBERT B. BALTER COMPANY

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 41312, Expiration Date: 1/5/2016


Kristopher M. Crist, P.E.
Senior Geotechnical Engineer




Joseph F. Whittle Jr., P.E.
Chief Engineer



**GEOTECHNICAL EVALUATION
24- INCH WATER MAIN
YORK ROAD BETWEEN NORTH PARK DRIVE AND COCKEYSVILLE ROAD
RBB CONTRACT NO. 16571-0 MD**

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	General	1
1.2	Authorization.....	1
1.3	Scope	1
2.0	PROJECT INFORMATION	1
2.1	Project Description.....	1
2.2	Site Geology.....	1
3.0	METHODS OF EVALUATION.....	2
3.1	Subsurface Explorations.....	2
3.2	Laboratory Testing Program	3
4.0	SUBSURFACE CONDITIONS	4
4.1	Subsurface Materials.....	4
4.2	Standard Penetration Resistances.....	6
4.3	Laboratory Test Results	7
4.4	Ground Water Conditions	8
4.5	Geophysical Evaluation	8
5.0	EVALUATIONS AND RECOMMENDATIONS.....	9
5.1	General	9
5.2	Trench Excavation	9
5.3	Ground Water Control.....	10
5.4	Bearing Pressures	10
5.5	Lateral Pressures for Structure Design.....	10
5.6	Earthwork.....	11
5.7	Lateral Pressures for Sheet Pile Design	12
5.8	Corrosion Potential	12
5.9	Pavement Repairs.....	12
6.0	GEOTECHNICAL OBSERVATION AND TESTING.....	12
7.0	GENERAL COMMENTS	13

TABLES

Table 1 – Measured Pavement Depths

Table 2 – Decomposed Rock and Highly Weathered Rock Depths

Table 3 – Laboratory Test Results

Table 4 – Estimated Soil Parameters for Preliminary Shoring Design

FIGURES

Figure 1 – Standard Penetration Resistances

PLATES

Plate 1 – Site Vicinity Map

Plate 2 – Boring Location Plan

Plate 3 – Boring Location Plan

APPENDICES

Appendix A – Boring Logs



Appendix B - Laboratory Test Results
Appendix C – Geophysical Evaluation



1.0 INTRODUCTION

1.1 General

The proposed project consists of a new 24-inch water main to be constructed in York Road from Cockeysville Road to North Park Drive in Cockeysville, Maryland. The new water line will also extend west along Shawan Road approximately 600 feet. The overall length of the water line will be approximately 6,000 LF. The purpose of our work was to perform a geotechnical evaluation of the subsurface conditions to provide geotechnical related recommendations for construction of the new water main. A geophysical study consisting of seismic refraction was performed to evaluate the depth to the top of rock along the alignment.

1.2 Authorization

This work was authorized by Michael Baker Jr., Inc. with the acceptance of our proposal dated August 24, 2012. This work was performed in general accordance with the scope, terms and conditions described in our proposal.

1.3 Scope

The scope of the geotechnical evaluation includes the following: site reconnaissance, subsurface sampling and testing, geotechnical laboratory testing, engineering evaluation and report preparation. Future studies also include a seismic refraction survey to evaluate depths to rock throughout the project.

2.0 PROJECT INFORMATION

2.1 Project Description

The subject site is located along York Road between North Park Drive and Cockeysville Road, Cockeysville, Baltimore County, Maryland. The project consists of the construction of a new 24-inch diameter water main to be located in York Road. The new water main will also extend about 600 feet along Shawan Road, west of York Road. The overall length of the new water main is approximately 6,000 LF.

According to Michael Baker Jr., Inc., the new water main will have inverts ranging from 4.0 feet to 8.0 feet below the pavement surface. The project location is shown on **Plate 1, Site Vicinity Map**.

2.2 Site Geology

The Geologic Map of the Cockeysville Quadrangle, MD (1975) indicates that the project is mostly underlain by the Cockeysville Marble, except at the Beaverdam Run, where Alluvium is present. Quaternary-age Alluvium generally consists of interbedded, poorly-sorted country rock and vein quartz gravels, quartzose sands, Micaceous silts and kaolinitic clays. These soils are typically confined to flood plains of perennial streams in valleys. The sediment sizes and mineralogy are directly related to the adjacent country rock and geomorphic setting.



The majority of the York Road is underlain by the Cambrio-Ordovician age Cockeysville Marble. York Road between North Park Drive and Beaver Run Lane is underlain by the Layered Metadolostone Member which consists of pure, white metadolostone interlayered on a scale of several decimeters with dark metadolostone containing silica minerals, including diopside, tremolite, phogophite, and quartz. York Road between Beaverdam Run and Cockeysville Road is underlain by the Phlogopitic Metalimestone Member, which consists of fine- to medium-grained interlayered white to bluish white calcite marble, and purplish phlogopitic calcite marble or calc-schist with quartz, muscovite, and feldspar.

3.0 METHODS OF EVALUATION

3.1 Subsurface Explorations

Geotechnical - Balter's subsurface exploration program for this study included seventeen (17) Standard Penetration Test (SPT) borings, numbered SB-1 through SB-17. The borings were selected and marked in the field by Michael Baker Jr., Inc. The utilities were cleared by Miss Utility and the use of Ground Penetrating Radar. Borings were offset as needed to avoid underground utilities or obstructions. Once the utility locating services were completed, the soil borings were advanced to a maximum depth of 15 feet below the existing ground surface utilizing an All-Terrain Vehicle (ATV) drill rig equipped with conventional 3.25-inch I.D. hollow stem augers with a 7.25-inch diameter carbide drill head bit. The borings were drilled under restricted work hours between July 23 and 31, 2014 on days authorized by the Maryland State Highway Administration (MDSHA). Traffic control was provided by Allied Contractors, Inc. The attached **Boring Location Plan, Plates 2 through 4**, indicates the approximate drilled locations of the borings performed along the roadway. Surface elevations were estimated using in-house topographic maps.

Standard Penetration Testing (SPT) and sampling were performed through the auger stem continuously at 2-foot intervals for the first 10.0 feet and then at 5-foot intervals to the full boring depth. The testing and sampling procedures were performed in accordance with ASTM D-1586 procedures, using a standard 2-inch O.D. sampling spoon, driven by an 140 pound hammer freely falling 30 inches. The drill rig was equipped with an automatic hammer which requires an approximate correction factor of x1.3 to the recorded N-Values. This correction factor is a conservative assumption based on our review of available literature. This allows comparison to "standard" N values for a less-efficient manual hammer (N60 values, for 60% energy efficiency). Corrected values (N60) are not shown on the boring logs or profiles, but were used in any analyses. During the drilling operations, the automatic hammer was replaced at some borings with a standard rope pulled cat head and hammer due to technical malfunctions. Borings SB-8 to SB-12, and SB-17 used the cathead method.

Bulk samples of representative were recovered from the auger flights for laboratory evaluation of compaction. Upon completion, the boreholes were backfilled with drill spoils, and the pavement opening sealed with cold patch asphalt for safety reasons. The field work was periodically supervised by a qualified Geotechnical Engineer.



The subsurface data obtained from the explorations are presented in log form in **Appendix A**. The numeric values (N-values) shown within the individual boring columns on the Boring Logs indicate the standard penetration resistances, in blows per foot (bpf), or as otherwise noted. N-values are used to provide a quantitative indication of in-place density of non-cohesive soil and the consistency of cohesive soils.

The depths at which water was observed in the uncased holes were recorded during drilling, and upon completion of drilling. Longer term water readings were not feasible as the holes were immediately backfilled to allow for traffic. The method of classification used in preparing the strata descriptions is based on our interpretation of the Unified Soils Classification System (USCS) and the AASHTO soil classification system. The boring logs show soil classifications and boundaries between soil types. *Actual conditions and soil boundaries between boreholes may vary significantly from those assumed. The subsurface data shown on the figures are integral to this report. Separation of the logs from the remainder of the report may lead to misinterpretation of the data by others.*

Geophysical - A seismic refraction study was performed by Enviroscan, Inc. from August 24 to 26, 2014. The work was performed at night to limit the noise generated by the heavy vehicular traffic that utilizes York Road during daytime hours. The purpose of the seismic refraction study was to attempt to map the top of the rock surface along York Road and along a portion of Shawan Road. The study included six seismic profiles of varying lengths. The study was not performed in the roadway intersections, or along a ~600 foot stretch from Shawan Road south to boring SB-5. This section was not evaluated due to the existing traffic patterns which could not be altered.

Seismic Refraction consisted of the placement of Mark Products 8.5-Hertz geophones in a linear array spaced at an interval of 10 feet. The geophones were connected to a 24 channel Geometrics SmartSeis Seismograph which receives the seismic signals which are generated from a 30-pound airless jackhammer hitting the ground surface at 40 foot intervals. The collected information was evaluated using the OYO Corporation software, SeisImager, to develop cross sections providing the various layering of the ground surface in terms of shear wave velocity. The estimated velocities can be correlated into estimated rippabilities, as described by Caterpillar, Inc. (1995). The seismic refraction results are discussed below. The report is provided in **Appendix C**.

3.2 Laboratory Testing Program

Recovered samples were subjected to laboratory testing to estimate their classifications according to the Unified Soils Classification System. This testing included sieve gradation analyses and Atterberg limits determinations. Visual classifications of the recovered soil samples were also performed. Pocket penetrometer tests were performed on cohesive samples. In addition, three bulk samples from the subject site were evaluated for its compactive properties by Modified Proctor (AASHTO T-180) compacted density versus moisture content relationship test. Split spoon samples collected at the proposed invert depths from 8 of the 17 borings were collected for corrosion testing. Russell Corrosion selected the borings and depths that required sampling. The collected samples were submitted by Balter to Russell Corrosion for testing. Those test results will be submitted directly to Michael Baker



Jr., Inc. by Russell Corrosion. Finally, tests for natural moisture contents of SPT and bulk samples were performed.

The results of our laboratory testing are presented in **Appendix B** and are summarized in **Table 1** of this report. Moisture testing, pocket penetrometers, percent passing #200 sieve and Atterberg limit test results are included on the boring logs for the subject materials.

4.0 SUBSURFACE CONDITIONS

4.1 Subsurface Materials

The following layering represents the generalized subsurface stratigraphy as noted in our borings:

Layer 1 – Surficial Materials

Pavement Materials – The existing pavement consisted of bituminous concrete overlying concrete at 4 of the 17 locations. The pavement consisted of bituminous concrete overlying an aggregate base at 13 of the 17 locations. Table 1 below provides the pavement layer thicknesses measured at each location.

Table 1 – Measured Pavement Depths

<i>Boring</i>	<i>Total Pavement Thickness (in)</i>	<i>Bituminous Concrete (in.)</i>	<i>Concrete (in)</i>	<i>Aggregate Base (in)</i>
SB-1	17.0	5.0	12.0	---
SB-2	18.0	5.0	---	13.0
SB-3	18.0	7.0	---	11.0
SB-4	20.0	7.0	---	13.0
SB-5	16.0	5.0	---	11.0
SB-6	16.0	7.5	---	8.5
SB-7	16.5	4.5	---	12.0
SB-8	14.0	8.0	---	6.0
SB-9	17.0	4.0	9.0	4.0
SB-10	15.0	4.0	7.0	4.0
SB-11	14.0	4.0	8.0	2.0
SB-12	21.0	10.0	---	11.0
SB-13	21.0	7.0	---	14.0
SB-14	19.0	7.0	---	12.0
SB-15	20.0	7.0	---	13.0
SB-16	18.0	7.0	---	11.0
SB-17	19.0	7.0	---	12.0

Layer 2 – Fill and Possible Fill Soils

Fill soils were encountered below the pavement materials in 12 of the 17 of the borings to depths ranging from 4 to 12 feet below the existing ground surface. Generally, if the soils displayed typical characteristics of fill (i.e., unnatural layers, trash and debris, etc.) then the soils were labeled as fill. If; however, the surficial soils did not have the “typical” appearance of fills, but appear to have different characteristics (color, texture, etc) than the natural soils,

then they are referred to as “possible fills.” It should also be noted that fill soils can be difficult to identify, and detection may not be possible in the field during construction.

The fill soils generally consisted of Silty Sand (SM), Clayey Rock Fragments (GC), Clayey Sand (SC), Sandy Silt (ML), and Clay (CL). Per AASHTO, the fill soils can be classified as A-2, A-2-6, A-5, A-6, and A-7. The fill layer generally displayed SPT N-Values from 3 blows per foot (bpf) to 51 bpf. Two samples collected exhibited an N-value of 50 blows per 5 inches of penetration. These elevated N-values are typically due to the presence of broken rock fragments. Pocket penetrometer values collected in the fine-grained soils ranged from 1.6 tons per square foot (tsf) to 3.5 tsf.

Layer 3 – Residual Soils

Natural residual soils were encountered underlying the pavement layers or the fill soils in all 17 borings to depths ranging from 4.0 feet to 15.0 feet below the existing ground surface. Residual soils are soils that have weathered in-place from the underlying parent rock. These soils generally consisted of Sand (SM, SC-SM, SW-SM), Silt (ML), and Clay (CL, CL-ML). Per AASHTO, the natural residual soils consist of A-2, A-2-6, A-3, A-5, A-6, and A-7. SPT N-values ranged from 2 bpf to 32 bpf. Pocket penetrometer values in the fine-grained soils ranged from 2.0 tsf to 3.2 tsf.

Layer 4 – Decomposed Rock

Decomposed Rock was encountered underlying the residual soils in 4 of the 17 borings (SB-4, SB-5, SB-9, and SB-12) to depths ranging from 12.0 feet to 15.0 feet below the existing ground surface. Decomposed rock is arbitrarily defined as having SPT N-values greater than 50 bpf and up to 50 blows for 4 inches of penetration. During the sampling process, the split spoon sampler pulverizes the material; therefore, the actual sample may not be representative of the true in-situ decomposed rock.

The pulverized decomposed rock samples generally consisted of Silty Sand (SM) exhibiting SPT N-values ranging from 47 bpf to 50 blows for 4 inches of penetration. Per AASHTO, these pulverized soils would consist of A-2 and A-3 soils. N-values less than 50 bpf were encountered below the higher N-values, indicating that there are zones within the decomposed rock that have been subjected to higher degrees of weathering.

Layer 5 – Highly Weathered Rock

Highly Weathered Rock was encountered underlying the residual soils and decomposed rock in one of the 17 borings (SB-9) to a depth of 9.0 feet below the existing ground surface. Highly weathered rock is arbitrarily defined as having SPT N-values greater than 50 blows for 3 inches of penetration. During the sampling process, the split spoon sampler pulverizes the material; therefore, the actual sample may not be representative of the true in-situ highly weathered rock.

The pulverized highly weathered rock samples generally consisted of Silty Sand (SM). Per AASHTO, these pulverized soils would consist of A-2 soils.



Auger refusal was also encountered in borings SB-5 and SB-14 at depths of 12.0 feet and 9.0 feet below the existing ground surface, respectively. Auger refusal is considered to be the top of competent rock and can be defined as the point where the augers and auger bits will no longer penetrate the subsurface materials with the full down force of the drill rig.

The following table provides the depths (and approximate elevations) of decomposed rock, highly weathered rock, and auger refusal.

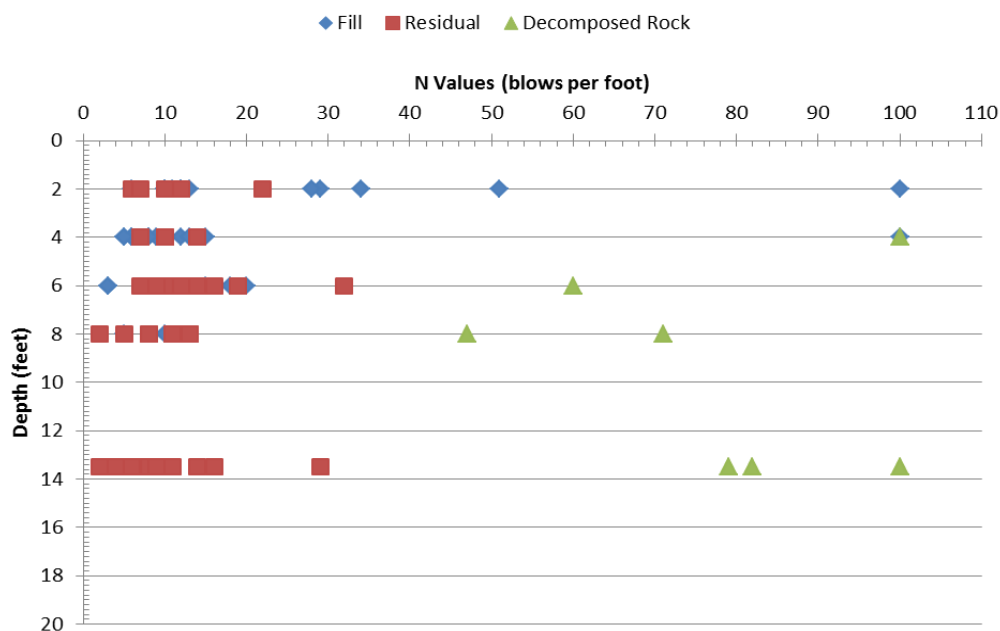
Table 2 – Decomposed Rock and Highly Weathered Rock Depths⁽¹⁾

Boring⁽²⁾	Approximate Ground Elevation (ft)	Decomposed Rock⁽³⁾		Highly Weathered Rock⁽⁴⁾		Top of Rock (Auger Refusal)	
		Depth (ft)	Approximate Elevation (ft)	Depth (ft)	Approximate Elevation (ft)	Depth (ft)	Approximate Elevation (ft)
SB-1	312.0	---	---	---	---	---	---
SB-2	304.0	---	---	---	---	---	---
SB-3	323.0	---	---	---	---	---	---
SB-4	311.0	4.0	307.0	---	---	---	---
SB-5	322.0	8.0	314.0	---	---	12.0	310.0
SB-6	321.0	---	---	---	---	---	---
SB-7	318.0	---	---	---	---	---	---
SB-8	315.0	---	---	---	---	---	---
SB-9	287.0	13.5	273.5	---	---	---	---
SB-10	282.0	---	---	---	---	---	---
SB-11	268.0	---	---	---	---	---	---
SB-12	248.0	12.0	236.0	---	---	---	---
SB-13	251.0	---	---	---	---	---	---
SB-14	263.0	---	---	8.0	255.0	9.0	254.0
SB-15	280.0	---	---	---	---	---	---
SB-16	286.0	---	---	---	---	---	---
SB-17	300.0	---	---	---	---	---	---

Notes: (1) First and highest occurrence
 (2) B-2 not drilled as described above.
 (3) N value = greater than 50 bpf to 50 blows for 4 inches of penetration
 (4) N-value = 50 blows for 3 inches of penetration and harder.

4.2 Standard Penetration Resistances

Figure 1 shows the distribution of the collected N-values, of fill, residual soils, and decomposed rock versus depth across the site.

Figure 1 - Standard Penetration Resistances

4.3 Laboratory Test Results

The completed laboratory tests performed on samples of the subsurface materials are summarized on the following **Table 3 - Laboratory Test Results**. Samples shown in Table 2 were selected to be representative of soils most likely to be encountered during construction. The full laboratory results are presented in graphic form in **Appendix B**. The corrosivity tests are being performed and submitted to Michael Baker Jr., Inc. by Russell Corrosion.

Table 3– Laboratory Test Results

Boring No.	Sample Depth (ft)	Soil Type ⁽¹⁾	USCS Class.	AASHTO Class.	In-Place ⁽²⁾ Moisture (%)	Atterberg Limits			Passing # 200 Sieve (%)	Modified Proctor (T-180)	
						LL	PL	PI		Max Dry Density (pcf)	Opt Moisture Content (%)
SB-3	2-7	F/R	CL	A-7	21.9	44	20	24	68.2	121.8	13.7
SB-5	2-4	F	GC	A-2-6	6.5	25	14	11	26.8	---	---
SB-7	2-7	R	CL	A-6	11.5	28	16	12	53.9	128.0	9.8
SB-12	8-10	R	CL	A-6	44.4	34	23	11	54.3	---	---
SB-13	6-8	F	CL	A-6	21.9	34	19	15	62.2	---	---
SB-17	2-7	F/R	SC	A-6	12.2	30	18	12	47.2	134.0	8.5

Notes: (1) F = Fill, R = Residual

(2) Refer to Boring Logs for additional Soil Moisture Contents.



Natural moisture contents were performed on selected soil samples obtained from the borings. The moisture contents ranged from approximately 1.5 to 44.4 percent. The optimum moisture content of the samples tested ranged from 8.5 to 13.7 percent.

4.4 Ground Water Conditions

Because the fieldwork involved lane closures, all 17 borings were immediately backfilled on completion; therefore, stabilized borehole observations could not be made. Based on measurements at completion, groundwater was encountered in two borings, SB-12 and SB-13, at depths of 11.4 feet and 9.0 feet below the existing ground surface, respectively (approximate elevations EL 236.6 and EL 242.0, respectively). These two borings are located just north of the Beaverdam Run. The remaining borings were dry during drilling.

Ground water levels generally fluctuate with rainfall and runoff, and may be affected by rainfall, construction, utility leaks, and other natural and unnatural causes. For these reasons, the ground water levels across the site at later dates will vary from those noted during the recent exploration program.

4.5 Geophysical Evaluation

The geophysical evaluation was performed by Enviroscan, Inc. and consisted of six seismic refraction profiles. Figure 1 of the Enviroscan Report, dated September 4, 2014 and located in Appendix C, provides the locations of the seismic refraction profile locations.

The data collected indicated three separate layers defined by Enviroscan to be unconsolidated sediments, weathered rock, and competent rock. It should be noted that the label of unconsolidated sediments does not mean that the upper soil sediments are in a loose, unsuitable state. In fact, the boring data generally indicates otherwise. The attached profiles include a dashed line which infers the top of the weathered rock and a solid black line that infers the top of competent rock. These should be considered only general and approximate boundaries, subject to sudden and significant variations.

The seismic refraction study measured approximate shear wave velocities which can be correlated to the different layers. Generally, the data indicated that the unconsolidated sediments which were encountered in the upper 20 feet of the subsurface had velocities ranging from 0 to 5,000 feet per second (fps). The weathered rock layer has velocities ranging from 5,000 fps to 10,000 fps, and competent rock has velocities greater than 10,000 fps. The published profiles are provided on Figures 2 and 3 of the Enviroscan report.

Comparison of the seismic refraction data and the boring data indicates a very similar subsurface profile. The study identified two areas of relatively shallow weathered rock and rock conditions. The first area is located at the north end of York Road between borings SB-2 and SB-5 (Profile 1 and 2). The second area is located at the south end of York Road between borings SB-14 and SB-15 (Profile 5A). At a minimum, weathered rock could be very near the surface, and just below the pavement section in these locations.

Two areas of the seismic study indicated rock conditions at deeper depths than the borings, including SB-9 and SB-12 (Profile 4A and 4B). It is unknown if the seismic refraction signal suffered interference by “noise” such as traffic vibration, active power lines, etc. One area near boring B-17 (Profile 5B) identifies a subsurface feature which could indicate the presence of a soil filled solution cavity within the underlying rock.

5.0 EVALUATIONS AND RECOMMENDATIONS

5.1 General

The proposed construction addressed in this report includes the excavation of the water pipe trench, preparation of the water main subgrades, and trench backfill. Pavement design is not a part of the scope of this work. The geotechnical design and construction implications for the proposed construction are in the sections below.

5.2 Trench Excavation

We have assumed that some or all of the water main will be installed utilizing the open trench method. The anticipated water line will be installed between 4.0 and 8.0 feet below the existing ground surface. Based on the conditions encountered in the soil borings and reported from the seismic refraction study, we anticipate that much of the trench can be excavated to the anticipated depths utilizing standard excavation equipment.

According to the collected data (borings and seismic refraction), shallow decomposed rock conditions were encountered beginning near boring SB-2 and potentially extending south along York Road to boring SB-5 (~800 foot long stretch). Note that boring SB-4 encountered decomposed rock within the proposed pipe zone. In addition, shallow weathered rock and rock conditions may exist between boring SB-14 and SB-15 with some zones located just below the pavement section. Although not common within the Cockeysville Marble formation, the presence of soil filled solution cavities is possible, as suggested on Seismic Refraction Profile 5B, just south of boring SB-17. Note that this may be located just outside of the water main limits.

At those locations where the boring data indicates decomposed rock, highly weathered rock, and rock at shallower elevations than the seismic refraction data (such as borings SB-9 and SB-12), we recommend that the boring depths be assumed as the top of the denser zone.

If the decomposed rock or highly weathered rock zones are located close to the proposed elevations, undercut, if necessary, could encounter these materials (ie, SB-5 and SB-14). Excavation into these weathered rock zones could require special excavation techniques including jack hammering or hoe ramming. In the event large boulders or competent bedrock is encountered, blasting could be required. Standard rippability charts, such as those provided in Appendix B of the Enviroscan report, suggest that soils with velocities less than 6,000 fps would be easily rippable with a D9R multi- or single-shank No. 9 Ripper, if working space permits this method. Velocities between 6,000 fps and 10,000 fps would be marginally rippable. Those materials with velocities greater than 10,000 fps would be considered non-rippable. However, excavation in confined space would be more difficult. In that case, special methods such as hoe-ramming or blasting could be required.



5.3 *Ground Water Control*

Based on the boring data collected, ground water was encountered in two borings (SB-12 and SB-13) at depths of 11.4 feet and 9.0 feet below the existing ground surface, respectively. It should be noted that these two borings are located near the Beaverdam Run. Based on an invert level of 8.0 feet below the existing ground surface, ground water would be located 1.0 feet below the pipe (deeper if the pipe is shallower than 8.0 feet). Although water may not be encountered at these locations, the soils at the invert depths could be wet due to the capillary fringe zone, which could extend 2-3 feet above the actual ground water level.

It should be noted; however, that no long term stabilized ground water data could be collected, as the borings were backfilled within 0.5 hours after drilling. If stabilized water levels increase, they could affect the construction operations, particularly at the stream location.

Depending on the construction methods utilized and conditions at the time of construction, water may accumulate in the trench or manhole excavations and may require sump pits and pumping, well pits or other water control measures. The contractor must be prepared to dewater if necessary.

5.4 *Bearing Pressures*

Based on the conditions encountered in the soil borings, the water main subgrades are expected to consist of medium dense Sands and soft to very stiff Silts and Clays at 16 of 17 borings. The water main will bear in the underlying decomposed rock at one boring (SB-4). The natural and fill soils encountered along the majority of the water main alignment are expected to be able to support the proposed water main.

For those structures that will bear within the underlying fills or natural residual soils (including manholes, valve structures, etc), an allowable bearing pressure of 2,000 PSF may be used in design. If these structures are to bear within the underlying decomposed rock or rock, and allowable bearing pressure of 3,000 PSF may be used for design.

In the event that soft or yielding soils are encountered along the water main, localized undercutting may be required. Unsuitable soils that require undercut should be replaced with suitable granular materials, such as a MDSHA #57 stone or CR-6 protected with a geotextile.

5.5 *Lateral Pressures for Structure Design*

The design of the subsurface structures associated with the water main, including manhole structures, valve structures, etc. must consider the effects of lateral earth pressures. Although no groundwater was encountered in the borings in the proposed water main invert zone, seepage of water downward and along the pipeline must be taken into account. For design of the subsurface structures, the following soil lateral load parameters may be used.



Table 4 – Soil Lateral Load Parameters

Internal Angle of Friction	$\Phi = 30^\circ$
Compacted soil moist unit weight	$\gamma_t = 141 \text{ pcf}$
Active Pressure Coefficient (deflection-allowed)	$K_a = 0.33$
At-rest Pressure Coefficient (restrained)	$K_o = 0.50$
Passive Pressure Coefficient	$K_p = 1.50^{(1)}$
Coefficient of Base Sliding Friction	0.43

Notes: ⁽¹⁾ Due to the large amount of movement necessary to mobilize the maximum passive resistance, we have applied a reduction factor of 0.5 to the passive parameters, to limit movements.

Backfill of the structures should be performed as described below in Section 5.6. It is important to properly backfill around all subsurface structures as required by MDSHA and Baltimore County.

5.6 Earthwork

In accordance with Baltimore County Department of Public Works Standard Specification for Construction and Materials (February 2000), the water main is to rest on undisturbed earth at the bottom of the trench. The remainder of the trench is to be backfilled with suitable compacted soils. The soils expected along the water main are generally suitable for reuse as compacted fill and will consist of SM, GC, CL, CL-ML, and ML. Although CL and ML soils are present within the trench zone, they do generally have a high percentage of sand (greater than 20 percent). In our opinion, these soils are suitable for reuse as controlled compacted fill, although they are more sensitive to moisture, the control of which may be more difficult. Any soil materials from trenching classified as OL, MH, CH, OH and PT are prohibited as backfill and must be removed from the site.

The existing soils reused onsite must be free from large clumps, clods, or rocks. They should not be frozen or composed of ash, cinders, organic matter, or other refuse. If suitable soils are not encountered (not anticipated) then imported granular borrow soils must be used. According to Baltimore County specifications, any imported borrow material used in trench backfill shall be a granular soil with a maximum of 35% passing the No. 200 sieve. Balter would also recommend that any imported borrow material have a liquid limit less than 40 and a maximum plasticity index of 10.

The suitable site soils or imported borrow soils should be placed around the pipe in maximum 6-inch layers to a depth of 2 feet over the pipe and compacted to a minimum of 92% of the maximum dry density as determined by AASHTO T-180. Backfill should then be placed in maximum 8-inch layers and compacted to a minimum of 92% of AASHTO T-180 to within the top 1.0 foot of subgrade. The top 1.0 foot should be compacted to a minimum of 95% of the maximum dry density as determined by AASHTO T-180.

Based on the laboratory testing, the site soils exhibit natural moisture contents that exceed the optimum moisture contents for the soils. This will require the contractor to manipulate the



soil moisture content as a minimum. Other soil modification methods might also prove necessary.

As per Baltimore County standard specifications, prior to placing any base course material and after the in-situ material has been properly compacted the sub-grade shall be inspected. If additional subgrade preparation is required then the following procedures may be used:

1. Undercut the trench backfill 1.0 foot.
2. Place soil reinforcing fabric, such as Mirafi 500X or equal over the undercut and replace with a compacted Aggregate Base Course.

5.7 Lateral Pressures for Sheet Piling Design

Temporary shoring will be necessary to support the side walls of the water main trench. The sheet piling system will be subject to lateral earth pressures, which will vary depending on the shoring type, water conditions, and backfill materials utilized. We recommend the following soil parameters be used for preliminary design of all temporary earth support. Hydrostatic pressures and any surcharge loads must also be included in the shoring design. *Note that the contractor must be responsible for the final design of such systems.*

Table 4 - Estimated Soil Parameters for Preliminary Shoring Design

Layer	Soil Type	Cohesion (psf)	Φ (°)	Moist Unit Weight (pcf)
Silt/Clay/Sand Soils	ML/CL/SM/SC	0	30	141.0

5.8 Corrosion Potential

For corrosion testing, SPT samples were collected from the proposed pipe depths between 4 and 8 feet below the existing ground surface. A total of 16 samples from eight borings (SB-1, SB-3, SB-4, SB-6, SB-8, SB-10, SB-14, and SB-17) were provided to Russell Corrosion for corrosion testing. They will provide an evaluation of the corrosion potential in a separate report. Balter was solely responsible for providing the corrosion samples to Russell. The corrosion results were not provided to us.

5.9 Pavement Repairs

No pavement design analyses or CBR testing have been performed. We have assumed that the existing pavement will be matched after trench backfill is complete. All materials and methods used in the pavement repairs should conform to the appropriate Maryland State Highway Administration and Baltimore County requirements.

6.0 GEOTECHNICAL OBSERVATION AND TESTING

As variations in soil conditions can be expected to some degree on any project, it is important that The Robert B. Balter Company provide full time, on-site observation and testing of all soil related aspects of construction. This is to assure compliance with design concepts and recommendations, and to verify that the subsurface conditions are consistent with those



anticipated prior to construction. The services shall include observation and testing of all undercutting, utility backfill, placement of pavement materials, and any other soil related activities.

Additionally, in accordance with good construction practice and continuity of inspection, it is recommended that the on-site construction monitoring services also encompass the structural aspects of the project, such as concrete placement and paving procedures.

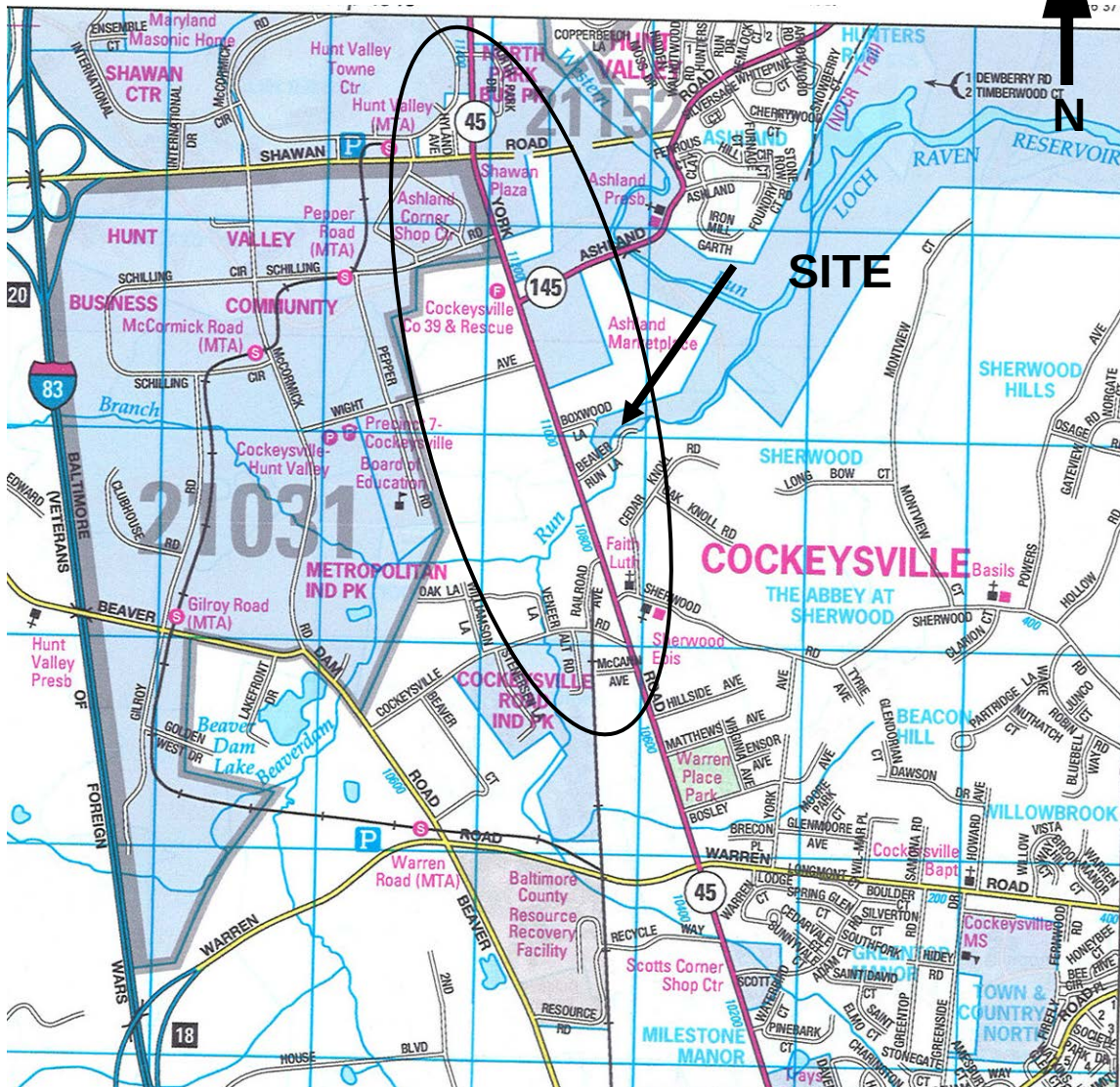
7.0 GENERAL COMMENTS

The evaluations and recommendations contained in this report were based upon the finite data obtained from the borings that are presented within this report. Although we have described typical variations that may affect the project, there is the possibility that significant unanticipated conditions may be present outside the specific boring locations. The nature and extent of differing subsurface conditions, as well as their impact on the proposed construction, will most likely not be evident until the time of construction. If significant differences are discovered in the field during construction, it may be necessary for us to re-evaluate and revise the contents of this report.

Our recommendations and conclusions are based upon the limited project parameters provided to us at the time of this report. We reserve the right to modify our conclusions and recommendations if substantial changes are incorporated into the project. Further, it is essential that we be provided the opportunity to review appropriate sections of the plans and specifications for the project before they are finalized to assure that our recommendations have been appropriately applied to the design.

This report specifically excludes exploration, sampling, testing, evaluation and recommendations relating to the presence of hazardous materials or other environmental concerns that could affect future development of the site. The Robert B. Balter Company performs these services and would be pleased to provide a proposal to address your needs.





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**24-inch Water Main
Baltimore County, Maryland**

THE ROBERT B. BALTER COMPANY®
Geotechnical and Geo-environmental Engineers

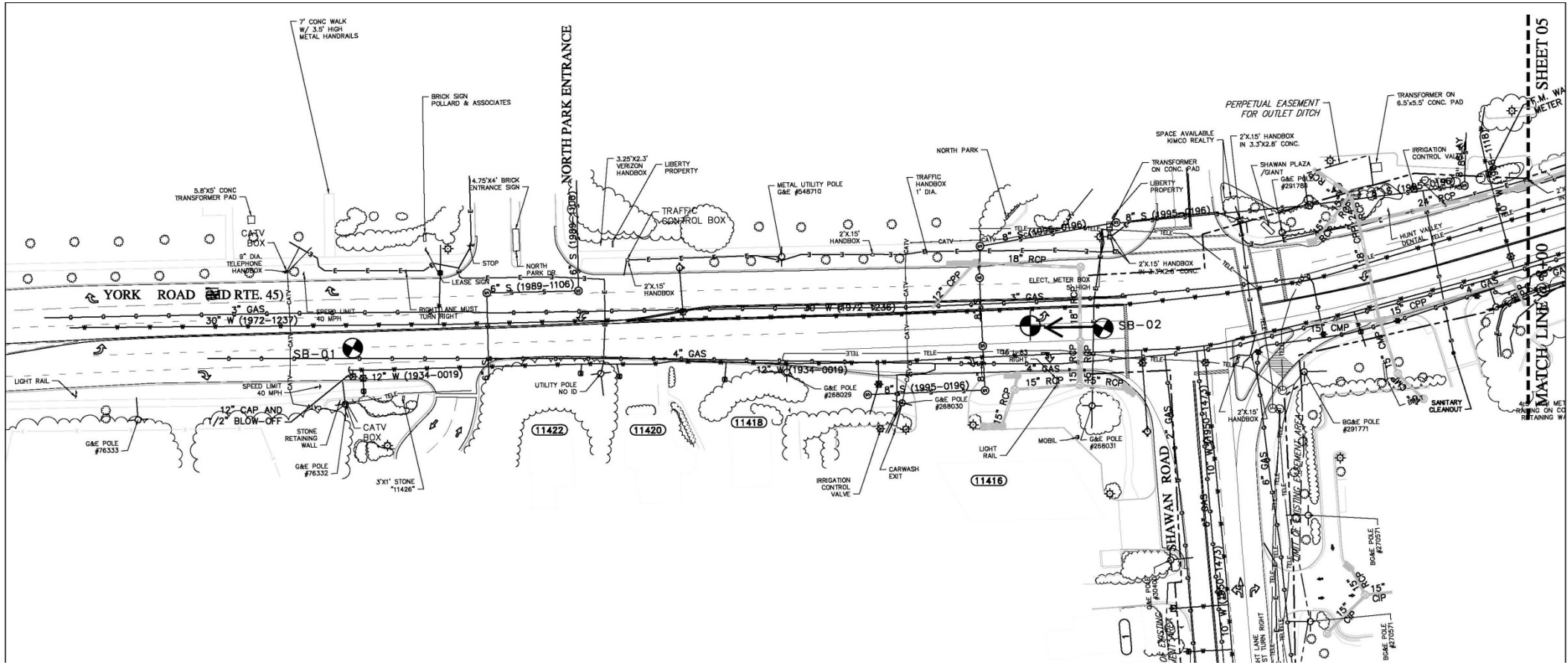
SITE VICINITY MAP

Scale: As Shown

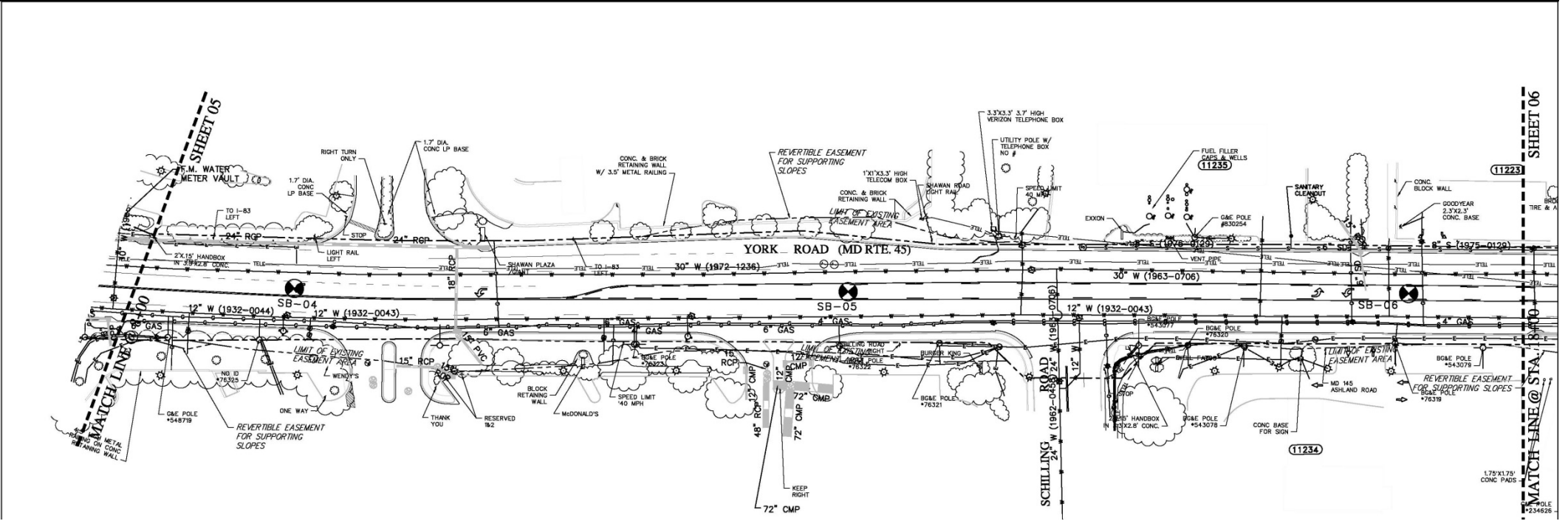
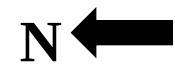
Date: SEP 2014

**Project No.
16571-0**

Plate 1



Offsets and direction shown,
distance provided on boring
logs



Plans Provided by Michael Baker Jr, Inc..

 THE ROBERT B. BALTER COMPANY® Geotechnical and Geo-environmental Engineers	Geotechnical Evaluation 24-inch Water Main – York Road Baltimore County, Maryland	Boring Location Plan	Project No. 16571-0
	112 Scale: 1" ~ 50'	Date: September 2014	PLATE 2

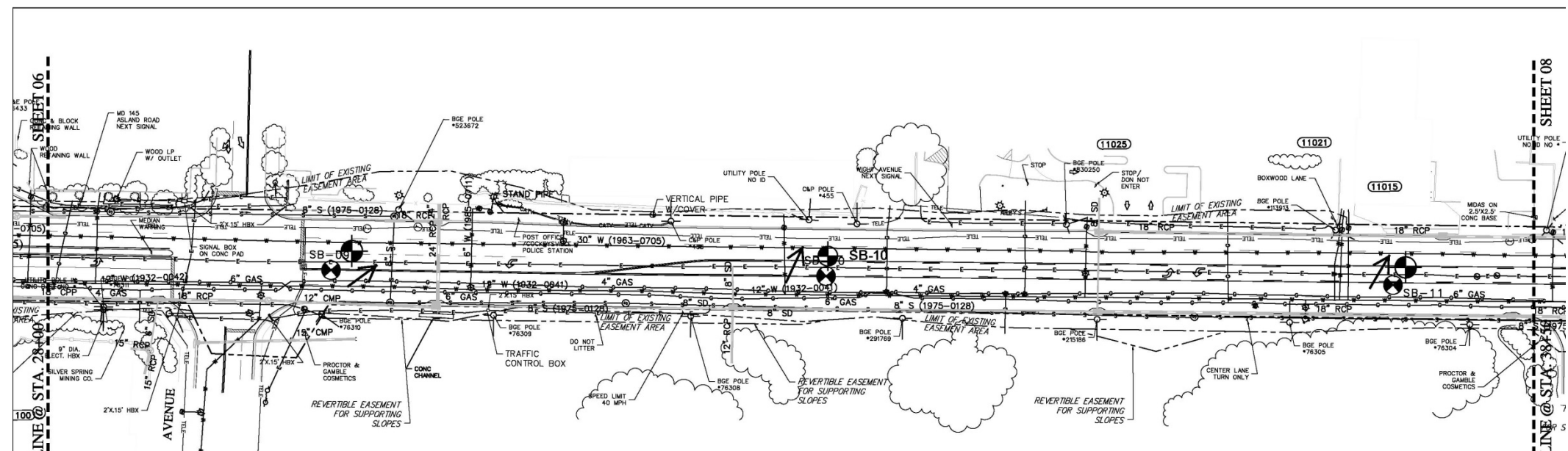
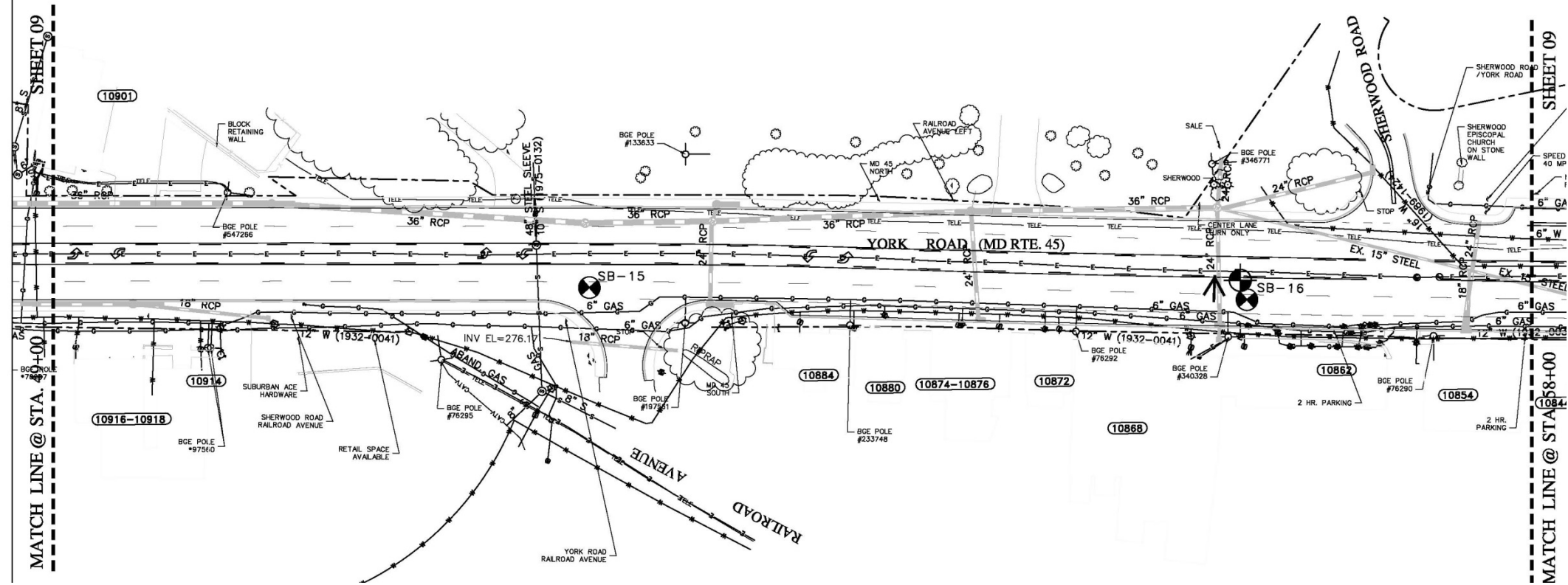
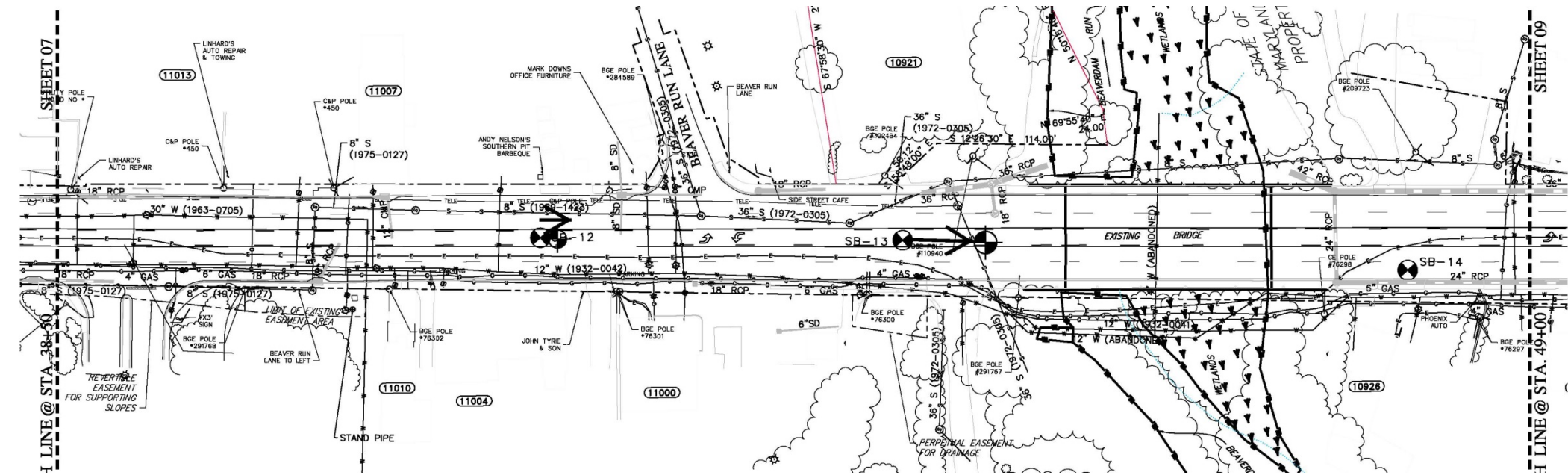
[illegible]

PLATE 3

Offsets and direction shown,
distance provided on boring logs



Plans Provided by Michael Baker Jr, Inc..



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Geotechnical and Geo-environmental Engineers

**Geotechnical Evaluation
24-inch Water Main – York Road
Baltimore County, Maryland**

Boring Location Plan

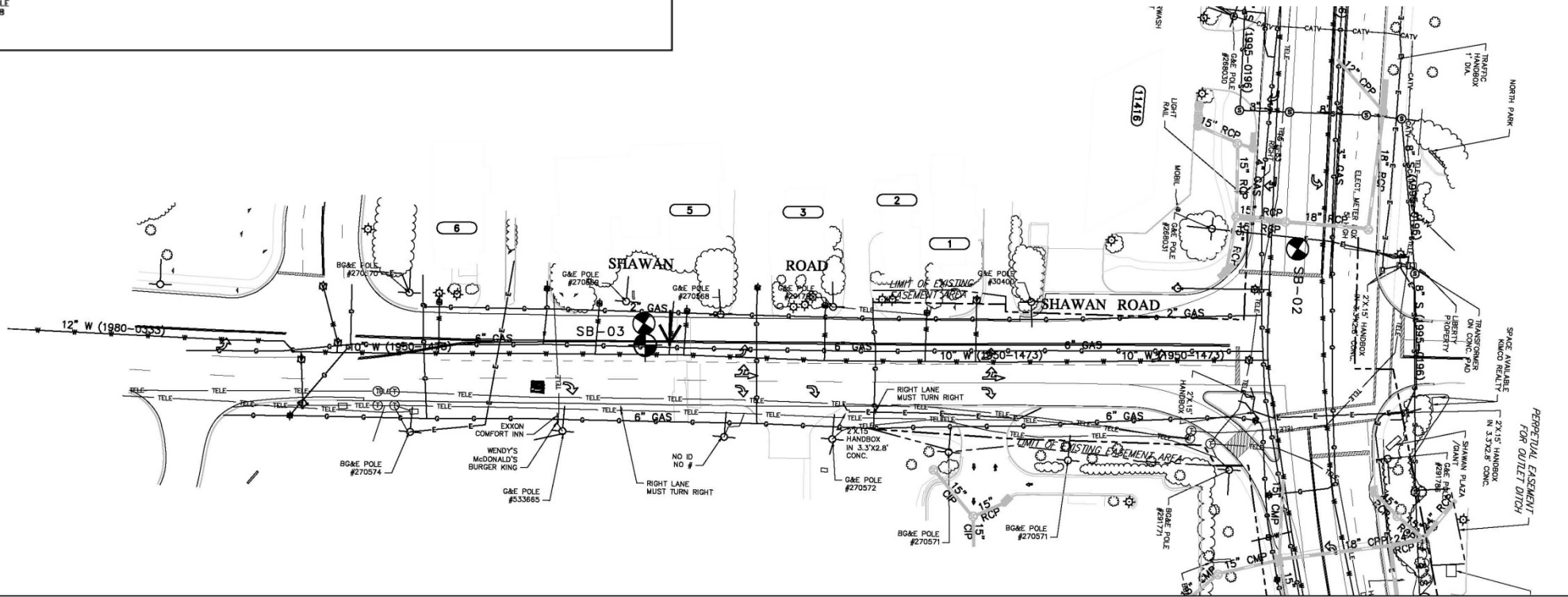
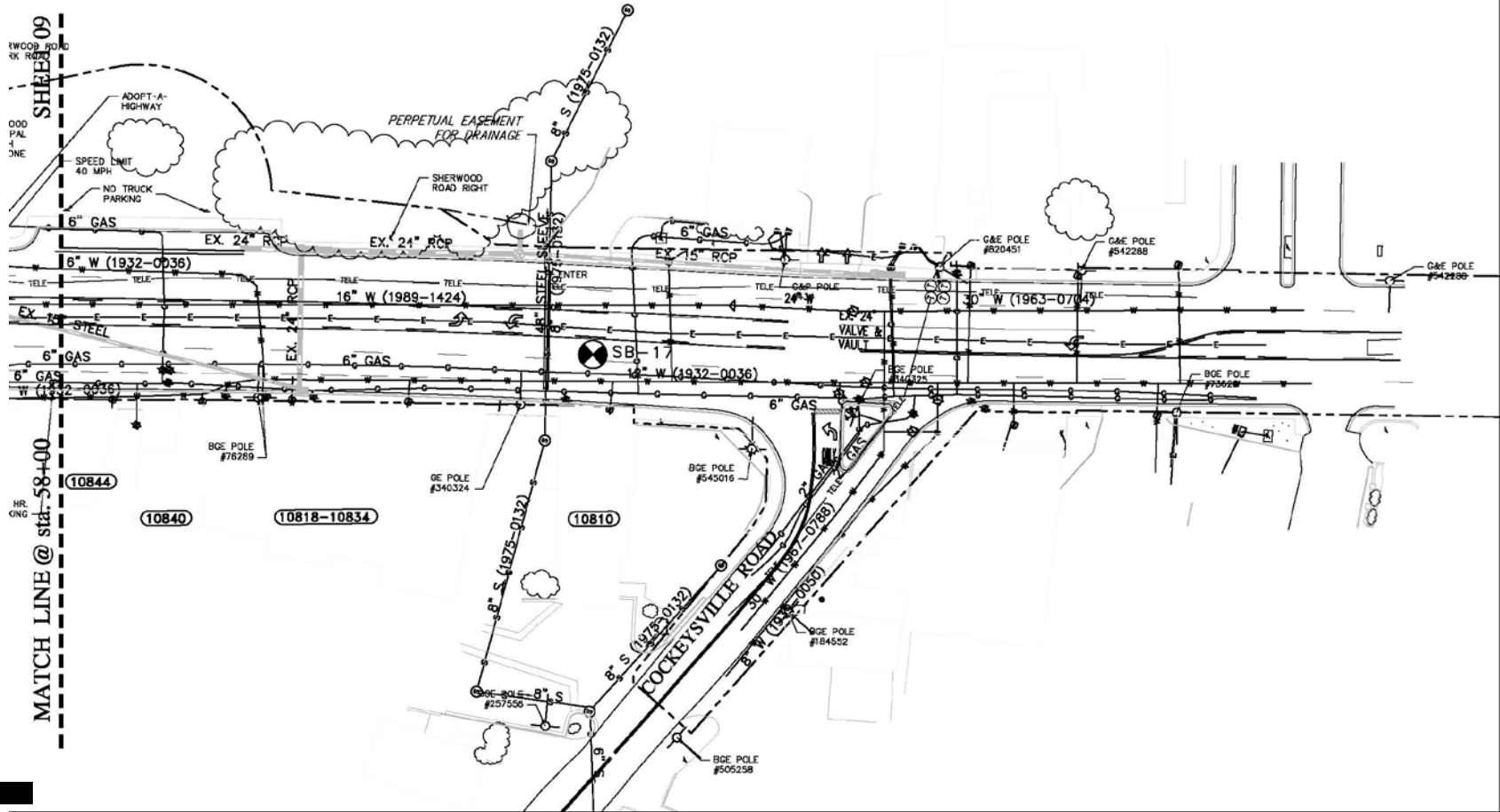
Project No. 16571-0

114 Scale: 1" ~ 50'

Date: September 2014

PLATE 4

Offsets and direction shown,
distance provided on boring logs



Plans Provided by Michael Baker Jr, Inc..



THE ROBERT B. BALTER COMPANY®
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Geotechnical Evaluation
24-inch Water Main – York Road
Baltimore County, Maryland

Boring Location Plan

115 Scale: 1" ~ 50'

Date: September 2014

Project No. 16571-0

PLATE 4

APPENDIX A – BORING LOGS



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BORING LOG

BORING SB-1

PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED 7-31-14

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/29/14

COMPLETED 7/29/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 6' East

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/29/14		0 ∇		12.9	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.4				SURFACE EL = 312.0 ft							
				311.6				Bituminous Concrete = 5 inches							
				1.4				Concrete = 12 inches							
				310.6				Moist, Stiff to Medium Stiff, Red Brown Sandy CLAY [A-6]	3.00	22					
5	S1	4-5-5-7	10			CL				25					
	S2	4-4-6-7	10												
	S3	4-4-7-9	11	6.0		CL		Moist, Stiff, Red-Brown Silty CLAY, little sand [A-6]	3.00	33					
				306.0											
	S4	3-4-4-7	8	8.0		CL		Moist, Medium Stiff, Red-Brown Sandy CLAY [A-6]		24					
10				304.0											
				12.0				Moist, Loose, Brown, Micaceous Silty SAND [A-2-6]							
				300.0		SM									
15	S5	3-2-4	6												
				15.0				Terminated at 15.0 feet							(1)
				297.0											

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.



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BORING LOG

BORING SB-2

PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/29/14

COMPLETED 7/29/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 46' North

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/29/14		0 ∇		12.4	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.4				SURFACE EL = 304.0 ft							
				303.6				Bituminous Concrete = 5 inches							
				1.5				Aggregate Base = 13 inches							
				302.5				Moist, Stiff to Medium Stiff, Brown Sandy SILT (Fill) [A-5]							
5	S1	5-5-7-6	12			ML									
	S2	3-4-4-4	8												
	S3	5-5-6-5	11	6.0		ML		Moist, Stiff, Brown Sandy SILT, slightly micaceous [A-5]							
				298.0											
10	S4	4-6-6-8	12	8.0				Moist, Medium Dense, Gray-Brown Silty SAND [A-2-6]							
				296.0											
						SM									
15	S5	5-7-7	14												
				15.0				Terminated at 15.0 feet							(1)
				289.0											

REMARKS: (1) Boring backfilled at completion for safety purposes. Pavement patched.

NEW GEOTECH BH LOG 16571-0 YORK ROAD 24-INCH WATER MAIN.GPJ MTA REDLINE.GDT 8/25/14



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BORING LOG

BORING SB-3

PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED 7-31-14

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/30/14

COMPLETED 7/30/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 9' South

BULK SAMPLES 2-7'

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/30/14		0 ▽		13.3	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.6				SURFACE EL = 323.0 ft							
				322.4				Bituminous Concrete = 7 inches							
				1.5				Aggregate Base = 11 inches							
				321.5											
5	S1	5-5-6-8	11	4.0		CL		Moist, Stiff, Red-Brown Sandy CLAY, little rock fragments (Fill) [A-7]		22	68	20	44	24	
				319.0						8					
	S2	4-4-6-8	10	6.0		SM		Moist, Loose, Reddish Brown Silty SAND, little rock fragments [A-2-6]		18					
				317.0											
	S3	10-10-9-9	19	8.0		ML		Moist, Very Stiff, Brown Sandy, Clayey SILT [A-6]		33					
				315.0											
10	S4	5-5-6-8	11	12.0		ML		Moist, Stiff, Reddish Brown SILT with Sand, slightly micaceous [A-5]	2.00	30					
				311.0											
15	S5	2-2-2	4	15.0		CL		Moist, Soft, Red-Brown Sandy CLAY [A-6]							
				308.0											
								Terminated at 15.0 feet							(1)

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.

NEW GEOTECH BH LOG 16571-0 YORK ROAD 24-INCH WATER MAIN.GPJ MTA REDLINE.GDT 8/25/14



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BORING LOG

BORING SB-4

PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc. **PROJECT NAME** York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland **PROJECT NUMBER** 16571-0: MD **DATE TESTED**

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/30/14 **COMPLETED** 7/30/14

DRILLER Mark Fletcher **HELPER** Andre Wills

REVIEWED BY Kristopher Crist **SITE DELAYS**

LOCATION 5' West **BULK SAMPLES** 2-7'

WATER LEVELS

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/30/14		0 ∇		12.6	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
								SURFACE EL = 311.0 ft				PL	LL	PI	
				0.6				Bituminous Concrete = 7 inches							
				310.4				Aggregate Base = 13 inches							
				1.7											
				309.3											
5	S1	8-11-11-18	22	4.0		SM		Moist, Medium Dense, Tan Silty SAND, little rock fragments [A-2-6]							
	S2	9-23-38-50/5"	50/5"	307.0		SM		DECOMPOSED ROCK sampled as: Moist, Very Dense, Tan Silty SAND, little rock fragments							
	S3	30-40-20-20	60	6.0											
				305.0											
10	S4	23-17-30-37	47					DECOMPOSED ROCK sampled as: Moist, Very Dense, White Silty SAND							
						SM									
15	S5	12-32-50	82	15.0											
				296.0				Terminated at 15.0 feet							(1)

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.

NEW GEOTECH BH LOG 16571-0 YORK ROAD 24-INCH WATER MAIN.GPJ MTA REDLINE.GDT 8/25/14



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BORING LOG

BORING SB-5

PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED 7-31-14

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/29/14

COMPLETED 7/29/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION As Staked

BULK SAMPLES 2-7'

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/29/14		0		11.4	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.4				SURFACE EL = 322.0 ft							
				321.6				Bituminous Concrete = 5 inches							
				1.3				Aggregate Base = 11 inches							
				320.7				Moist, Loose to Medium Dense, Red-Brown Clayey ROCK FRAGMENTS with Sand (Fill) [A-2-6]							
5	S1	4-3-3-3	6			GC				6	27	14	25	11	
	S2	3-5-7-5	12							13					
	S3	3-2-30-30	32	6.0		SM		Moist, Dense, Tan Silty SAND [A-2-6]		2					
				316.0											
				8.0											
10	S4	44-35-36-50/5"	50/5"	314.0		SM		DECOMPOSED ROCK sampled as: Moist, Very Dense, Tan Silty SAND		2					
				12.0				Auger Refusal at 12'							
				310.0				Terminated at 12.0 feet							

(1)

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.



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BORING LOG

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PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/23/14

COMPLETED 7/23/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Matt Leone

SITE DELAYS

LOCATION 10' North

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/23/14		0 ∇		12.3	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.6				SURFACE EL = 321.0 ft							
				320.4				Bituminous Concrete = 7.5 inches							
				1.3				Aggregate Base = 8.5 inches							
5	S1	19-7-5-4	12	319.7		ML		Moist, Medium Stiff, Light Red-Brown Sandy SILT, little rock fragments, trace white sand [A-5]							
	S2	3-3-4-6	7												
	S3	3-5-7-10	12	6.0											
10	S4	5-5-8-8	13	315.0		ML		Moist, Stiff, Light Brown SILT, little sand, trace gray clay from 8-10ft [A-5]							
				12.0											
				309.0		SM		Moist, Medium Dense, Red-Brown Silty SAND, some rock fragments [A-2-6]							
15	S5	7-5-6	11	15.0											
				306.0				Terminated at 15.0 feet							(1)

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched



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BORING LOG

BORING SB-7

PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/23/14

COMPLETED 7/23/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Matt Leone

SITE DELAYS

LOCATION 46' South

BULK SAMPLES 2-7'

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/23/14		0 ∇		12.6	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.4				SURFACE EL = 318.0 ft							
				317.6				Bituminous Concrete = 4.5 inches							
				1.4				Aggregate Base = 12 inches							
				316.6				Moist, Medium Stiff, Brown Sandy CLAY [A-6]		11	54	16	28	12	
5	S1	3-3-3-3	6	4.0		CL				19					
	S2	6-7-7-6	14	314.0				Moist, Medium Dense, Brown Silty SAND, some gravel [A-2-6]		14					
	S3	4-4-4-5	8	8.0		SM				16					
10	S4	3-2-3-2	5	310.0				Moist, Loose, Light Brown Silty fine SAND [A-2-6]		19					
						SM									
15	S5	2-3-3	6	15.0											
				303.0				Terminated at 15.0 feet							(1)

REMARKS: (1) Boring backfilled at completion for safety purposes. Pavement patched.

NEW GEOTECH BH LOG 16571-0 YORK ROAD 24-INCH WATER MAIN.GPJ MTA REDLINE.GDT 8/25/14



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BORING LOG

BORING SB-8

PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED 7-31-14

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** No

DATE STARTED 7/28/14

COMPLETED 7/28/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 98' North, 7' East

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/28/14		0 ∇		13.2	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.7				SURFACE EL = 315.0 ft							
				314.3				Bituminous Concrete = 8 inches							
				1.2				Aggregate Base = 6 inches							
5	S1	5-5-7-8	12	313.8		SM		Moist, Medium Dense to Loose, Brown Silty SAND (Possible Fill) [A-2-6]		15					
	S2	5-4-5-8	9												
	S3	10-10-10-8	20	6.0		SM		Moist, Medium Dense, Brown Silty SAND (Possible Fill) [A-2-6]							
10	S4	3-4-4-6	8	8.0				Moist, Loose, Brown Silty SAND [A-2-6]							
				307.0		SM									
15	S5	3-3-5	8												
				15.0				Terminated at 15.0 feet							(1)
				300.0											

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.

NEW GEOTECH BH LOG 16571-0 YORK ROAD 24-INCH WATER MAIN.GPJ MTA REDLINE.GDT 8/25/14



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BORING LOG

BORING SB-9

PAGE 1 OF 1

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** No

DATE STARTED 7/28/14

COMPLETED 7/28/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 19' NE

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/28/14		0 ∇		13.0	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.3				SURFACE EL = 287.0 ft							
				286.7				Bituminous Concrete = 4 inches							
				1.1				Concrete = 9 inches							
				285.9				Aggregate Base = 4 inches							
				1.4				Moist, Medium Stiff, Red-Brown Sandy CLAY (Fill) [A-6]	3.10						
5				285.6				Moist, Medium Stiff, Brown Sandy SILT (Fill) [A-5]	3.50						
				4.0											
				283.0											
				6.0				Moist, Medium Dense, Orange Brown Silty SAND [A-2-6]							
				281.0											
10															
				13.5				DECOMPOSED ROCK sampled as: Moist, Very Dense, Tan Silty SAND							
15				273.5											
				13.9											
				273.1				Terminated at 15.0 feet							

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** No

DATE STARTED 7/28/14

COMPLETED 7/28/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 15' East

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/28/14		0 ∇		13.0	Dry	

[illegible]

REMARKS: (1) Boring backfilled at completion for safety purposes. Pavement patched.



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BORING LOG

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CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** No

DATE STARTED 7/28/14

COMPLETED 7/28/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 17' East

BULK SAMPLES 2-7'

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/28/14		0		12.8	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS	REMARKS
								SURFACE EL = 268.0 ft					
				0.3				Bituminous Concrete = 4 inches					
				267.7				Concrete = 8 inches					
				1.0				Aggregate Base = 2 inches					
				267.0				Moist, Stiff to Medium Stiff, Red-Brown Sandy CLAY with Rock Fragments (Fill) [A-6]					
5	S1	8-8-5-4	13	1.2		CL							
				266.8									
				6.0									
				262.0				Moist, Soft, Red-Brown Sandy CLAY (Fill) [A-6]					
10	S3	3-2-1-3	3			CL							
				12.0									
				256.0				Moist, Medium Dense, Brown Silty SAND [A-2-6]					
15	S5	12-19-10	29			SM							
				15.0									
				253.0				Terminated at 15.0 feet					

REMARKS: (1) Boring backfilled at completion for safety purposes. Pavement patched.

NEW GEOTECH BH LOG 16571-0 YORK ROAD 24-INCH WATER MAIN.GPJ MTA REDLINE.GDT 8/25/14



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BORING LOG

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CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/23/14

COMPLETED 7/23/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 12' South

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/23/14		0 ∇		7.8	11.4	236.6

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.8				Bituminous Concrete = 10 inches							
				247.2				Aggregate Base = 11 inches							
	S1	50/5"	50/5"	1.8											
				246.3		SM		Moist, Very Dense, Brown Silty SAND, little broken rock fragments (Fill) [A-2-6]							
5	S2	6-3-3-2	6	4.0											
				244.0		CL		Moist, Medium Stiff, Brown Sandy CLAY with Rock Fragments (Fill) [A-6]							
	S3	25-11-7-5	18					Large Wood Fragments at 6'							
				8.0											
10	S4	1-1-1-1	2	240.0						44	54	23	34	11	
						CL		Wet, Soft, Dark Gray, Micaceous Sandy CLAY, trace organics, slight organic odor [A-6]							
				12.0											
				236.0		SP-SM		DECOMPOSED ROCK sampled as: Moist, Very Dense, Tan Poorly Graded SAND with Silt							
15	S5	9-29-50	79	15.0											
				233.0				Terminated at 15.0 feet							(1)

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.



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BORING SB-13

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CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/23/14

COMPLETED 7/23/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 30' South

BULK SAMPLES 2-7'

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/23/14		0 ∇		10.8	9.0	242.0

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.6				SURFACE EL = 251.0 ft							
				250.4				Bituminous Concrete = 7 inches							
				1.8				Aggregate Base = 14 inches							
				249.3				Moist, Dense, Gray Silty SAND with Rock Fragments (Fill - Possible GAB) [A-2]		6					
5	S1	30-22-12-7	34	248.0		SM		Moist, Loose, Brown Silty SAND (Fill) [A-2-6]							
	S2	2-3-2-2	5	247.0		CL		Moist, Medium Stiff to Soft, Brown Sandy CLAY, with rock fragments (Fill) [A-6]	3.00	16					
	S3	2-1-2-2	3						1.60	22	62	19	34	15	
10	S4	2-3-9-10	12	243.0		SM	∇	Wet, Medium Dense, Gray, Micaceous Silty SAND, slight organic odor [A-2-6]		20					
				12.0											
				239.0		SW-SM		Wet, Medium Dense, Brown Well-Graded SAND with Silt and Rock Fragments [A-3]							
15	S5	4-7-9	16	15.0											
				236.0				Terminated at 15.0 feet							(1)

REMARKS: (1) Boring backfilled at completion for safety purposes. Pavement patched.



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CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/25/14

COMPLETED 7/25/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION As Staked

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/25/14		0 ∇		7.1	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.6				SURFACE EL = 263.0 ft							
				262.4				Bituminous Concrete = 7 inches							
				1.6				Aggregate Base = 12 inches							
				261.4				Moist, Medium Dense, Brown Silty SAND, little rock fragments (Possible Fill) [A-2-6]							
5	S1	7-8-21-20	29			SM									
	S2	6-8-5-4	13												
	S3	4-3-4-12	7			SM		Moist, Loose, Orangish Brown Silty SAND [A-2-6]							
	S4	50/3"	50/3"					HIGHLY WEATHERED ROCK sampled as: Moist, Very Dense, Gray Silty SAND with Rock Fragments							
				255.0				Auger Refusal at 9'							
				9.0				Terminated at 9.0 feet							
				254.0											(1)

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.



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CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/25/14

COMPLETED 7/25/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 1' West

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/25/14		0 ∇		6.8	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.6				SURFACE EL = 280.0 ft							
				279.4				Bituminous Concrete = 7 inches							
				1.7				Aggregate Base = 13 inches							
				278.3		SM		Moist, Tan, Medium Dense, Silty SAND with Rock Fragments (Fill) [A-2-6]							
5		S1	7-15-13-7	28											
		S2	4-3-2-1	5				Moist, Loose, Brown Silty SAND with Rock Fragments (Fill) [A-2-6]							
		S3	4-8-7-12	15				Moist, Medium Dense, Dark Gray Silty SAND with Rock Fragments (Fill) [A-2-6]							
10		S4	4-3-7-12	10											
				12.0											
				268.0				Moist, Very Loose, Brown Silty SAND, little rock fragments, slightly micaceous [A-2-6]							
15		S5	1-1-1	2											
Terminated at 15.0 feet															
				15.0											(1)
				265.0											

REMARKS: (1)Borign backfilled at completion for safety purposes. Pavement patched.

NEW GEOTECH BH LOG 16571-0 YORK ROAD 24-INCH WATER MAIN.GPJ MTA REDLINE.GDT 8/25/14



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CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** Yes

DATE STARTED 7/25/14

COMPLETED 7/25/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 7' East

BULK SAMPLES

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/25/14		0		13.3	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.6				Bituminous Concrete = 7 inches							
				285.4				Aggregate Base = 11 inches							
				1.5											
				284.5											
5															

REMARKS: (1)Boring backfilled at completion for safety purposes. Pavement patched.



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BORING LOG

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CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED

RIG ATV R-Tired CME 750 **METHOD** Hollow Stem Auger **SAMPLER:** 2-in OD SS **HAMMER:** 140# **FALL:** 30" **AUTO?** No

DATE STARTED 7/28/14

COMPLETED 7/28/14

WATER LEVELS

DRILLER Mark Fletcher

HELPER Andre Wills

REVIEWED BY Kristopher Crist

SITE DELAYS

LOCATION 3' East

BULK SAMPLES 2-7'

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
7/28/14		0 ∇		11.7	Dry	

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS			REMARKS
												PL	LL	PI	
				0.6				SURFACE EL = 300.0 ft							
				299.4				Bituminous Concrete = 7 inches							
				1.6				Aggregate Base = 12 inches							
				298.4				Moist, Stiff, Brown SILT with Sand (Possible Fill) [A-5]							
5	S1	7-4-6-8	10			ML			3.00	12	47	18	30	12	
	S2	5-8-7-7	15	5.0					3.20	21					
	S3	6-7-9-10	16	295.0		CL		Moist, Very Stiff, Red Brown Sandy CLAY [A-6]							
	S4	5-6-5-5	11	8.0					2.60	30					
10				292.0		CL-ML		Moist, Stiff, Reddish Brown Clayey SILT [A-6]		20					
				12.0											
				288.0											
15	S5	4-3-6-8	9			SM		Moist, Loose, Orangish Tan Silty SAND, micaceous [A-2-6]							
				15.5											
				284.5				Terminated at 15.5 feet							

(1)

REMARKS: (1) Boring backfilled at completion for safety purposes. Pavement patched.

APPENDIX B – LABORATORY TEST RESULTS



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GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

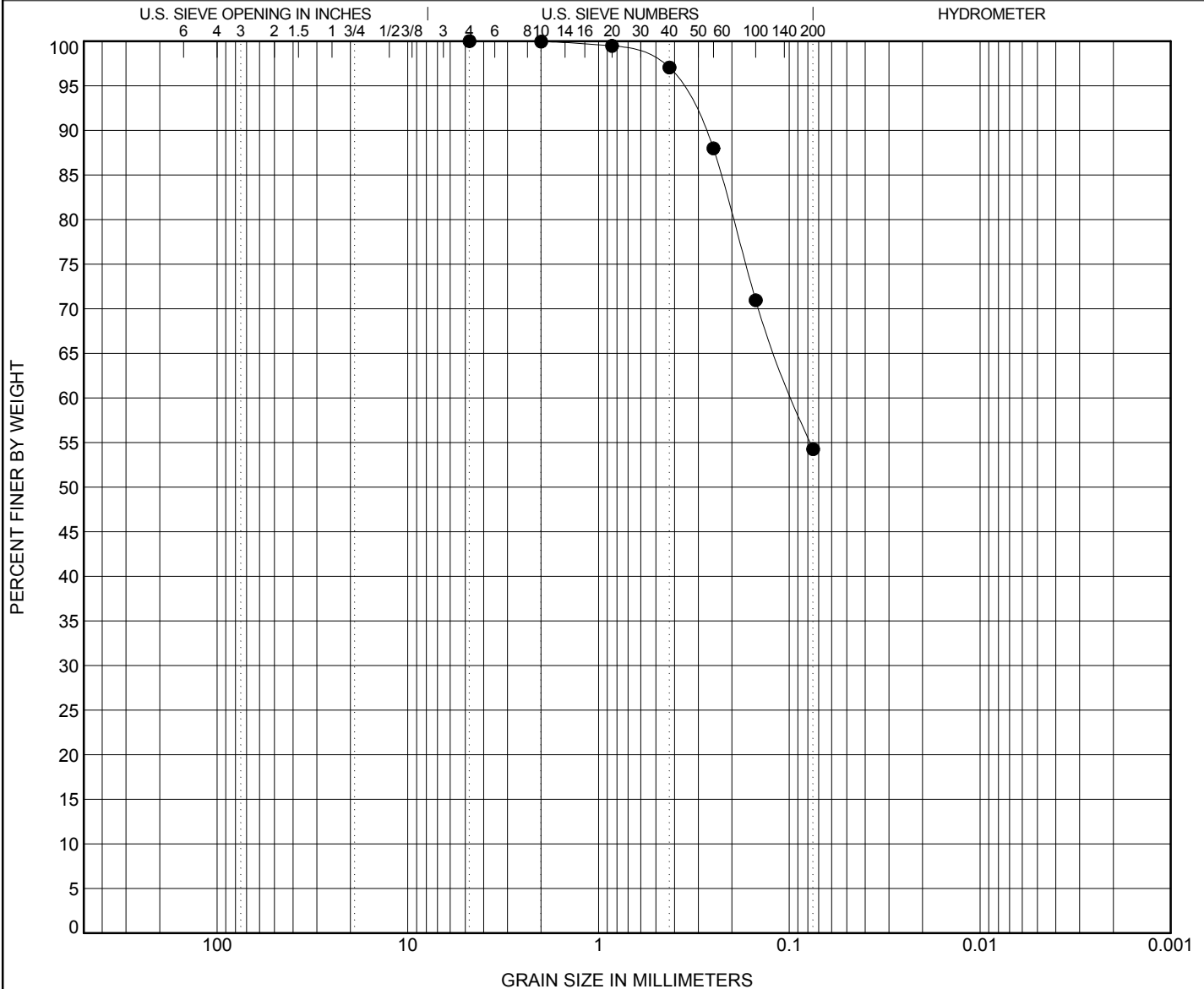
CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED





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GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

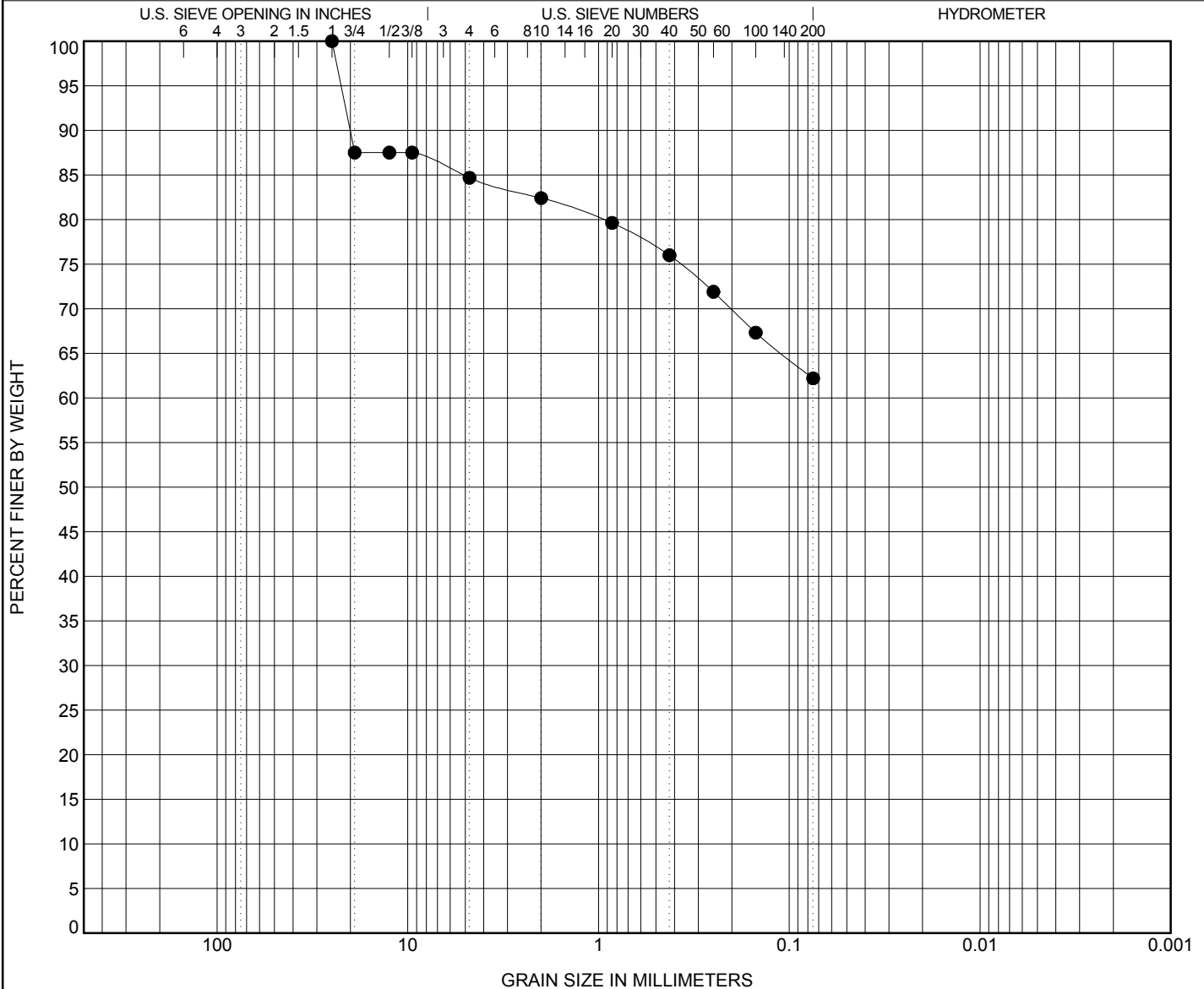
CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED





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GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

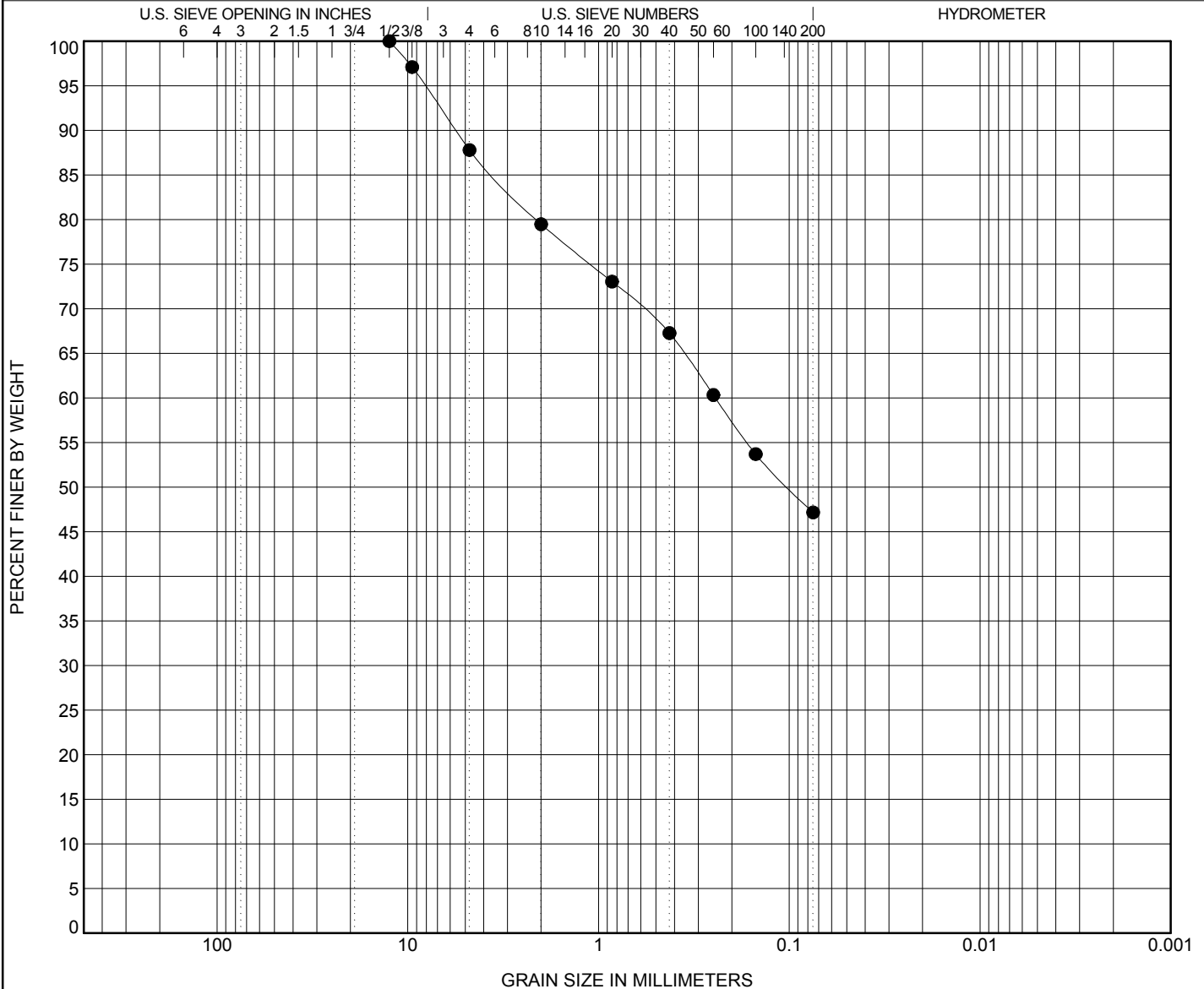
CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● SB-17, Bulk		Strong Brown CLAYEY SAND(SC) {A-6, GI=2}					30	18	12		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● SB-17, Bulk		12.5	0.244			12.2	40.6	47.2			



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GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

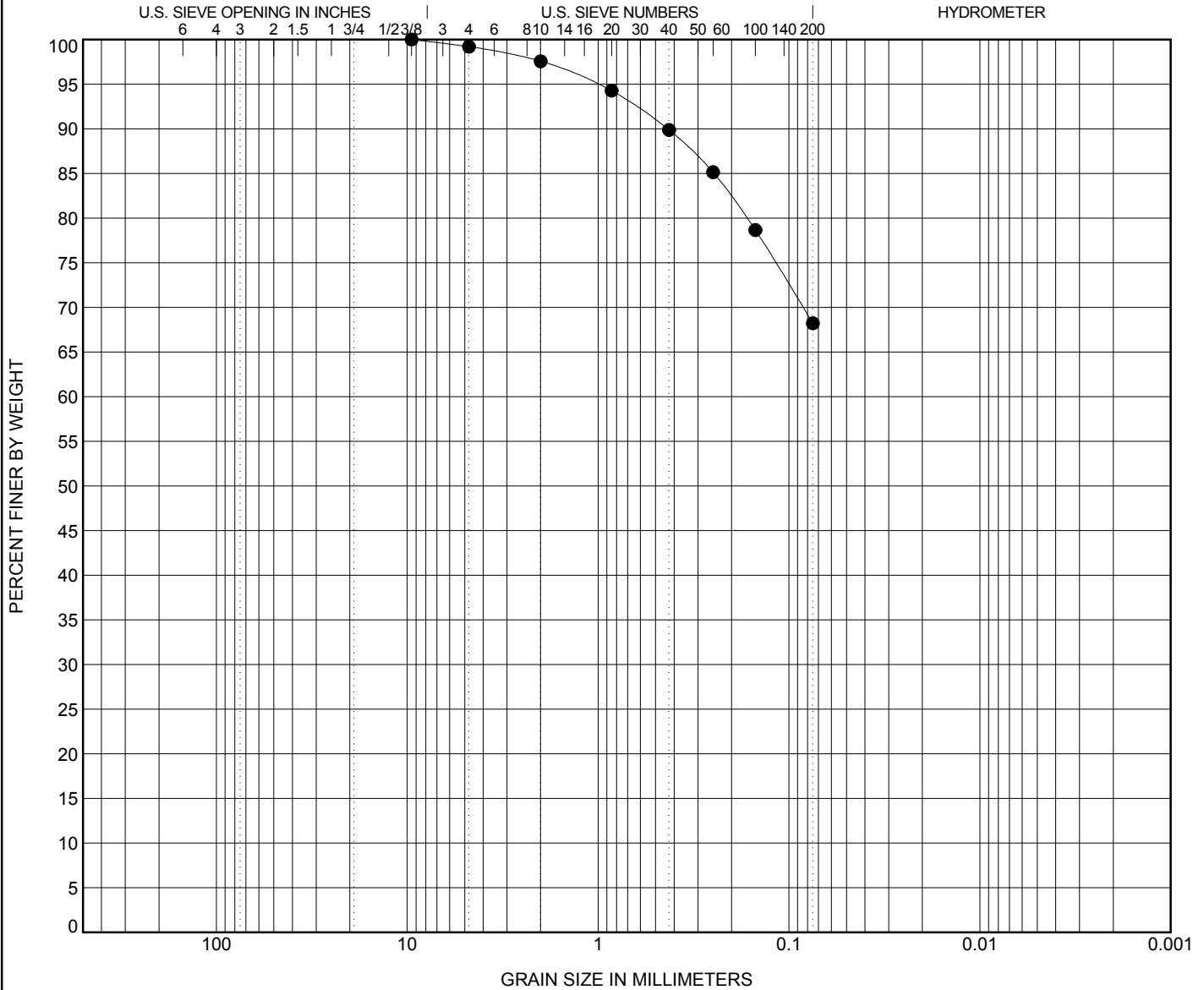
CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED 7-31-14





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GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

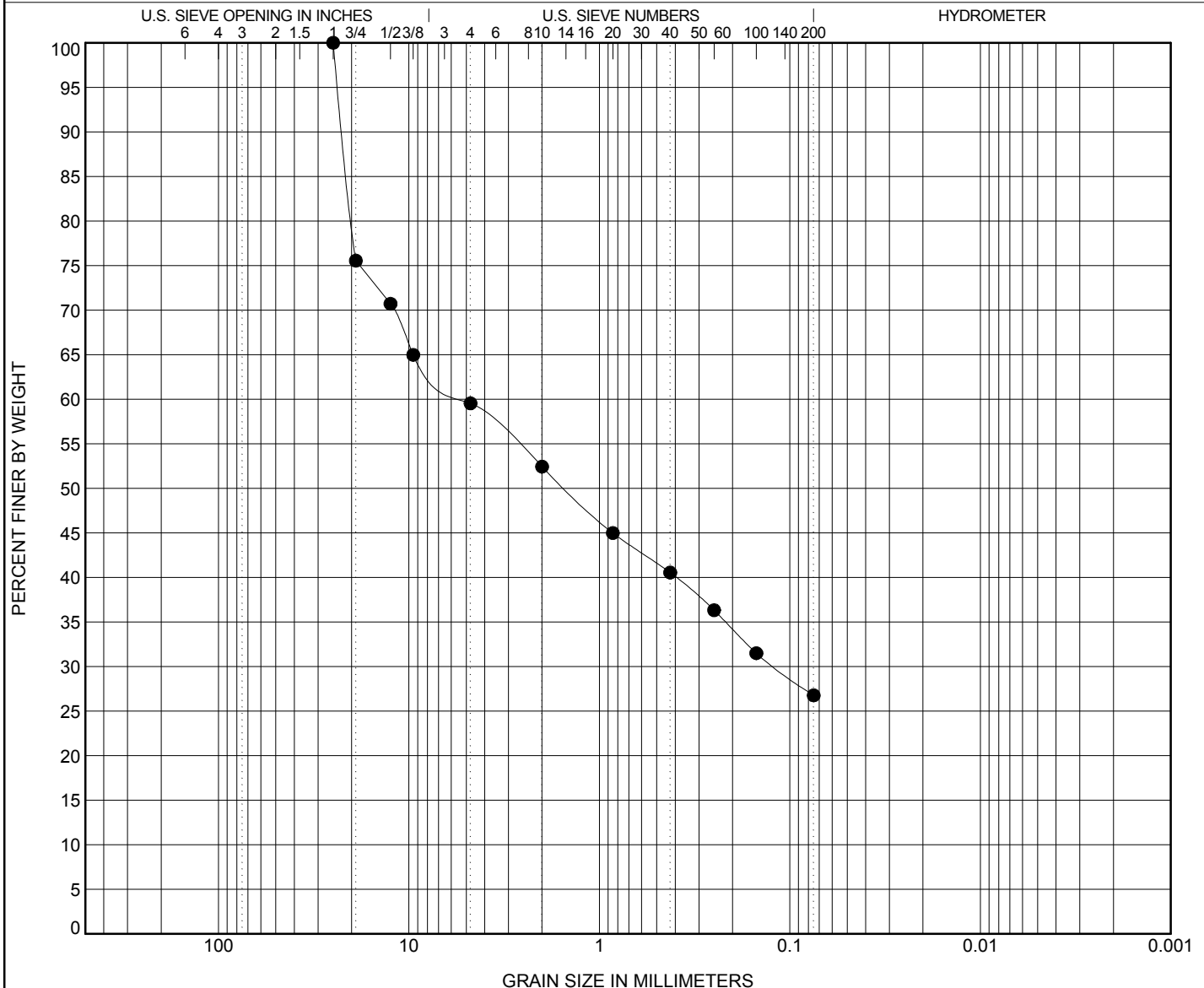
CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED 7-31-14



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● SB-5, S-1		Reddish Brown CLAYEY GRAVEL with SAND(GC) {A-2-6, GI=0}					25	14	11		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● SB-5, S-1		25	5.039	0.121		40.5	32.8	26.8			



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GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

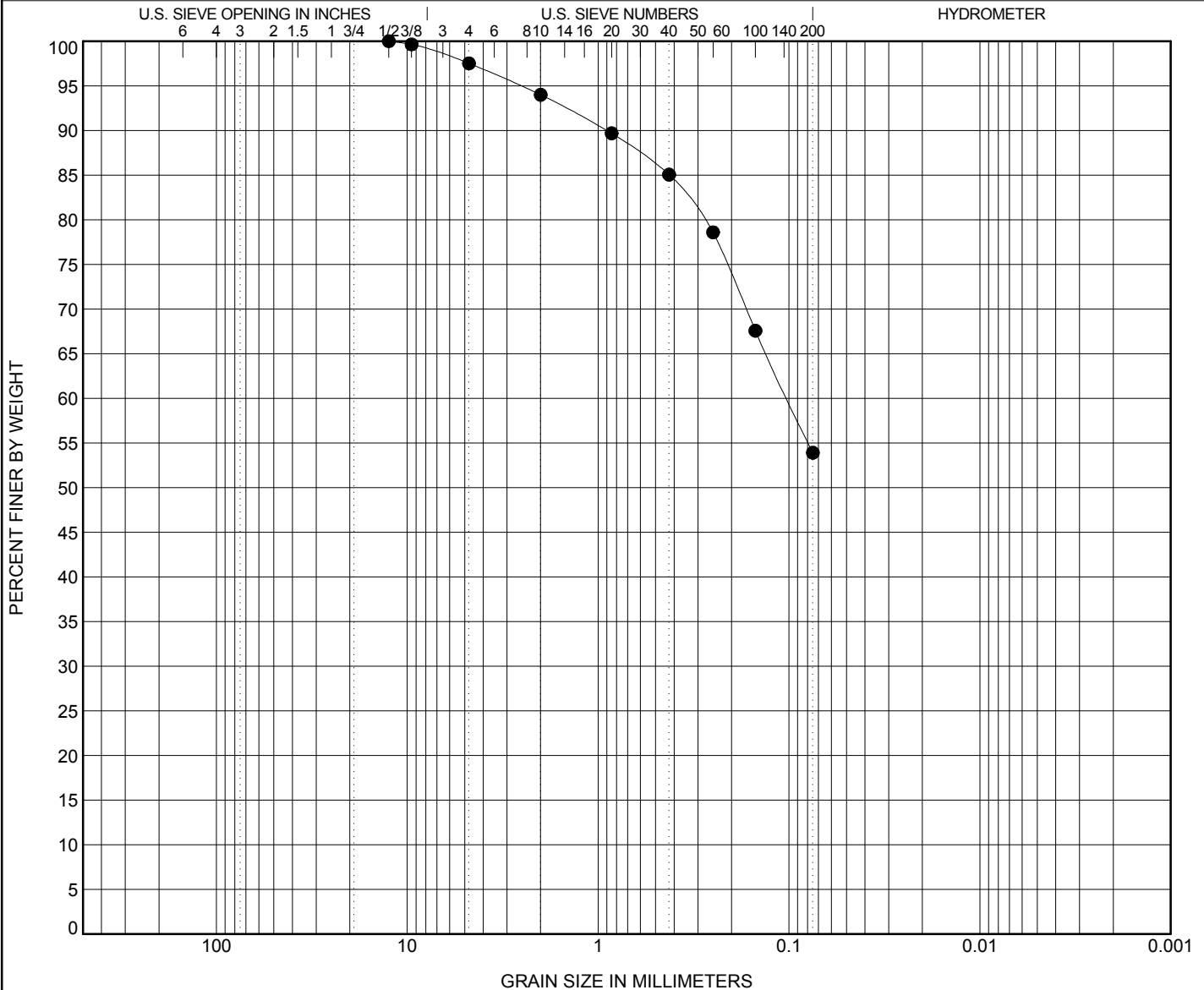
CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● SB-7, Bulk		Brown SANDY LEAN CLAY(CL) {A-6, GI=3}					28	16	12		
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● SB-7, Bulk		12.5	0.102			2.5	43.6	53.9			

GRAIN SIZE ASTM AND AASHTO 16571-0 YORK ROAD 24-INCH WATER MAIN.GPJ MTA REDLINE.GDT 9/8/14



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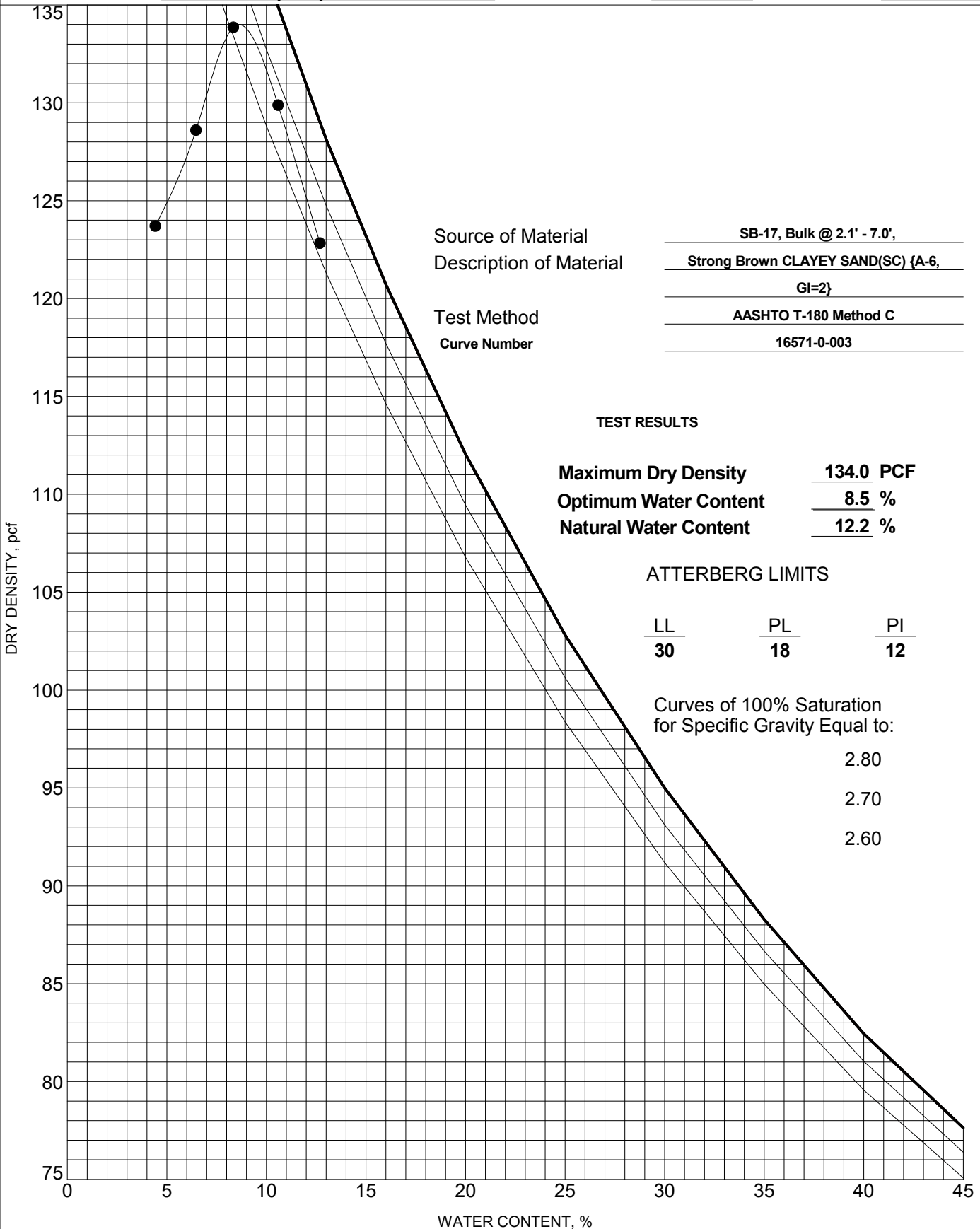
MOISTURE-DENSITY RELATIONSHIP

CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD DATE TESTED





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MOISTURE-DENSITY RELATIONSHIP

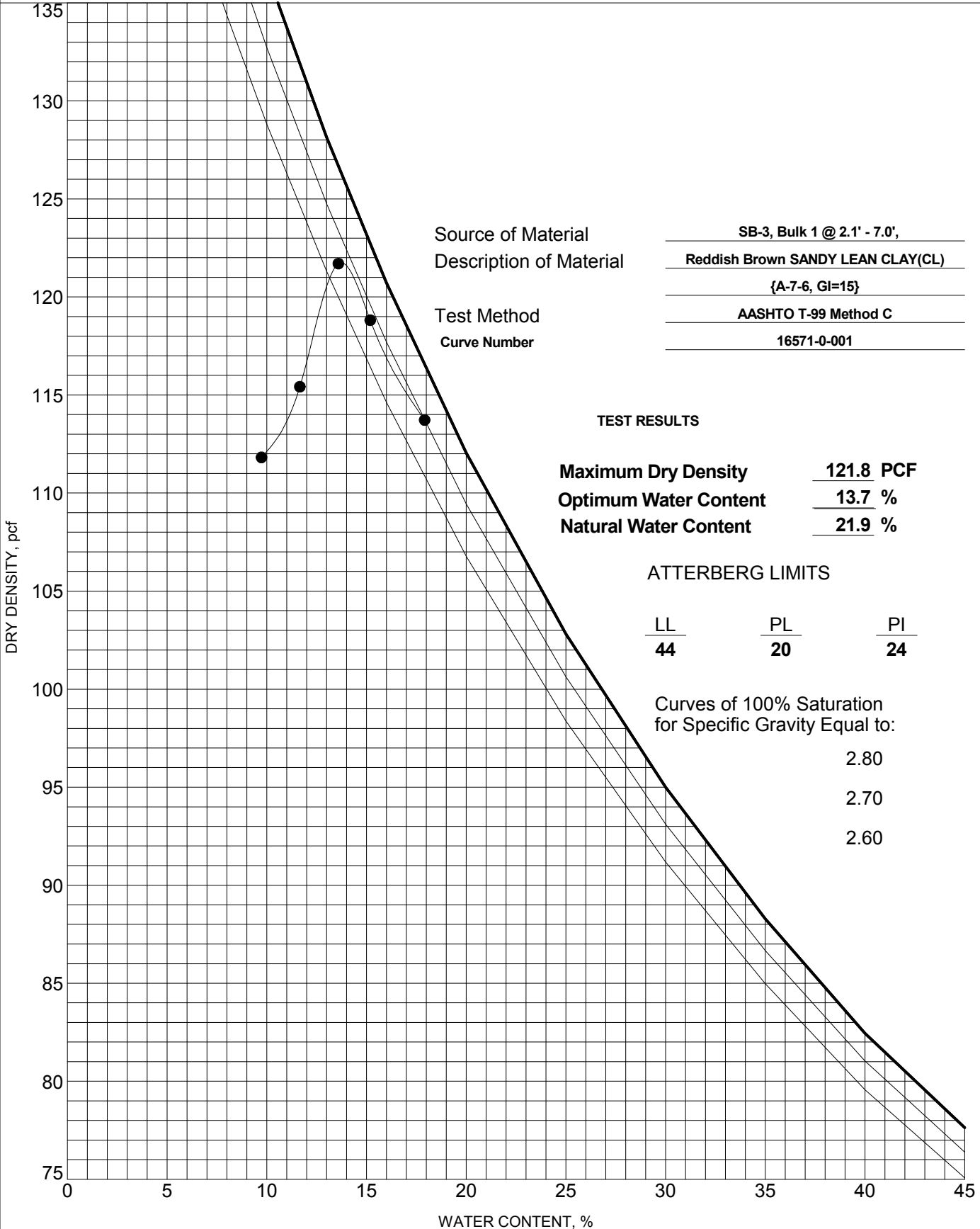
CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

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Telephone No. (410) 363-1555
www.balterco.com

MOISTURE-DENSITY RELATIONSHIP

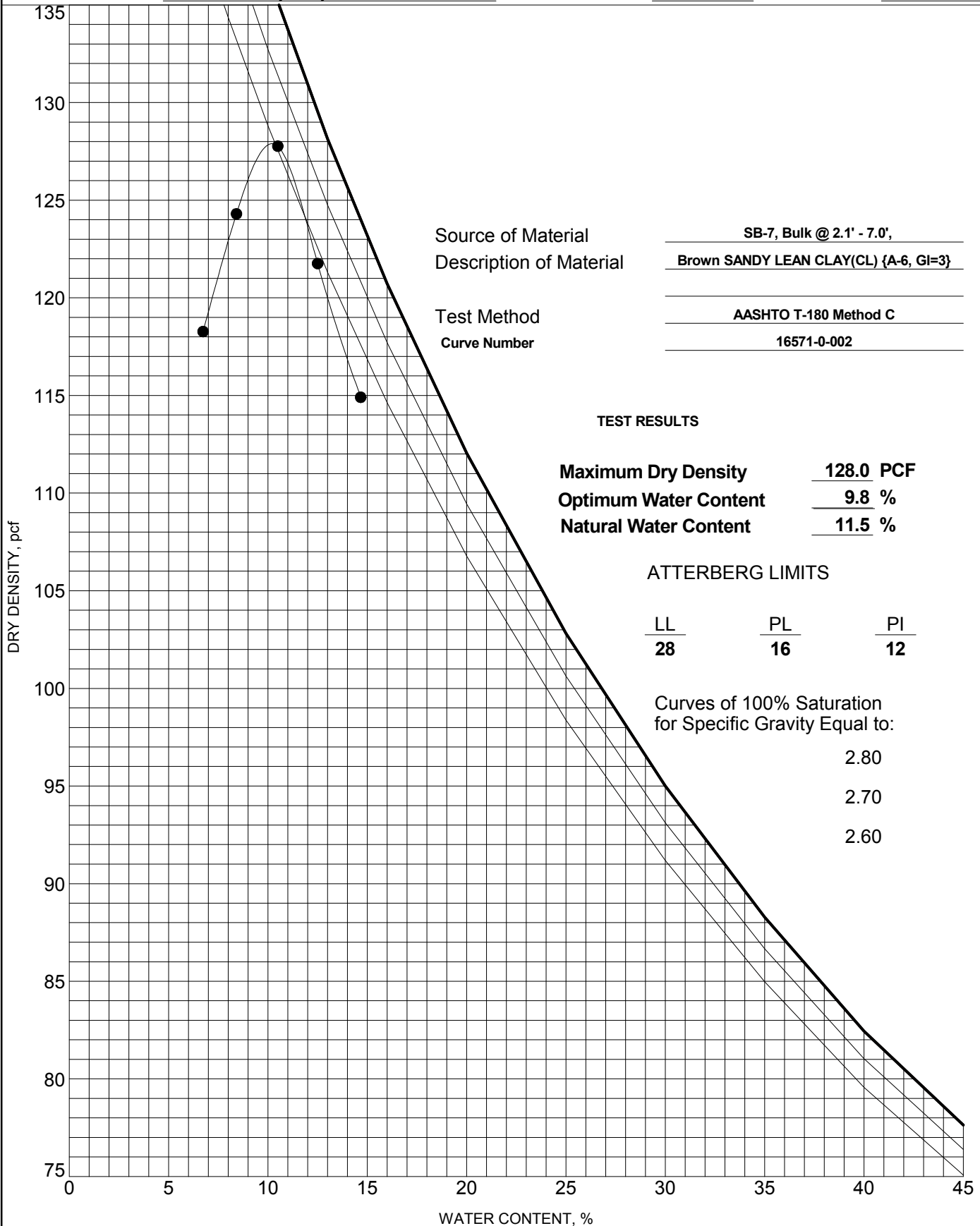
CLIENT Michael Baker, Jr., Inc.

PROJECT NAME York Road 24-Inch Water Main

PROJECT LOCATION Baltimore County, Maryland

PROJECT NUMBER 16571-0: MD

DATE TESTED



APPENDIX C – GEOPHYSICAL EVALUATION



**Final Report
Bedrock Depth and Rippability Mapping ~ 6000 Lineal Feet
York Road Improvement Project
Cockeysville, MD
Enviroscan Reference Number 081239**

**Prepared For: The Robert B. Balter Company
Prepared By: Enviroscan, Inc.
September 4, 2014**





September 4, 2014

Mr. Kristopher Crist
The Robert B. Balter Company
18 Music Fair Road
Owings Mills, MD 21117

RE: Bedrock Depth and Rippability Mapping ~ 6000 Lineal Feet
York Road Improvement Project
Cockeysville, MD
Enviroscan Reference Number 081239

Dear Mr. Crist:

Pursuant to our proposal dated August 23, 2012, Enviroscan, Inc. has completed a geophysical survey at the above-referenced site. The purpose of the survey was to determine the depth to and rippability of bedrock beneath an approximately 6000-foot length of a proposed utility alignment along York Road from Shawan Road to Cockeysville Road in Cockeysville, MD. Fieldwork was conducted between August 24-26 between the hours of 9:00 PM and 4:00 AM. The following report and figures describe the methods and results of the investigation.

Site Description

The survey was conducted along York Road from just north of the intersection of Shawan Road and York Road, to the intersection of York Road and Cockeysville Road, and a small section of Shawan Road in Cockeysville, MD. The seismic arrays were located within the turn lane of the road wherever possible, during lane closures at night (see Figure 1). The survey was not conducted across major intersections, over bridges and where traffic patterns could not be altered. Furthermore, data was collected when traffic was minimal or non-existent. The ground cover for the survey consisted of asphalt with and without a concrete base. Three sources of interference were identified during the survey. The first was noise from nearby lighting generators and traffic control vehicles. The second was electrical signal interference from overhead and underground power lines along the entire route of the survey. The third was concrete beneath the asphalt road in several locations. Onsite filtering in the seismograph's software indicated that a majority of this interference could be filtered out of the data; however, note that the interference still degraded the data quality.



Mr. Krist
September 4, 2014
Page 2

The site bedrock geology, as reported by the Geologic Map of Maryland (Cleaves, 1968), consists of the Precambrian-aged Cockeysville Marble, a metadolomite, calc-schist, and calcite marble with calc-gneiss and calc-silicate marble widespread but minor (Ibid). Five of the 17 borings (completed by others) along the proposed alignment encountered decomposed or weathered rock within 15 feet of the ground surface (SB-4, SB-5, SB-9, SB-12, and SB-14). The location of each boring along the seismic survey is shown in Figures 2 and 3.

Survey Methods

In order to provide the highest level of confidence and greatest cost-effectiveness, Enviroscan performed seismic refraction profiling. Seismic refraction can be used to determine the depth to bedrock and overburden thickness as well as estimates of the material velocity and rippability of the bedrock. The principles and scopes of work for each technique are described below.

To map the top of rock, Enviroscan completed six seismic refraction profiles within the survey area (see Figure 1). The principles of seismic refraction are described in the accompanying Introduction to Seismic Refraction (Appendix A), and generally involve measuring the travel times of shock waves traveling from a surficial source (shot point) to a linear array of ground motion sensors (geophones). At a distance from the shot point, the first arrivals of seismic energy are waves that have been refracted along whatever density contrast or contrasts (called refractors) are present in the subsurface. The travel times of these refracted arrivals can be used to compute a cross-sectional profile of the density contrast(s). The seismic survey consisted of several 240-foot-long profiles recorded as follows:

- A Geometrics 24-channel SmartSeis seismograph was used to record seismic travel times at linear arrays of Mark Products 8.5 Hertz geophones spaced at constant 10-foot intervals along each segment.
- Seismic shots were generated at 40-foot intervals along each array using a 30-pound airless jackhammer. At each shot point, 10 to 15 blows were stacked to enhance the signal-to-noise ratio.
- The relative elevations and locations were taken with a Topcon Hyperlite real-time kinematic (RTK) differential global positioning system (DGPS) during the seismic survey.

Mr. Krist
September 4, 2014
Page 3

Processing and interpretation of the seismic refraction data were completed using the SeisImager software package of computer programs (PickWin & PlotRefa) by OYO Corporation. First arrival travel times or first breaks were selected on the waveform data using the automatic picking routine PickWin (with occasional manual adjustment) to ensure consistent and objective picking. From the first arrival times and geophone locations, T-X graphs (see Appendix A) were compiled for each line using the routine PlotRefa. T-X data roughly defined three linear segments consistent with a three-layer stratigraphy (presumably consisting of soil, unconsolidated/weathered rock, and bedrock). The PlotRefa module of SeisImager uses multiple methods such as time-term inversion, reciprocal method, ray-tracing, and tomographic inversion to determine the best model based on the T-X data. Color-contour velocity models from SeisImager are presented on Figures 2 and 3.

On each profile, the vertical scale represents the elevation in feet. The horizontal axis represents an along-profile north to south in feet (west to east for Profile 6). The color-contour seismic cross sections on the figures show velocity variations identified by SeisImager, with the contour lines depicting the inferred top-of-weathered rock (black dashed line) and inferred top-of-competent rock (solid black line).

Survey Results

The seismic refraction survey results for each profile indicate a generalized three-layer stratigraphic model with a weathered zone between unconsolidated sediments and competent rock. The profile results are shown on Figures 2 and 3. Note that many of the segments are too long to fit across a single figure; in these cases, the segments are split into lettered profiles that, when stitched end-to-end, display the entire segment.

The location and summary of each boring along the seismic profiles (based on boring information provided by the client) are shown with unconsolidated material in blue and decomposed rock in red. Comparison of the seismic results with the borings indicates some correlation between SB-5, SB-9, SB-12, and SB-14; however, SB-2, SB-15, and SB-17 as well as SB-13 and possibly SB-16 appear to be within areas of shallow rock. Figure 4 summarizes the areas of concern in plan-view along the alignment. Please note that due to the presence of concrete within the subsurface and other sources of interference discussed above, the accuracy of this survey is between 10-20% rather than the normal plus or minus 5-10% of the actual depths.

Mr. Krist
September 4, 2014
Page 4

The surficial layer (Layer 1, shaded blue to white) average velocity is less than 2000 feet per second (fps). This average velocity is consistent with published velocities for unsaturated soils and sediments (see e.g., Redpath, 1973, and Carmichael, 1989). The intermediate layer (Layer 2, shaded white/yellow) average velocity is around 7000 fps across the site. The basal layer (Layer 3, shaded orange/red) average velocity is above 10000 fps. This average velocity is consistent with published velocities for bedrock in the area (Ibid.).

The seismic data show an increasing velocity with depth, with several recorded velocities for the basal layer over 10000 fps. This suggests a gradual change from slightly weathered bedrock into very competent bedrock. The color-contour seismic cross sections on Figures 2 and 3 show velocity variations identified by SeisImager, with white to yellow to orange shades depicting the transition from weathered rock to more competent rock based on the SeisImager inversion. Please note that each apparent contact between the unconsolidated soils and inferred top-of-rock on the cross sections is an averaged location, and may in reality represent the middle of a transitional zone.

The seismic velocities were compared to standard ripping charts (see e.g. Appendix B, Caterpillar, Inc., 1995) using the inferred/assumed layer compositions to determine the general rippability of each stratum. In general, the top layer (velocities less than 2000 fps) should be easily rippable with a D9R multi- or single-shank No. 9 Ripper, while the middle and bottom layers (average velocities from 6000 to 10000 fps) should be marginally- to non-rippable with a D9R multi- or single-shank No. 9 Ripper (Ibid.). However, please note that the apparent contact between the unconsolidated soils and high-velocity refractor on the cross section is an averaged location, and may in reality represent the middle of a transitional zone between unconsolidated soils and weathered rock to competent rock. Since the transition between unconsolidated soils and bedrock may be gradual and may include various degrees of weathering, the difficulty of ripping the stratum may also increase gradually as soils grade into more competent bedrock that is non-rippable.

Limitations

The geophysical survey described above was completed using standard and/or routinely accepted practices of the geophysical industry and equipment representing the best available technology. Enviroscan does not accept responsibility for survey limitations due to inherent technological limitations or unforeseen site-specific conditions. In particular, Enviroscan cannot make any warranties concerning the future occurrence or development of soil piping activity. However, we make every effort to identify and notify the client of such limitations or conditions.

Mr. Krist
September 4, 2014
Page 5

We have enjoyed and appreciated the opportunity to have worked with you. If you have any questions, please do not hesitate to contact me.

Sincerely,

Enviroscan, Inc.



Charles H. Rhine, M.Sc., P.G.
Senior Geophysics Project Manager

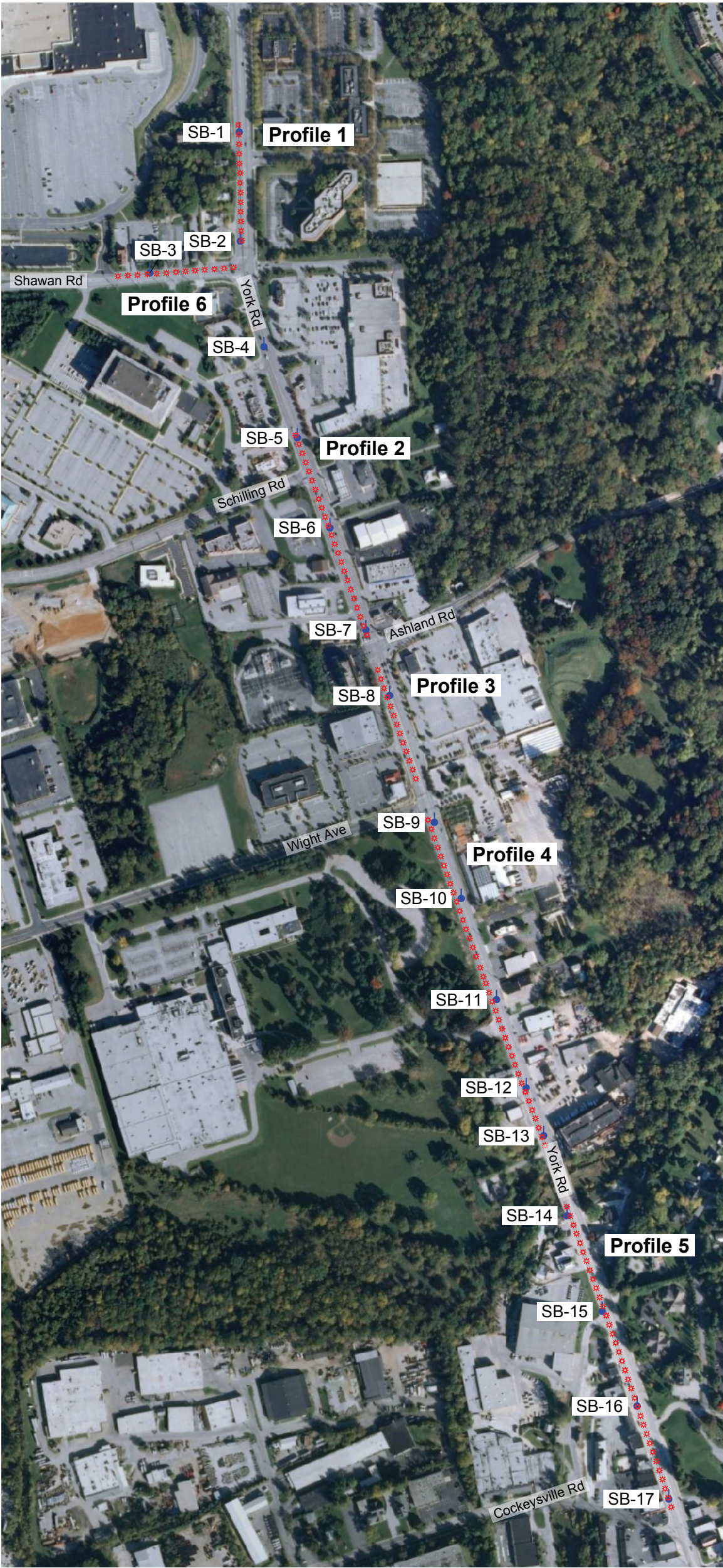
Technical Review By:

Enviroscan, Inc.



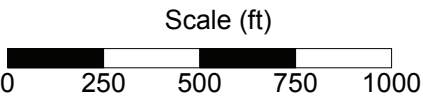
Felicia K. Bechtel, M.Sc., P.G.,
President

enc.: Figure 1: Seismic Refraction Survey Coverage Map
Figure 2: Seismic Refraction Results – Profiles 1 – 4A
Figure 3: Seismic Refraction Results – Profiles 4B – 6
Figure 4: Geophysical Survey Results Summary
Appendix A: Introduction to Seismic Refraction
Appendix B: Example Ripping Charts
References



Geophysical Legend

-  Seismic Shot Location
-  Soil Boring (by others)



Notes:

Image from USGS EROS Ortho
1-Foot Image Server (WMS Server).

Seismic model from Geometrics
24-channel Smartseis, 40-foot shot spacing.

Prepared by:



Enviroscan, Inc.
1051 Columbia Ave.
Lancaster PA 17603
717-396-8922
www.enviroscan.com

Title:

**Seismic Refraction
Survey Coverage Map**

151

Project Location:

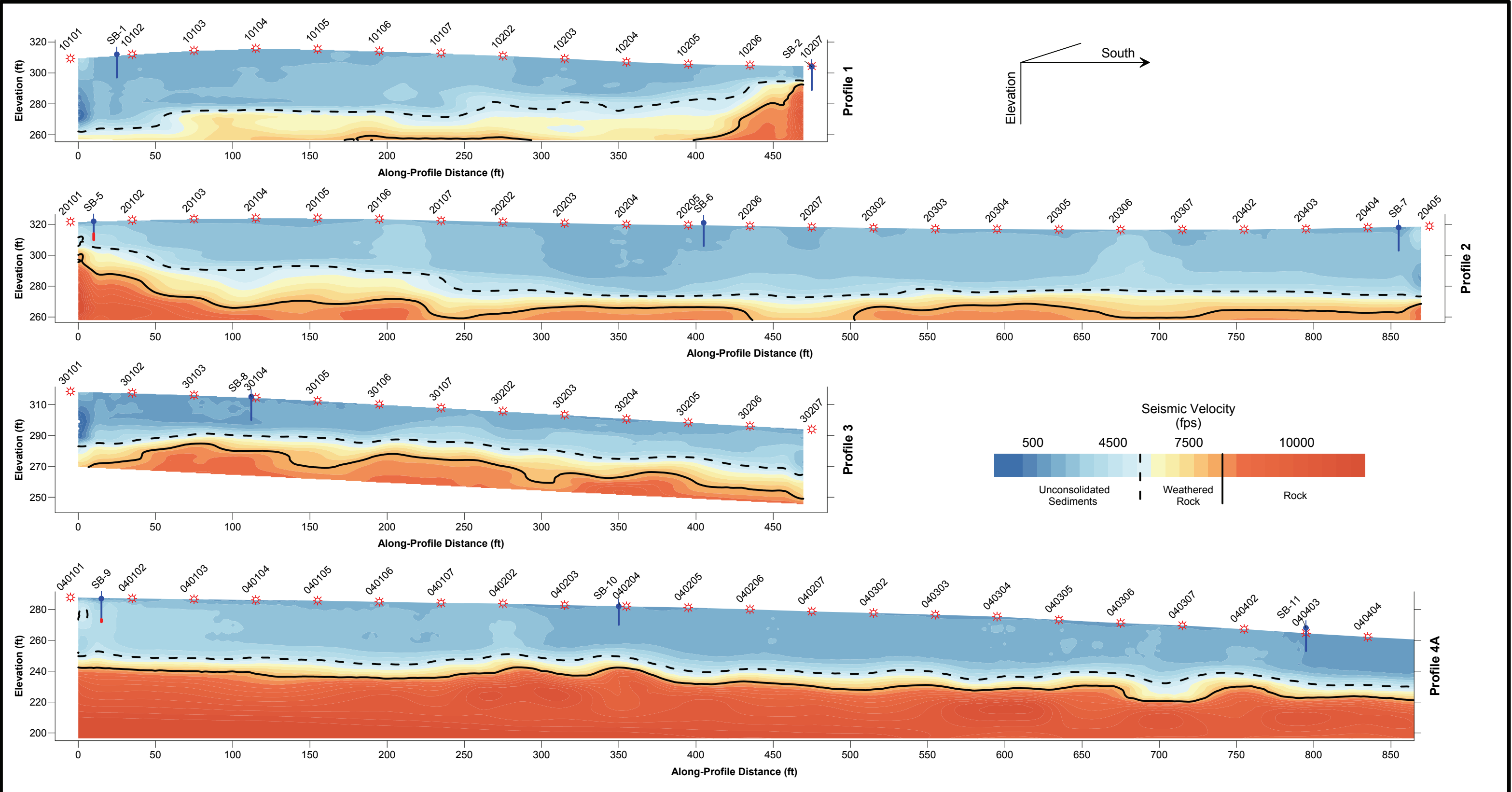
**York Road 24"
Water Main
Cockeysville, MD**

Project Number 081239	Revision/Issue 9/4/2014
Original Scale 1" = 500'	Survey Ending Date 08/26/2014

Figure

1

Drawn by: CHR	Approved by: FKB
------------------	---------------------



Notes:

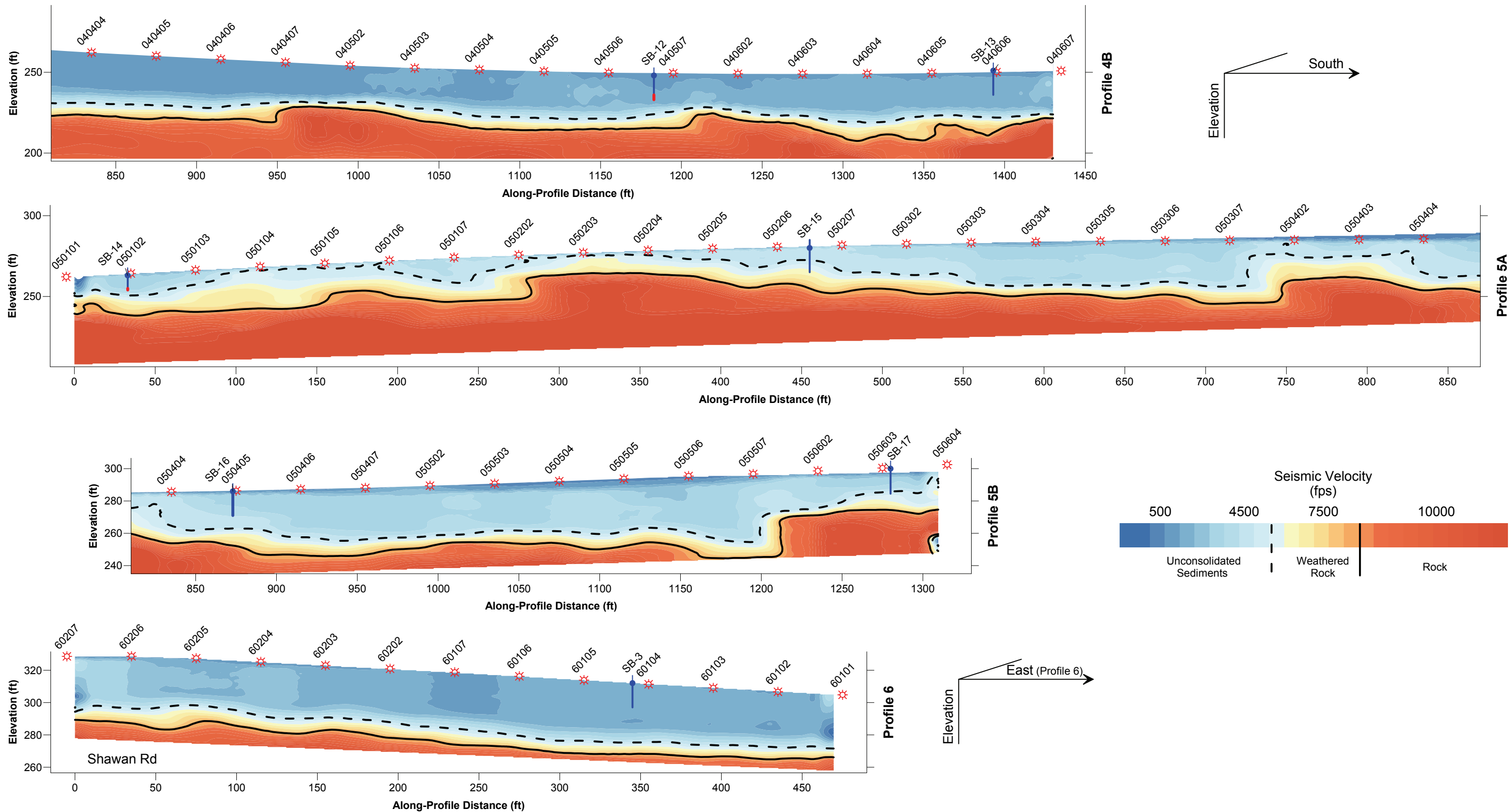
Distance in feet along-line, elevation in feet above NAVD.

Seismic model from Geometrics 24-channel Smartseis, 40-foot shot spacing, SeisImager tomographic inversion.

Geophysical Legend

- Seismic Shot Location
- Soil Boring (by others)
 - Blue = Unconsolidated Material
 - Red = Decomposed Rock

Prepared by:  Enviroscan, Inc. 1051 Columbia Ave. Lancaster PA 17603 717-396-8922 www.enviroscan.com	Title: Seismic Refraction Profiles 1 - 4A	Project Location: York Road 24" Water Main Cockeysville, MD		Figure 2	
		Project Number 081239	Revision/Issue 9/4/2014		
		Original Scale 1" = 60'	Survey Ending Date 08/26/2014	Drawn by: CHR	Approved by: FKB



Notes:

Distance in feet along-line, elevation in feet above NAVD.

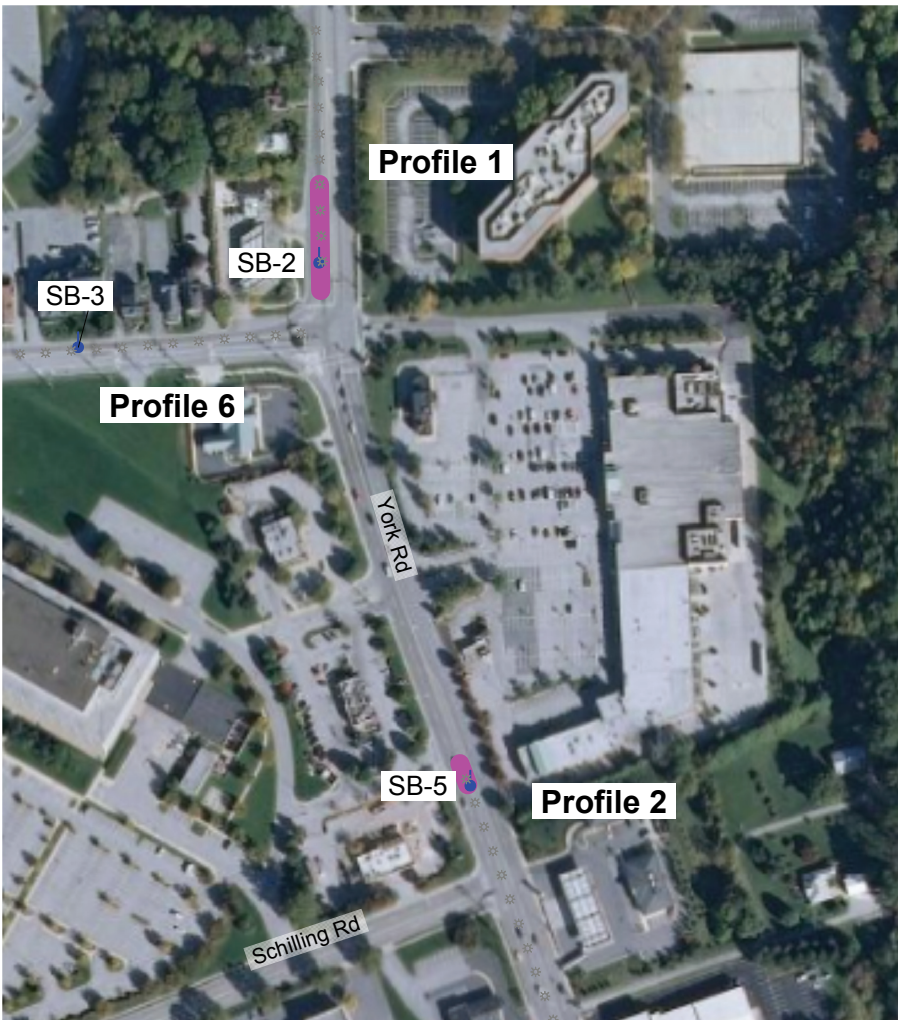
Seismic model from Geometrics 24-channel Smartseis, 40-foot shot spacing, SeisImager tomographic inversion.

Geophysical Legend

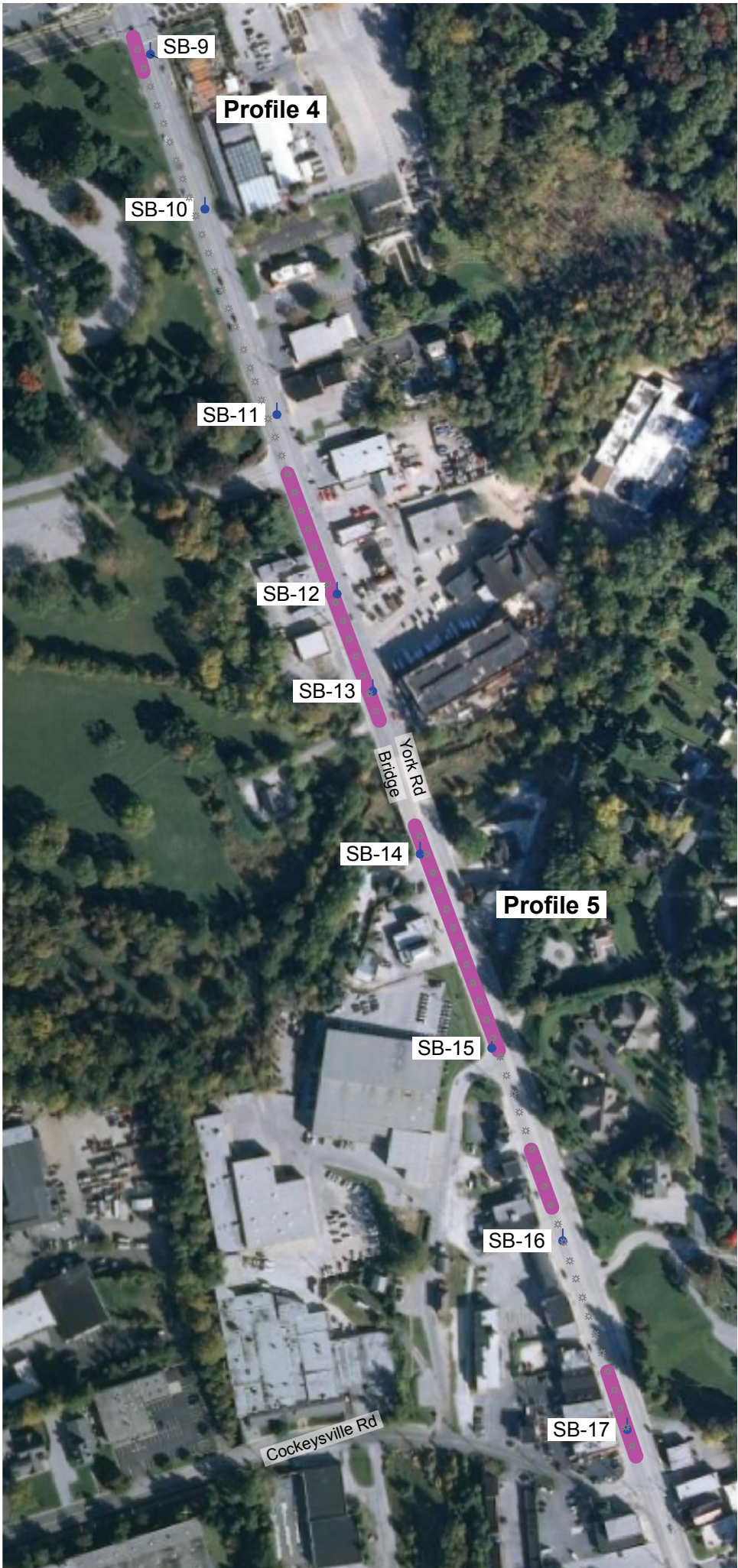
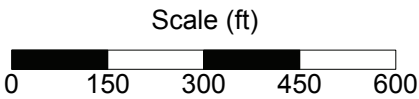
☀ Seismic Shot Location

📍 Soil Boring (by others)
Blue = Unconsolidated Material
Red = Decomposed Rock

Prepared by:  Enviroscan, Inc. 1051 Columbia Ave. Lancaster PA 17603 717-396-8922 www.enviroscan.com	Title: Seismic Refraction Profiles 4B - 6	Project Location: York Road 24" Water Main Cockeysville, MD	Figure 3	
		Project Number 081239		
		Original Scale 1" = 60'	Survey Ending Date 08/26/2014	Drawn by: CHR



- Geophysical Legend**
- Shallow High-Velocity Areas
 - Seismic Shot Location
 - Soil Boring (by others)



Notes:

Image from USGS EROS Ortho
1-Foot Image Server (WMS Server).

Seismic model from Geometrics
24-channel Smartseis, 40-foot shot spacing.

Prepared by:  Enviroscan, Inc. 1051 Columbia Ave. Lancaster PA 17603 717-396-8922 www.enviroscan.com	Title: Geophysical Survey Results Summary 154	Project Location: York Road 24" Water Main Cockeysville, MD		Figure 4	
		Project Number 081239	Revision/Issue 10/23/2013		
		Original Scale 1" = 300'	Survey Ending Date 08/26/2014	Drawn by: CHR	Approved by: FKB

Appendix A

Introduction to Seismic Refraction



Introduction to Seismic Refraction

By

Timothy D. Bechtel, Ph.D., P.G.

Energy

Mechanical elastic (seismic) waves generated by a hammer blow, weight drop, or explosion.

Sensitivity

Sensitive to elastic properties or moduli – generally strongly correlated with density.

Basic Equipment

Recording Seismograph (generally 24 or more channels); Geophones (one for each channel); Geophone cable; Hammer or weight plus strike plate or explosives; Trigger switch.

Common Applications

Determination of the depth and dip of soil horizons and bedrock surfaces. Recent processing advances allow some detection and delineation of discrete targets.

Principles

In a uniform isotropic earth, the shock wave from a blow or explosion at the surface travels outward and downward in a hemispherical wave front like a three-dimensional ripple from a pebble in a still pond. At any point on the wave front, a straight line from the shock source to the wave front depicts the path of the seismic wave, and is called a ray path (see Figure SR-1). In reality, there are several independent shock waves; the fast-moving primary, compressional or P wave front; the slower moving secondary, shear or S wave (both of which form hemispherical wavefronts); and several disk-like wave fronts that travel only along the surface of the earth (called surface waves or ground roll). For the purposes of most seismic refraction surveys, only the fastest moving wave front — the P wave — is considered. S-wave refraction is used in selected circumstances where complete determination of elastic moduli is desired – particularly when it may be desirable to eliminate the effects of water saturation.



Introduction to Seismic Refraction
Page 2

In a layered earth, the hemispherical P shock wave defined by the radially distributed P ray paths are deflected according to the laws of optics (Snell's Law) at interfaces between materials with differing seismic velocities (i.e. densities or elastic properties). Figure SR-2 depicts the deflection of ray paths due to an increase in P velocity at a bedding plane. The type of deflection that a ray path will undergo is dependent upon the angle at which it strikes the interface, and falls into one of four categories:

- 1) Some direct rays (green in Figures SR-2 and SR-3) travel parallel to the ground surface at the seismic velocity of the upper layer, do not strike the underlying interface, and consequently are not deflected.
- 2) Reflected rays (purple in Figures SR-2 and SR-3) arise where direct rays strike the interface, and a portion of the energy is reflected symmetrically back towards the surface.
- 3) The portion of the energy of the incident direct wave that is not reflected upward is refracted, or bent as it crosses the interface – making refracted waves in the lower layer (red in Figures SR-2 and SR-3).
- 4) At a precise angle called the critical angle, the incident ray is refracted directly along the interface, and travels at the higher seismic velocity of the lower layer (see Critically Refracted Wave in Figure SR-3). As this critically refracted or head wave races along beneath the interface, it generates a secondary elastic disturbance that travels back to the surface along ray paths that define a wave front analogous to the bow wake of a ship. These returning rays again travel at the slower velocity of the upper layer.

To perform a refraction survey, a linear array of ground motion sensors or geophones is spaced out from the seismic source or shot point, forming a geophone spread. Each geophone is connected to a separate channel in a seismograph which records a wiggle trace representing the ground motion resulting from the passage of the various seismic rays.

As depicted in the time-distance (T-X) curve in Figure SR-4, the layered earth structure can be determined by analyzing the seismographic wiggle traces. At distances close to the seismic source, the first wiggle or ground motion (the first arrival after the shot) is due to passage of the direct wave travelling at the velocity of the upper layer. Reflected waves arrive later since they have by definition traveled a greater distance at the same velocity (additional later wiggles are caused by passage of the more slowly travelling S and surface waves). Beyond a distance dictated by the critical angle, the first arrival of seismic energy represents the head wave of the critically refracted ray. These refracted rays also by definition travel a greater distance than the direct wave. However, along part of their path, they have traveled at the higher velocity of the underlying more consolidated layer. At greater

Introduction to Seismic Refraction
Page 3

distances from the shot point, where the path length in the higher velocity layer becomes significant, the head wave arrivals actually race past the direct wave and become the first arrival (see labeled crossover in Figure SR-4). By extension, it can be shown that if a third layer with even greater velocity lies at greater depth, the head wave from this layer will become the first arrival at a sufficient distance from the shot point.

In conventional seismic refraction, only the first P wave arrivals can be reliably selected on a wiggle trace record. The later reflected P wave arrivals are generally obscured by the slower-travelling S and surface waves, and the very slow air blast or sound wave from the shot. To interpret a seismic refraction record, the first arrival travel times are measured for each wiggle trace and plotted at the appropriate point on a time-distance (T-X) curve (see Figure SR-4). In a plane-layered earth, these first arrivals define a series of line segments, each representing a discrete layer. The seismic velocity of each layer is simply the reciprocal of the slope of the associated line segment. The thickness of each layer can be calculated from the distances where the line segments intersect. The mathematics for these calculations are easily derived, and can be found in any introductory geophysics text.

True geologic strata are rarely perfectly horizontal. The effect of a dipping interface on a travel time curve cannot be recognized using a single shot point. Calculations based on a T-X curve from a single shot point should always be considered as producing apparent depths to interfaces and apparent seismic velocities for all but the uppermost layer. To determine the true depths and dips of interfaces and the true seismic velocities, it is necessary to reverse the seismic line; that is, move the shot point to a location at or beyond the farthest geophone in the spread, and repeat the shot. The calculation of true depths, dips and velocities from reversed seismic lines is also readily performed.

Capabilities

Conventional seismic refraction can yield accurate measurements of depths and attitudes of soil horizons, groundwater tables, and other relatively distinct and planar strata. Modern computer analysis of multi-fold seismic refraction data (i.e. with many and overlapping shot points) can provide delineation of undulating or even irregular (as opposed to simply planar) interfaces. The latest generation of computer processing techniques require very high-fold data, but in favorable conditions, are capable of resolving even discrete targets such as foundation elements, tunnels or cavities, and can resolve gradational boundaries as well as distinct interfaces. The seismic P-wave velocities of materials are generally an indication of relative density or compaction. S-wave refraction data (collected using specialized geophones, shock sources and field procedures) can provide S-

Introduction to Seismic Refraction
Page 4

wave velocities that bear a well-constrained empirical relationship to standard penetration test (SPT) N values and therefore bearing capacity. For surveys where matching P- and S-wave velocities are determined, the dynamic elastic moduli of subsurface materials can be calculated (including Poisson's Ratio, Young's or Bulk Modulus, and Shear Modulus or Rigidity).

Limitations

Seismic data is collected at spaced geophones, and therefore does not provide continuous profile data. If geophones are spaced too widely, thin layers can be missed entirely.

Conventional refraction interpretations are only accurate where the velocity of strata increase with depth. Velocity inversions not only alter the data, but are particularly insidious since the presence of a low velocity zone at depth is not apparent in first arrival data. The latest generation of computer processing techniques do allow detection and delineation of laterally restricted low velocity zones (e.g. tunnels, cavities, gravel lenses, etc.).

Sharp or dramatic interface relief such as limestone pinnacles cannot always be resolved even with very tight geophone spacing. Therefore, refraction profiles of expectedly irregular interfaces should be assumed to represent somewhat smoothed versions of actual relief (see e.g. Figure SR-5).

Seismic records can contain noise due to heavy machinery vibrations, vehicular traffic, and sometimes even wind or distant earthquakes. Care must be taken to identify potential sources of seismic noise prior to beginning a survey.

The effective survey depth is limited to approximately 1/5 of the greatest shotpoint to geophone distance. Therefore, very deep surveys may require impractically long lines (requiring consideration of other geophysical techniques such as seismic reflection).

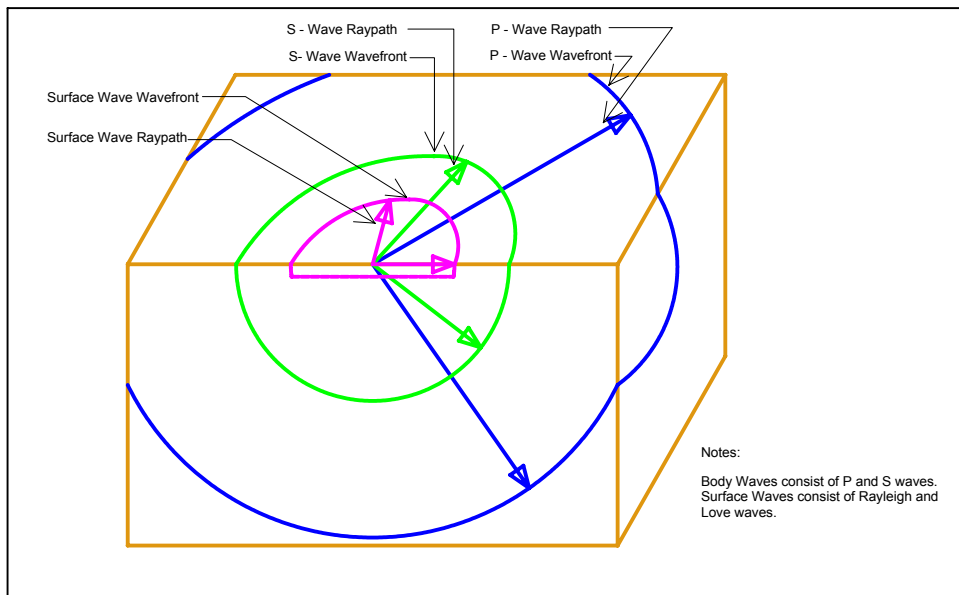


Figure SR-1

Seismic Wave Types

Rev. 01/2001

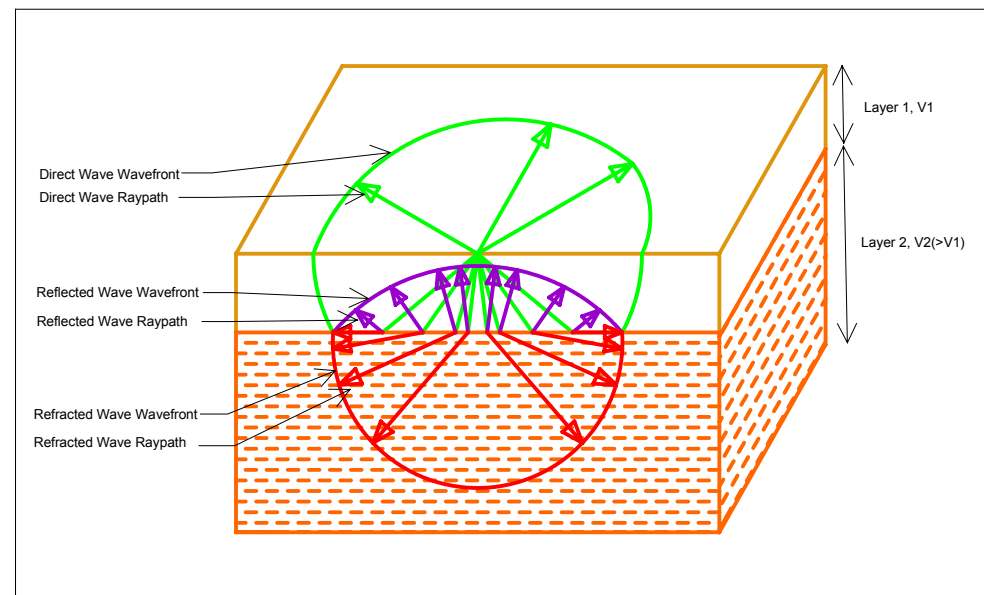


Figure SR-2

**Effect of Layering
on Body Wave Raypath**

Rev. 01/2001

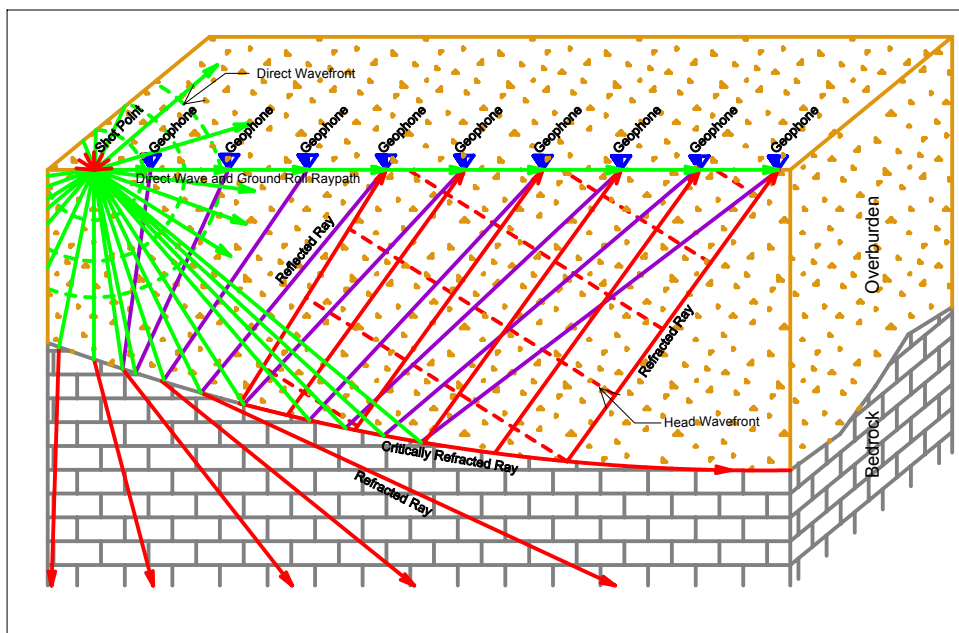


Figure SR-3

Seismic Ray Path Geometry

Rev. 01/2001

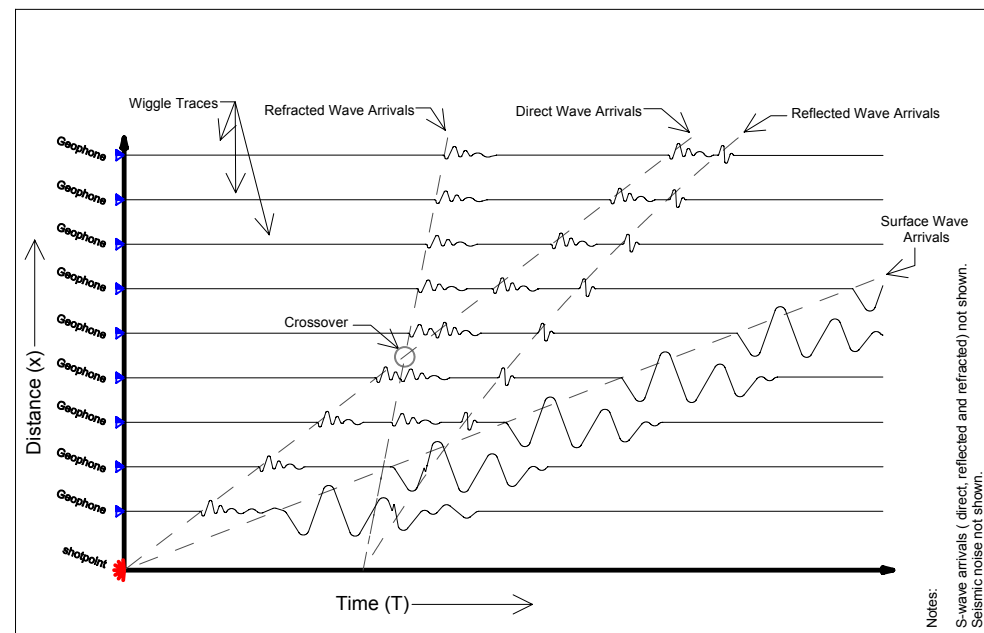


Figure SR-4

160

**Idealized
Seismic Record
and T - X Graph**

Rev. 01/2001



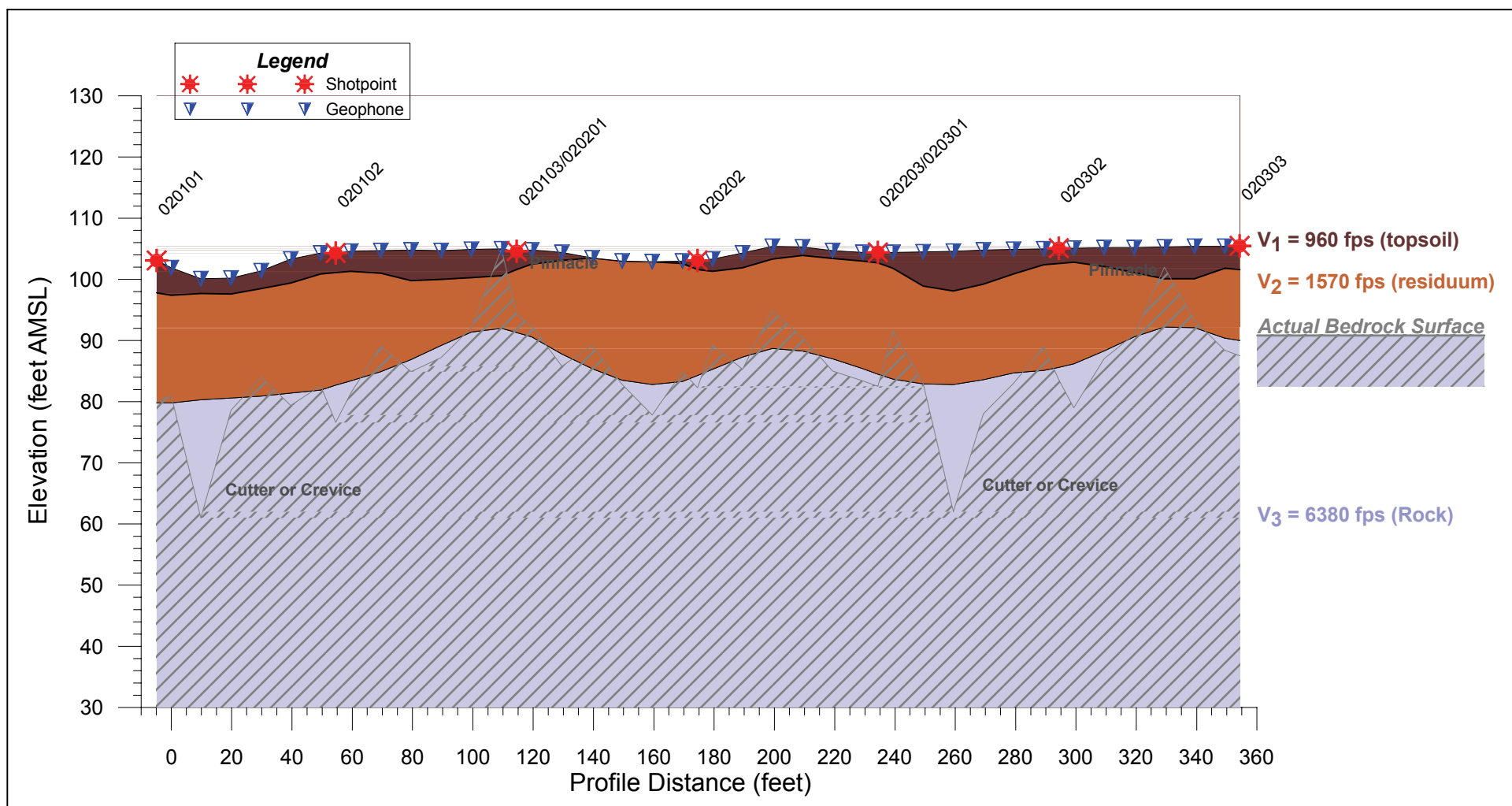


Figure SR-5

Example Karst Terrane Seismic Profile

Revised 01/2001

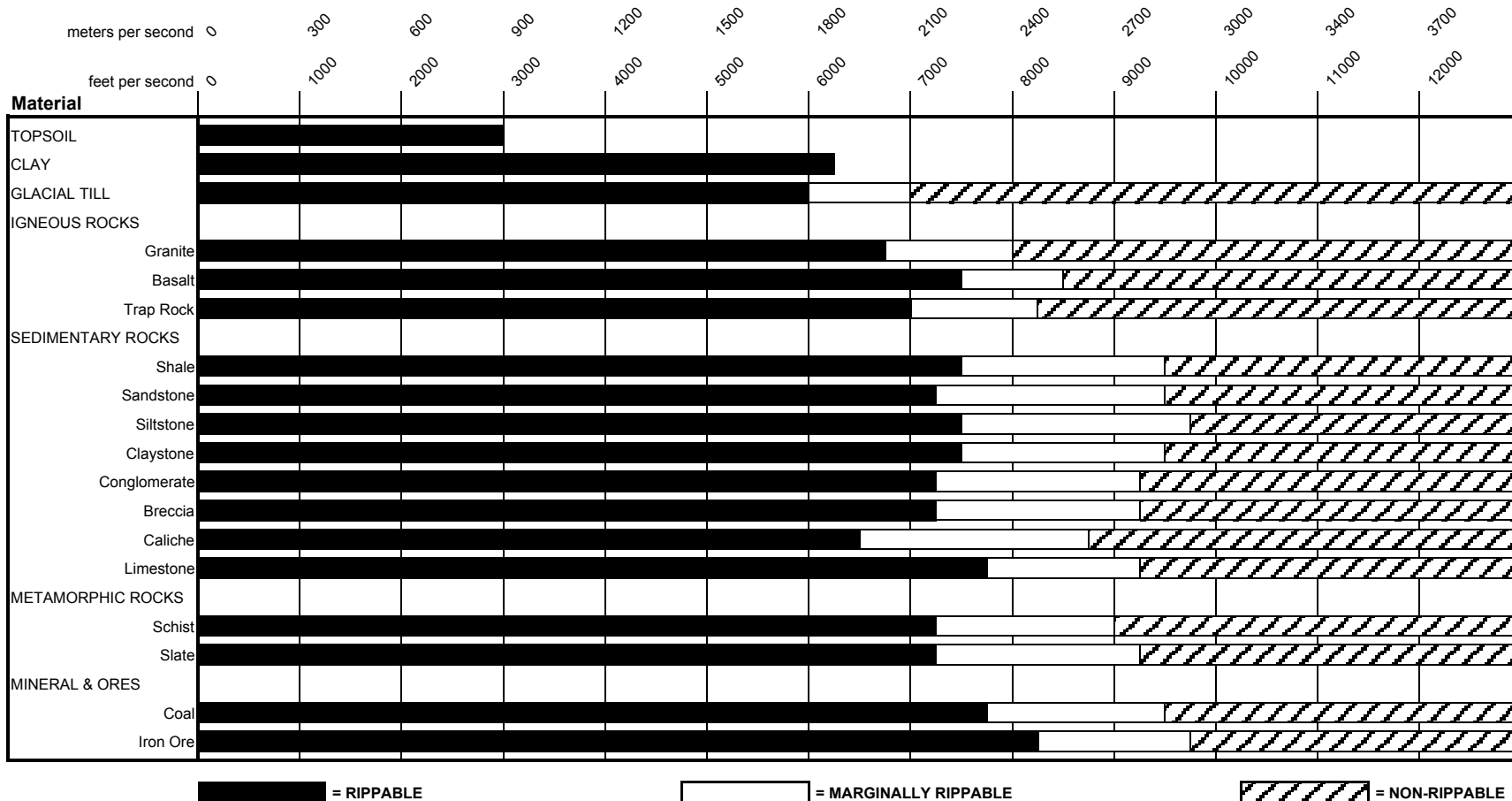


Appendix B

Ripping Charts

Ripping Chart *
D9R
 Multi or Single Shank No. 9 Ripper
 Estimated by Seismic P-Wave Velocities

Seismic Velocity



■ = RIPPABLE

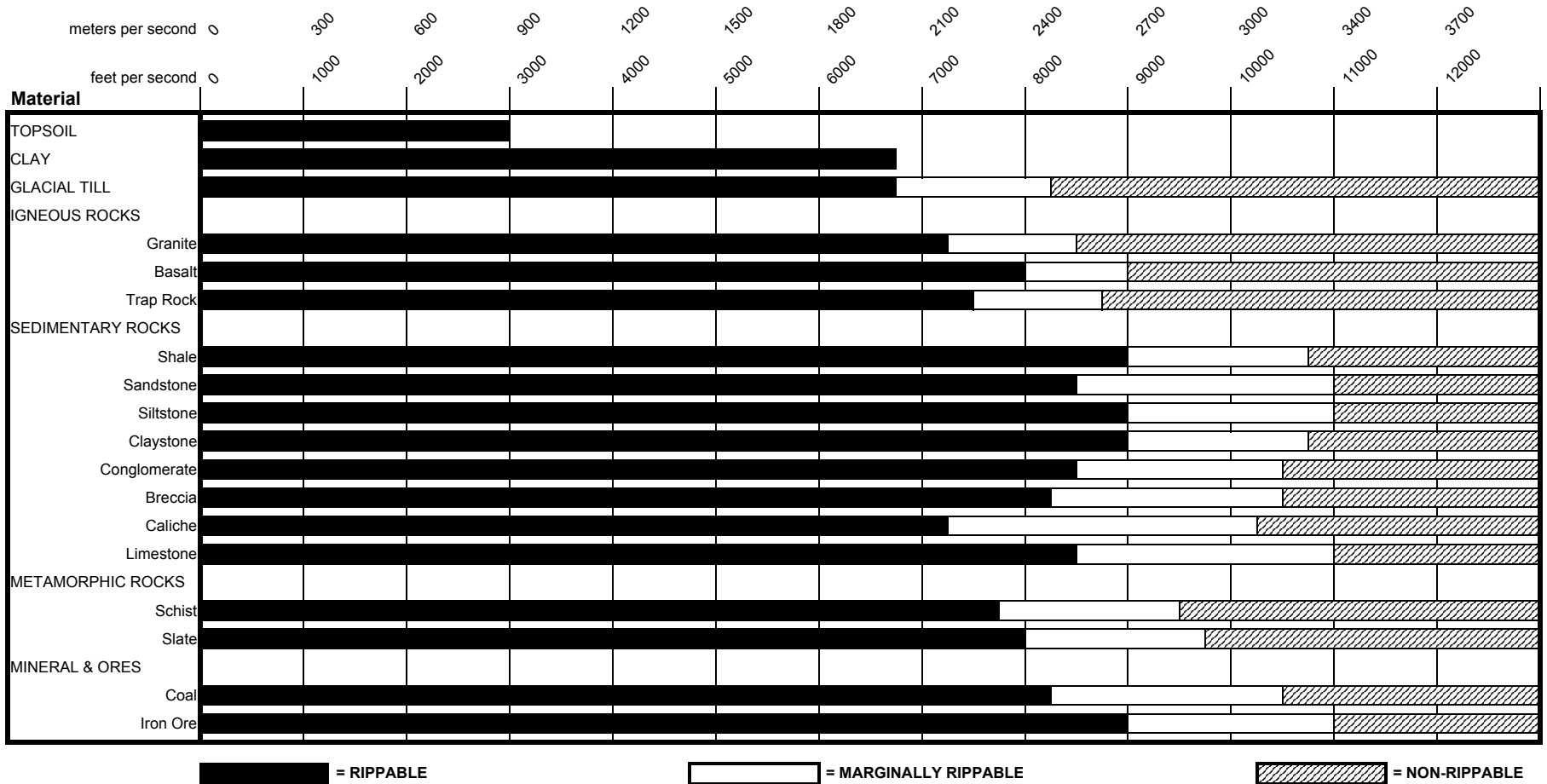
□ = MARGINALLY RIPPABLE

▨ = NON-RIPPABLE

* Caterpillar Performance Handbook, Edition 26, Caterpillar, Inc., Peoria, Illinois

Ripping Chart *
D10N
Multi or Single Shank No. 10 Ripper
Estimated by Seismic P-Wave Velocities

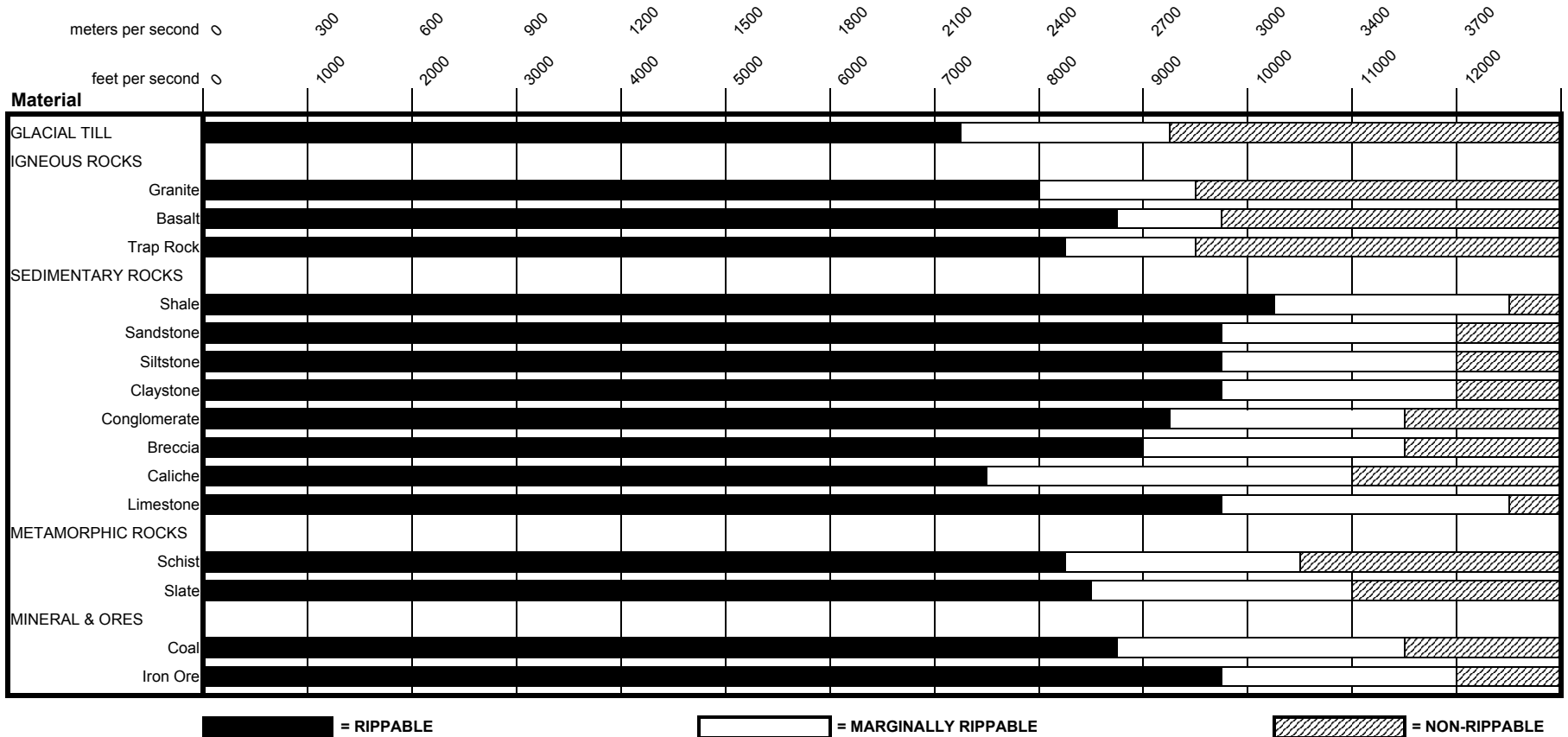
Seismic Velocity



* Caterpillar Performance Handbook, Edition 26, Caterpillar, Inc., Peoria, Illinois

Ripping Chart *
D11N
Multi or Single Shank No. 11 Ripper
Estimated by Seismic P-Wave Velocities

Seismic Velocity



* Caterpillar Performance Handbook, Edition 26, Caterpillar, Inc., Peoria, Illinois

References

Carmichael, R. S. (1989), Physical Properties of Rocks and Minerals, CRC Press

Caterpillar Tractor Company (1995), The Applicator, Caterpillar Tractor Company Marketing Division.

Cleaves, E.T., Edwards, Jr., J., and Glaser, J.D. (1968), Geologic Map of Maryland, Maryland Geologic Survey.

Redpath, B. B. (1973) Seismic Refraction Exploration for Engineering Site Investigations, U.S. Army Corps. of Engineers, Technical Report E-73-4.



APPENDIX B

Contractor Shutdown Request Form

Baltimore City & Baltimore County Contractor Shutdown Request Form

Date Form Submitted _____

Submittal # _____

Please note that the following request form ***must be emailed ten (10) working days*** prior to requested shutdown date. Please email request to **Natassia.Landefeld@baltimorecity.gov**

and copy: **Kris.Carter@baltimorecity.gov**
Jonathan.Cohen@baltimorecity.gov
DWalker@baltimorecity.gov

If you have any questions, or need additional assistance, please call **Ms. Landefeld** at **410-709-8289**.

General Information

☒ Contract ☐ Developer's Agreement (Check One)	Charge No: (For Contract Only)	Contract / D.A. Name & Number:
---	--------------------------------	--------------------------------

Contact Information (Team listed below is responsible for 72 hours advanced public notifications of water outages)

☒ Resident Engineer or ☐ Field Inspector Name: (Check One)		Resident Engineer or Field Inspector Phone #: Email:
Contractor Name:	Contractor Phone #:	Contractor Email:
Field Contact Name:		Field Contact Phone #:

Shutdown Information

In the event of inclement weather or other cancellations, please contact Natassia to reschedule. Please allow at least 72 hours for the new date.

Requested Date / Time	
Description of Work	
Location of Construction (address and/or street from point A to point B) ☐ Copy of Relevant D.A./ Contract Drawing Attached	
Estimated Time of Water Work Construction	
Number of Services Affected	
Significant Consumers Affected	

Resident Engineer / Field

Contractor

Date

APPENDIX C

Utility Work Notification and Water Shutdown Notice



JOHN A. OLSZEWSKI, JR.
County Executive

LAUREN T. BUCKLER, *Director*
Department of Public Works and Transportation

Dear Resident:

A water utility project in your neighborhood requires that your water service be temporarily shut off by Baltimore City, which owns and maintains the water system in both the City and the County. Understanding customers' needs and concerns, Baltimore County is making every effort to lessen the inconvenience during this short halt in normal service.

We suggest that you prepare for the shut off by storing water - but if you or anyone in your household has special needs or has medical requirements, please let us know and we will work to accommodate these requirements. We also may be able to reduce the impact by adjusting the contractor's work schedule. Call us at: 410-887-3531 and we will work with you to manage the challenges.

Sincerely,

A handwritten signature in black ink, consisting of a stylized loop followed by a horizontal line.

Lauren T. Buckler, Director
Department of Public Works and Transportation

APPENDIX D

MD State Highway Admin. Documents

- **MDOT SHA Utility Permit**
 - **Project Information Form**
 - **2025 Utility Permit General Provisions**
 - **2025 Acknowledgement of General Provisions**
 - **Utility Master Agreement Form**
 - **Traffic Control Permit Application**
- (see Pages 204-261 of the Permits Section)**

APPENDIX E

MDE Construction Permit

(see Pages 262-265 of the Permits Section)

APPENDIX F

Holiday Detection Daily Field Report



BALTIMORE COUNTY
DEPARTMENT OF PUBLIC WORKS
HOLIDAY DETECTION DAILY FIELD REPORT

TEST DATE: _____

PROJECT: _____

CONTRACT #: _____

CONTRACTOR: _____

LOCATION: _____

PIPE SIZE: _____ (IN) PIPE MATERIAL: _____ COATING: _____

COATING THICKNESS: _____ (MILS) COATING MANUFACTURER: _____

TESTER USED: _____ TEST VOLTAGE: _____

SUMMARY OF TESTS: _____

PIPE NUMBER	STATION		INITIAL TEST RESULTS (# OF HOLIDAYS)	RETEST REQUIRED (Y/N)	RETEST RESULTS (# OF HOLIDAYS)	SKETCH
	FROM	TO				

NAME OF TESTER: _____

SIGNATURE: _____

COUNTY INSPECTOR SIGNATURE: _____

DATE REPORT RECEIVED: _____

APPENDIX G

Test Hole Reports

Field Utility Test Hole Report

Site Diagram / Location Details: Scale: (NTS)

W. PARK
← DR

PARKING LOT
B. DRIVE

YORK RD

WHITE
CLIFF STRIDE

41.9'

7.2'

51'

FLC

SIDEWALK

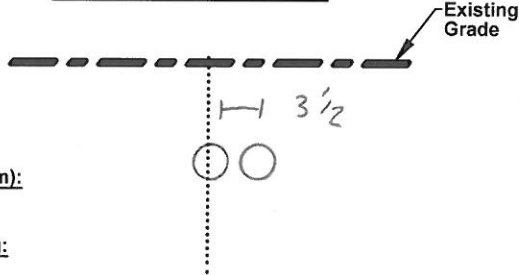
Site Diagram Field Chk. by:

ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #:	<u>2</u>	Project Number:	<u>MD11-051</u>
Test Hole Crew:	<u>DAM</u>	Utility Owner:	<u>VERIZON</u>
(Initials)	Leader: <u>WAP</u> Note Taker: <u>WAP</u>	Project Location:	<u>BALTIMORE, MD</u>
Project Name:	<u>YORK RD TH</u>	Test Hole Date:	<u>9/30/14</u>
Requested By:	<u>BAKER</u>	Soil Conditions:	<u>SAND/WET</u>
Utility Requested:	<u>TELEPHONE</u>	Utility Condition:	<u>GOOD</u>
Utility Found:	<u>TELEPHONE CONDUITS</u>	Pavement -	
Material Makeup:	<u>PLASTIC</u>	Condition:	<u>FAIR</u>
Size Utility Found:	<u>1 1/4</u>	Type & Thickness:	<u>ASPHALT / .5</u> <u>CONCRETE .5</u>

Test Hole Information:  Existing Grade Cover (Top): <u>2.30'</u> Cover (Bottom): <u>N/A</u> Drawn Facing: <u>N</u> Utility Width: <u>1 3/4</u>	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings @ Benchmark: _____ @ Top of Utility: _____ Notes: <u>SET PK OVER</u> <u>EAST CONDUIT.</u> <u>CROWN TO CROWN = 3 1/2</u>
--	--

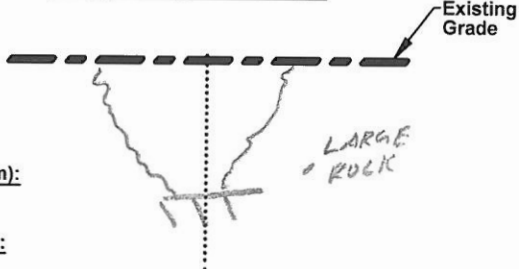
 N. PARK DR YORK RD 9.8' 1.5' FLC	Site Diagram / Location Details: Scale: (NTS)
Site Diagram Field Chk. by: _____	

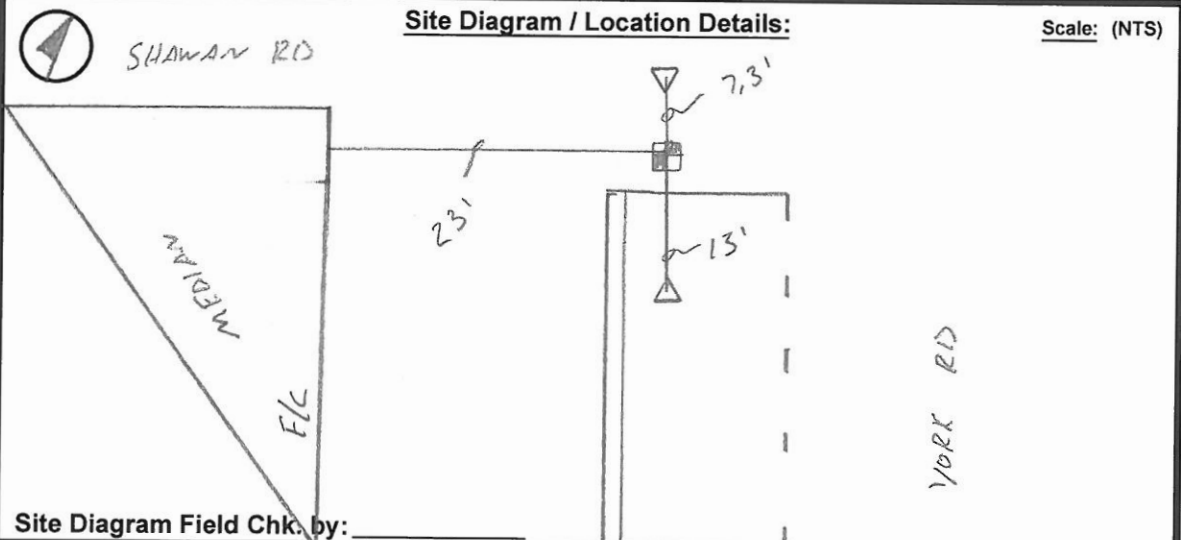
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #:	# 3	Project Number:	MD/4-051
Test Hole Crew:	DAM, DDA	Utility Owner:	N/A
(Initials)	Leader: WAP Note Taker: WAP	Project Location:	BALTIMORE COUNTY
Project Name:	YORK RD TH	Test Hole Date:	11/5/14
Requested By:	BAKER	Soil Conditions:	ROCK / CLAY
Utility Requested:	TELEPHONE	Utility Condition:	N/A
Utility Found:	SEE NOTE	Pavement -	
Material Makeup:	SEE NOTE	Condition:	FAIR
Size Utility Found:	N/A	Type & Thickness:	ASPHALT / 1.7'

Test Hole Information:  Existing Grade COVER (Top): N/A COVER (Bottom): 7.5' Drawn Facing: N/A Utility Width: N/A LARGE ROCK	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings @ Benchmark: _____ @ Top of Utility: _____ Notes: TH REQUESTED TELEPHONE, DUG TO 7.5' HIT LARGE ROCK COULD NOT DIG PAST, SET PK OVER CENTER OF TH
---	---

 SHAWAN RD MEDIAN F/C 23' 7.3' 13' YORK RD	Site Diagram / Location Details: Scale: (NTS)
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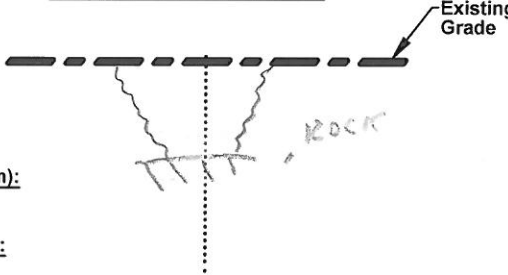
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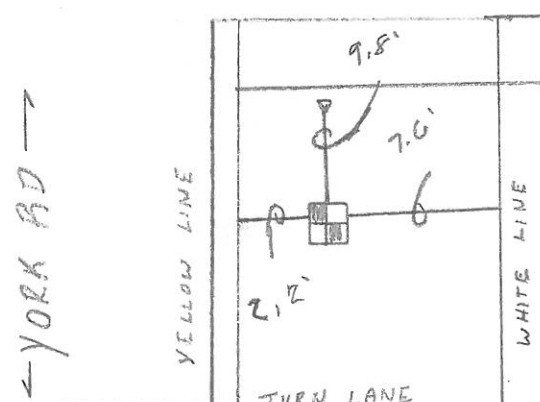
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #:	4	Project Number:	MD14-051
Test Hole Crew:	WAP/DAM/DDA	Utility Owner:	N/A
(Initials)	Leader: WAP Note Taker: DAM	Project Location:	BALTIMORE, MD
Project Name:	YORK RD TEST HOLES	Test Hole Date:	11/5/14
Requested By:	BAKER	Soil Conditions:	ROCKY
Utility Requested:	TELEPHONE DUCT	Utility Condition:	N/A
Utility Found:	N/A	Pavement -	
Material Makeup:	N/A	Condition:	ASPHALT / CONCRETE
Size Utility Found:	N/A	Type & Thickness:	.7' / .7'

Test Hole Information:  Cover (Top): 3.5' Cover (Bottom): N/A Drawn Facing: N/A Utility Width: N/A	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings @ Benchmark: _____ @ Top of Utility: _____ Notes: DUG DOWN 3.5' and HIT ROCKS. WAS UNABLE TO GET THROUGH.
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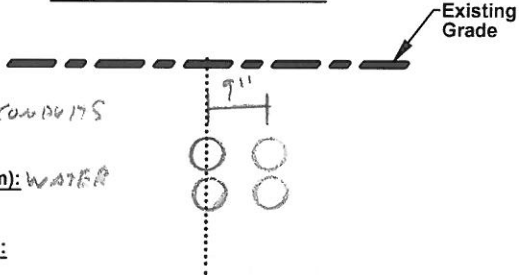
 SHAWAN	Site Diagram / Location Details:  Site Diagram Field Chk. by:	Scale: (NTS)
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ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #:	#5	Project Number:	MD14-051
Test Hole Crew:	DAM, DDA, RW	Utility Owner:	VERIZON
(Initials)	Leader: WAP Note Taker: WAP	Project Location:	BAKEMORE, COUNTY
Project Name:	YORK RD TH	Test Hole Date:	11/10/14
Requested By:	BAKER	Soil Conditions:	CLAY
Utility Requested:	QUC 30" WATER	Utility Condition:	GOOD
Utility Found:	TELEPHONE CONDUITS SEE NOTE	Pavement -	
Material Makeup:	STEEL	Condition:	FAIR
Size Utility Found:	4"	Type & Thickness:	ASPHALT / 1.4" CONCRETE / .9"

Test Hole Information:  Cover (Top): CONDUITS 4.25' Cover (Bottom): WATER 8.91' Drawn Facing: N/W Utility Width: 5"	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation _____ Grade Rod Readings @ Benchmark _____ @ Top of Utility: _____ Notes: TH REQUESTED 30" WATER, FOUND (5) 4" STEEL POSSIBLY TELEPHONE CONDUITS FROM TH #4, DUG BETWEEN CONDUITS HIT 30" WATER POSSIBLY, UNABLE TO SEE DUE TO CONDUITS.
--	--

 TO SHAWAN RD. → YORK RD LEFT TURN SOLID WHITE LINE 5.3' 1 6.1' 26.2' SD INLET. (QUC) W < T DASH WHITE LINE	Site Diagram / Location Details: Scale: (NTS)
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Site Diagram Field Chk. by: _____

ACCUMARK, INC. (800) 542-2990

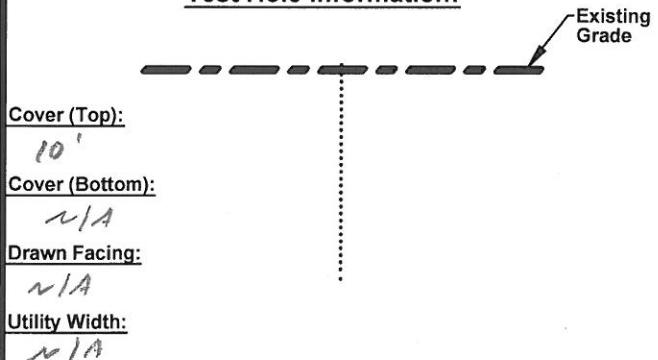
This form and its contents are protected by copyright, 2012

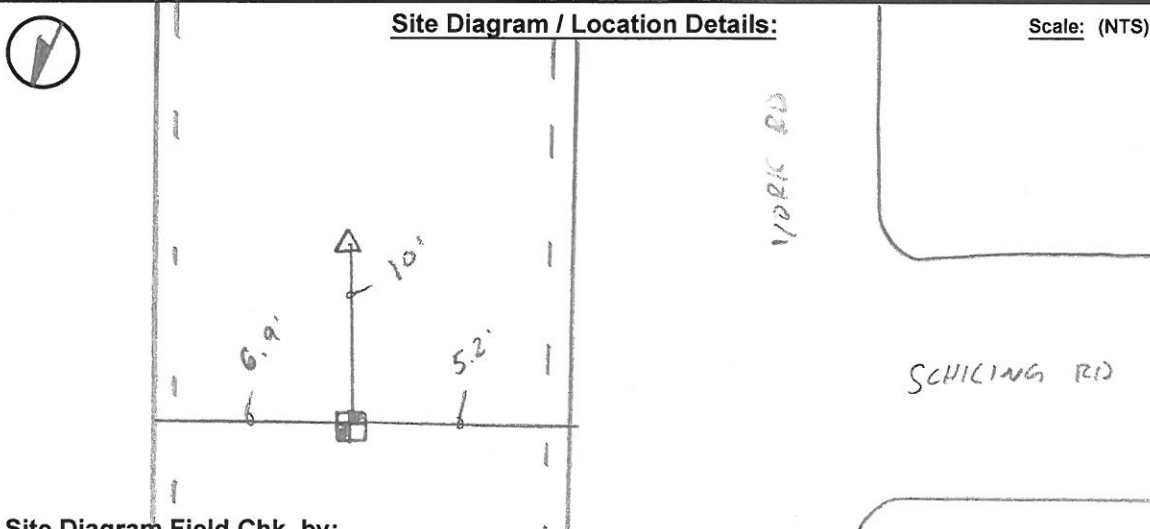
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #: <u>#6</u> Test Hole Crew: <u>DAM, CSS, DDA</u> <i>(Initials)</i> Leader: <u>WAP</u> Note Taker: <u>WAP</u> Project Name: <u>YORK RD TH</u> Requested By: <u>BAKER</u> Utility Requested: <u>WATER</u> Utility Found: <u>SEE NOTE</u> Material Makeup: <u>N/A</u> Size Utility Found: <u>N/A</u>	Project Number: <u>MD14-051</u> Utility Owner: <u>N/A</u> Project Location: <u>BAKIMOLF, MD</u> Test Hole Date: <u>10/27/14</u> Soil Conditions: <u>ROCKY/CLAY</u> Utility Condition: <u>N/A</u> Pavement - Condition: <u>FAIR</u> Type & Thickness: <u>ASPHALT</u>
---	--

Test Hole Information:  The diagram shows a vertical test hole. A dashed line at the top represents the 'Existing Grade'. A solid line below it represents the 'Cover (Top)' at 10'. Below the cover is the 'Utility' (24" water). The 'Cover (Bottom)' is at N/A. The 'Drawn Facing' is N/A. The 'Utility Width' is N/A.	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings: @ Benchmark: _____ @ Top of Utility: _____ Notes: TH REQUESTED 24" WATER, DUG 10' FOUND NO UTILITY. OPENED MANHOLE FOR WATER, FOUND THAT GPS COORDINATES WERE NOT OVER WATER. MOVING
--	---

Site Diagram / Location Details:  The site diagram shows a rectangular area representing the test site. A north arrow points upwards. The test hole is located at the intersection of York Rd (vertical) and Schilling Rd (horizontal). The distance from the top of the test hole to the top of the utility is 10'. The distance from the left side of the test hole to the center is 6.9'. The distance from the center to the right side is 5.2'.	Scale: (NTS)
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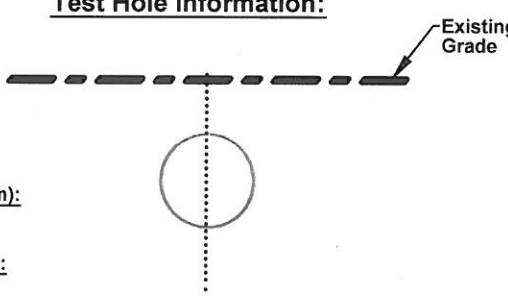
Site Diagram Field Chk. by: _____

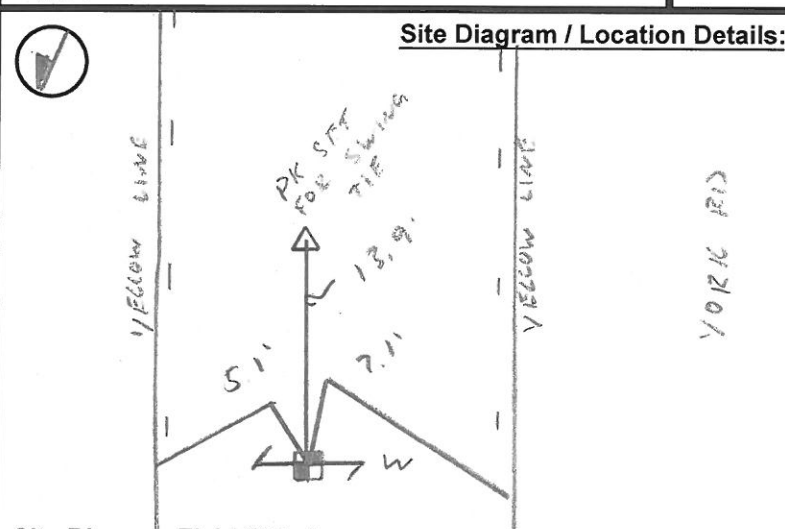
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #: <u>6 A</u>	Project Number: <u>MD14-051</u>
Test Hole Crew: <u>DAM/CJS/DDA</u> <i>(Initials)</i>	Utility Owner: <u>BALTIMORE</u> <u>COUNTY</u>
Project Name: <u>YORK RD TEST HOLES</u>	Project Location: <u>BALTIMORE</u> <u>MD</u>
Requested By: <u>BAKER</u>	Test Hole Date: <u>10/27/14</u>
Utility Requested: <u>WATER</u>	Soil Conditions: <u>ROCKY/CLAY</u> <u>SANDY</u>
Utility Found: <u>WATER</u>	Utility Condition: <u>GOOD</u>
Material Makeup: <u>SEE NOTE</u>	Pavement - <u>GOOD</u>
Size Utility Found: <u>SEE NOTE</u>	Condition: <u>GOOD</u>
	Type & Thickness: <u>ASPHALT / 1"</u>

Test Hole Information:  Existing Grade Cover (Top): <u>7.18'</u> Cover (Bottom): <u>N/A</u> Drawn Facing: <u>E</u> Utility Width: <u>SEE NOTE</u>	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation _____ Grade Rod Readings @ Benchmark _____ @ Top of Utility: _____ Notes: <u>PK SET OVER 24"</u> <u>WATER PIPE TO LARGE</u> <u>FOR ADEQUATE SIZE</u>
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Site Diagram / Location Details: 	Scale: (NTS)
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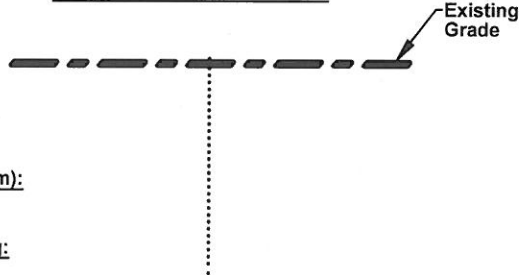
Site Diagram Field Chk. by: _____

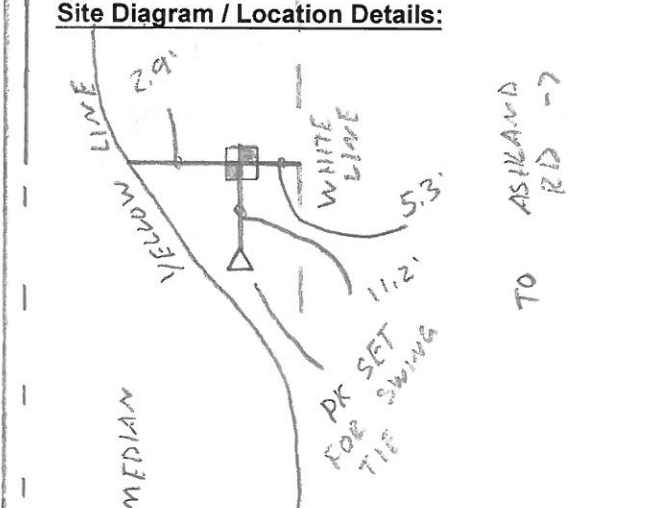
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #: <u>7</u> Test Hole Crew: <u>1DAM</u> <i>(Initials)</i> Project Name: <u>YORK RD TH</u> Requested By: <u>BAKER</u> Utility Requested: <u>TELEPHONE</u> Utility Found: <u>SEE NOTE</u> Material Makeup: <u>N/A</u> Size Utility Found: <u>N/A</u>	Project Number: <u>MDKI-051</u> Utility Owner: <u>N/A</u> Project Location: <u>BALTIMORE, MD</u> Test Hole Date: <u>10/23/14</u> Soil Conditions: <u>CLAY</u> Utility Condition: <u>N/A</u> Pavement - Condition: <u>FAIR</u> Type & Thickness: <u>ASPHALT 1.4'</u> <u>CONCRETE 1.6'</u>
--	--

Test Hole Information:  Existing Grade Cover (Top): <u>10'</u> Cover (Bottom): <u>N/A</u> Drawn Facing: <u>N/A</u> Utility Width: <u>N/A</u>	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings @ Benchmark: _____ @ Top of Utility: _____ Notes: <u>TH REQUESTED</u> <u>TELEPHONE DUCT. DUG</u> <u>TO 8', THEN PROBE TO</u> <u>10', NO UTILITY FOUND.</u> <u>PREVIOUS DESIGNATING</u> <u>FOUND NO TELEPHONE</u> <u>IN AREA. SET PC IN CENTER.</u>
--	---

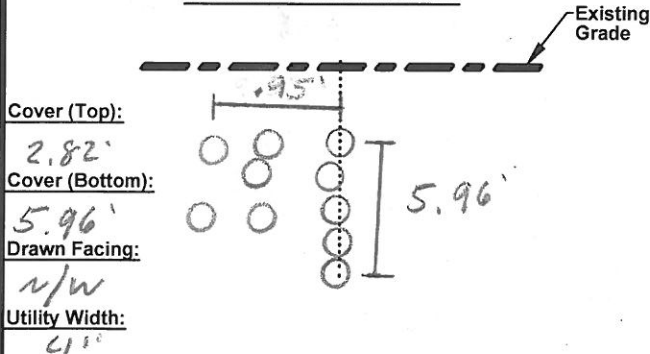
	Site Diagram / Location Details:  YORK RD TO SHAWAN RD MEDIAN YELLOW LINE 2.9' WHITE LINE 5.3' ASILAND RD -7 PK SET FOR SWING TIE 11.2'	Scale: (NTS)
Site Diagram Field Chk. by: _____		

ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #: <u># 8</u> Test Hole Crew: <u>DAM, DDA</u> <i>(Initials)</i> Leader: <u>WAP</u> Note Taker: <u>WAP</u> Project Name: <u>YORK RD TH</u> Requested By: <u>BAKER</u> Utility Requested: <u>TELEPHONE</u> Utility Found: <u>TELEPHONE CONDUITS</u> Material Makeup: <u>STEEL</u> Size Utility Found: <u>3"</u>	Project Number: <u>MDKI-051</u> Utility Owner: <u>VERIZON</u> Project Location: <u>BALTIMORE,</u> <u>COUNTY</u> Test Hole Date: <u>11/2/14</u> Soil Conditions: <u>ROCKY / CLAY</u> Utility Condition: <u>FAIR</u> Pavement - Condition: <u>FAIR</u> Type & Thickness: <u>ASPHALT 1.7'</u>
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Test Hole Information:  Existing Grade Cover (Top): <u>2.82'</u> Cover (Bottom): <u>5.96'</u> Drawn Facing: <u>n/w</u> Utility Width: <u>4"</u>	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings @ Benchmark: _____ @ Top of Utility: _____ Notes: <u>PK SET OVER</u> <u>CROWN OF EASTERN MOST</u> <u>4" STEEL CONDUIT, TH</u> <u>VISIBLY SAW (10) CONDUITS</u> <u>POSSIBLY MORE.</u>
---	---

 YORK RD PNC BANK ASHLAND RD SMH GAS TEST STATION WV 14.7' 12.5' 3.4' SHELL GAS STATION	Site Diagram / Location Details: Scale: (NTS)
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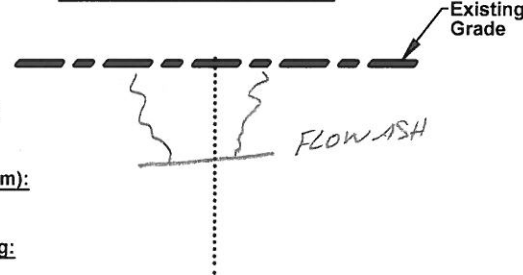
Site Diagram Field Chk. by: _____

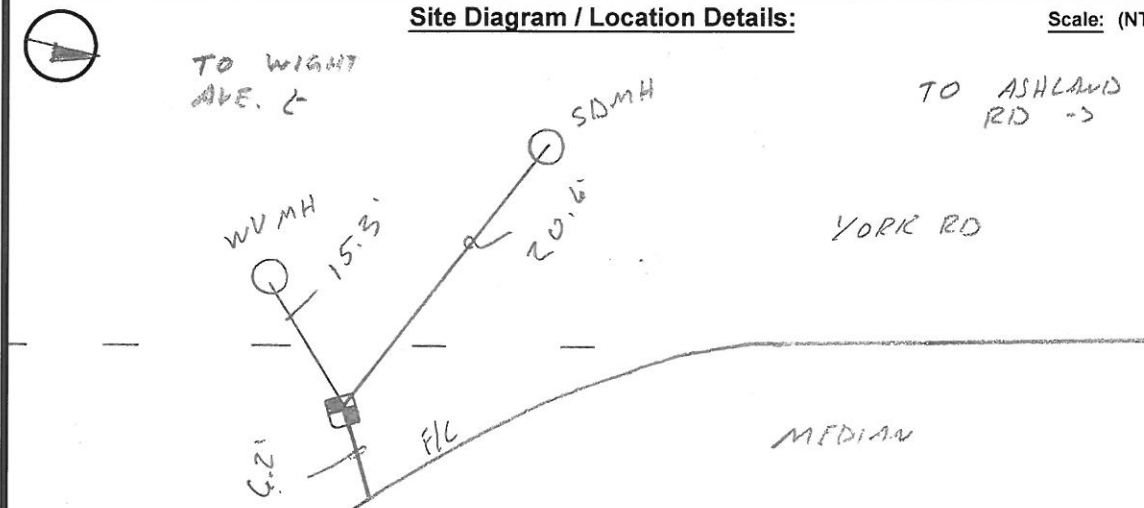
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #: <u>A 9</u> Test Hole Crew: <u>DAM</u> <i>(Initials)</i> Leader: <u>WAP</u> Note Taker: <u>WAP</u> Project Name: <u>YORK RD TH</u> Requested By: <u>BAKER</u> Utility Requested: <u>115 KV DUCT.</u> Utility Found: <u>SEE NOTE</u> Material Makeup: <u>N/A</u> Size Utility Found: <u>N/A</u>	Project Number: <u>MD14-051</u> Utility Owner: <u>N/A</u> Project Location: <u>BALTIMORE,</u> <u>COUNTY</u> Test Hole Date: <u>10/29/14</u> Soil Conditions: <u>FLOW-ASH</u> Utility Condition: <u>N/A</u> Pavement - Condition: <u>FAIR</u> Type & Thickness: <u>ASPHALT 1.7'</u>
--	--

Test Hole Information:  Cover (Top): <u>3'</u> Cover (Bottom): <u>N/A</u> Drawn Facing: <u>N/A</u> Utility Width: <u>N/A</u>	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation _____ Grade Rod Readings @ Benchmark _____ @ Top of Utility: _____ Notes: <u>TH REQUESTED</u> <u>ELECTRIC DUCT, DUG TO 3'</u> <u>HIT HARD FLOW ASH COULD</u> <u>NOT GET PASSED.</u>
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Site Diagram / Location Details: 	Scale: (NTS)
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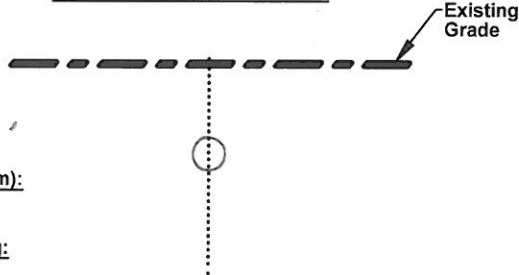
Site Diagram Field Chk. by: _____

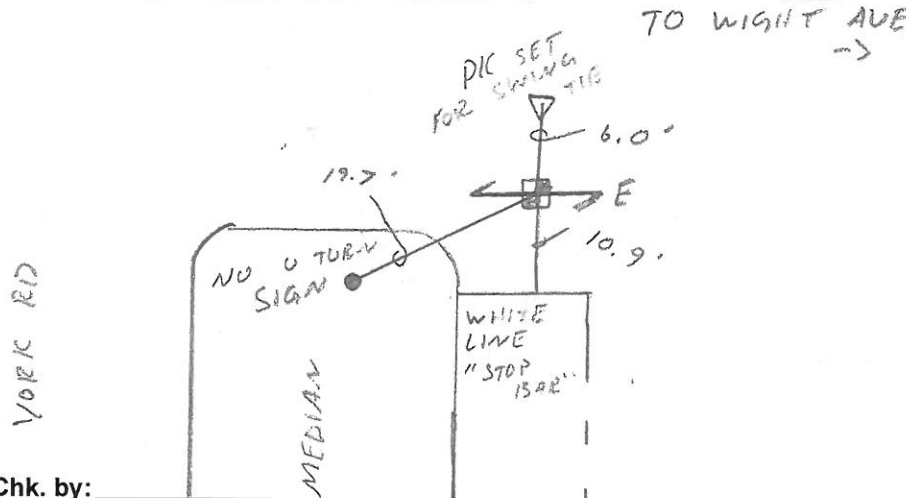
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #:	# 10	Project Number:	MDH-051
Test Hole Crew:	DAM, DDA	Utility Owner:	BGE
(Initials)	Leader: WAD Note Taker: WAD	Project Location:	BALTIMORE, COUNTY
Project Name:	YORK RD TH	Test Hole Date:	10/4/14
Requested By:	BAKER	Soil Conditions:	CLAY
Utility Requested:	ELECTRIC	Utility Condition:	GOOD
Utility Found:	TRAFFIC CONTROL CONDUIT	Pavement -	
Material Makeup:	STEEL	Condition:	FAIR
Size Utility Found:	2 1/2"	Type & Thickness:	ASPHALT / .9'

Test Hole Information:  Cover (Top): 1.24' Cover (Bottom): N/A Drawn Facing: S/E Utility Width: 2 1/2"	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings @ Benchmark: _____ @ Top of Utility: _____ Notes: PIC SET OVER CROWN OF 2 1/2" STEEL CONDUIT. TRAFFIC CONTROL
---	---

	Site Diagram / Location Details:  Scale: (NTS) TO WIGHT AVE ->
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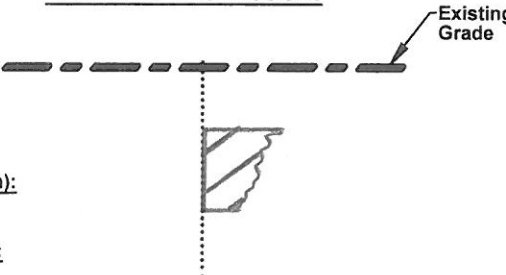
Site Diagram Field Chk. by: _____

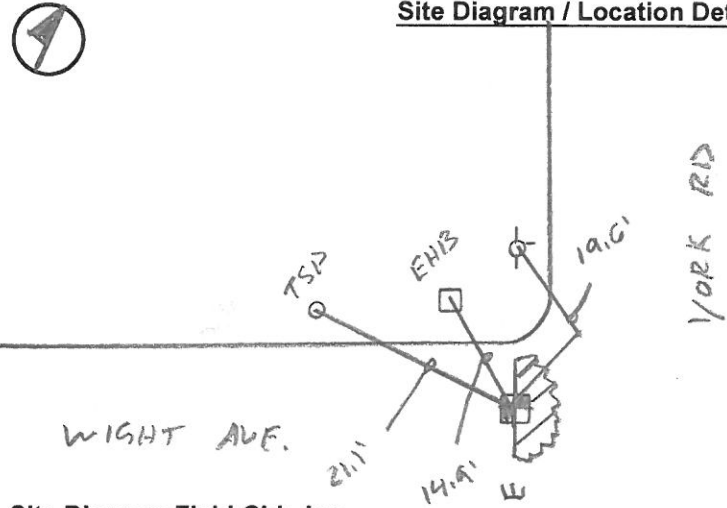
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #:	#11	Project Number:	MD11-051
Test Hole Crew:	DAM, DDS, RW	Utility Owner:	ISGE
(Initials)	Leader: WAP Note Taker: WAP	Project Location:	BALTIMORE, COUNTY
Project Name:	YORK RD TH	Test Hole Date:	10/11/14
Requested By:	BAKER	Soil Conditions:	CLAY
Utility Requested:	ELECTRIC	Utility Condition:	FAIR
Utility Found:	ELECTRIC DUCT	Pavement -	
Material Makeup:	CONC.	Condition:	FAIR
Size Utility Found:	N/A	Type & Thickness:	ASPHALT 1.8"

Test Hole Information:  Existing Grade Cover (Top): 2.39' Cover (Bottom): 4.73' Drawn Facing: n/w Utility Width: n/a	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings @ Benchmark: _____ @ Top of Utility: _____ Notes: MOVED TH NORTH WEST 5' +/- FOR SAFE TRAFFIC SET UP, TH FOUND ELECTRIC DUCT BANK, SET PK OVER WEST EDGE.
---	--

Site Diagram / Location Details:  Scale: (NTS)
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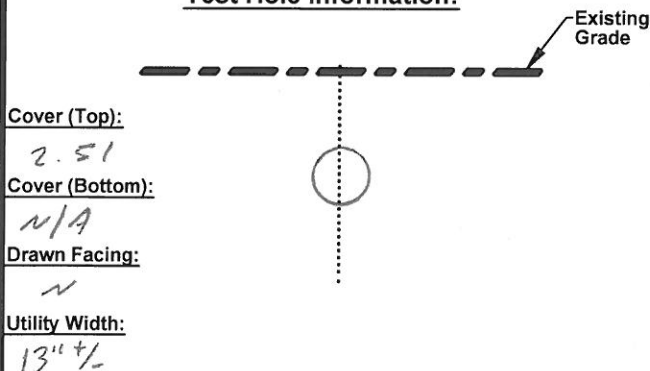
Site Diagram Field Chk. by: _____

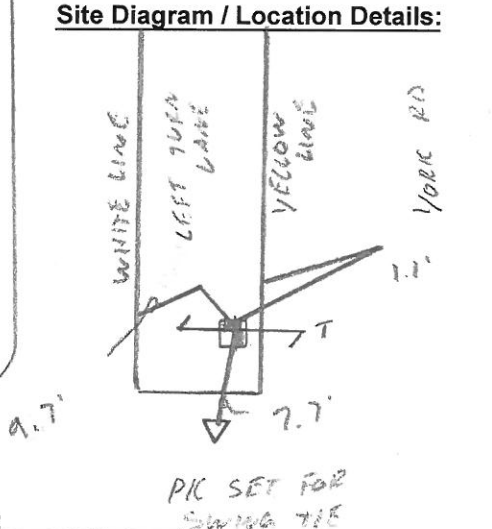
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #: <u>12</u> Test Hole Crew: <u>WAP, DDA, CJS</u> <i>(Initials)</i> Project Name: <u>YORK RD TH</u> Requested By: <u>BAKER</u> Utility Requested: <u>TELEPHONE</u> Utility Found: <u>TELEPHONE CONDUIT</u> Material Makeup: <u>STEEL</u> Size Utility Found: <u>12"</u>	Project Number: <u>MD14-051</u> Utility Owner: <u>VERIZON</u> Project Location: <u>BALTIMORE</u> <u>MD</u> Test Hole Date: <u>10/27/14</u> Soil Conditions: <u>ROCKY / CLAY</u> Utility Condition: <u>GOOD</u> Pavement - Condition: <u>FAIR</u> Type & Thickness: <u>ASPHALT / .8"</u>
---	---

Test Hole Information:  Cover (Top): <u>2.51</u> Cover (Bottom): <u>N/A</u> Drawn Facing: <u>N</u> Utility Width: <u>13" +/-</u>	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation _____ Grade Rod Readings @ Benchmark _____ @ Top of Utility: _____ Notes: PK SET OVER CROWN OF 12" STEEL TELEPHONE CONDUIT. NOTE THAT RECORDS INDICATED DUCT. PIPE WAS CORRODED NO ACCURATE PIPE SIZE
--	---

	Site Diagram / Location Details:  WHITE LINE LEFT TURN LANE YELLOW LINE YORK RD WIGHT AVE. 9.7' 7.7' PK SET FOR SWING TIE	Scale: (NTS)
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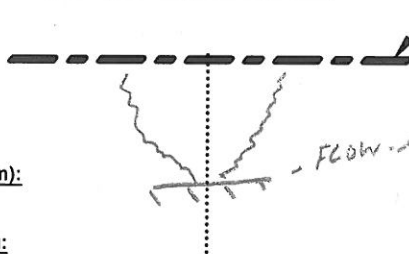
Site Diagram Field Chk. by: _____

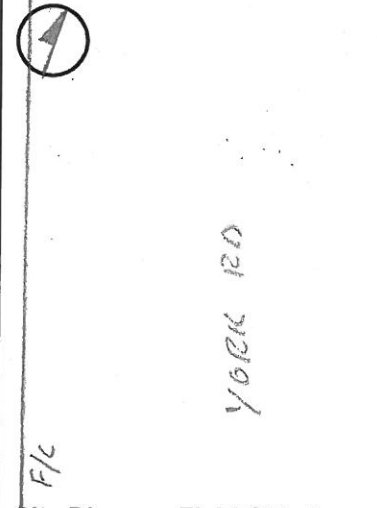
ACCUMARK, INC

Subsurface Utility Services

Field Utility Test Hole Report

Test Hole #:	# 13	Project Number:	MDK1051
Test Hole Crew:	DAM, DDA	Utility Owner:	N/A
(Initials)	Leader: WAD Note Taker: WAD	Project Location:	BALTIMORE, COVA 44
Project Name:	YORK RD TH	Test Hole Date:	11/4/04
Requested By:	BAKER	Soil Conditions:	ROCK / CLAY
Utility Requested:	115 KV ELECTRIC	Utility Condition:	N/A
Utility Found:	SEE NOTE	Pavement -	
Material Makeup:	N/A	Condition:	FAIR
Size Utility Found:	N/A	Type & Thickness:	ASPHALT

Test Hole Information:  Existing Grade Cover (Top): N/A Cover (Bottom): 3' Drawn Facing: N/A Utility Width: N/A Flow: ASH	Benchmark / Elevation Information: Located By: _____ Benchmark Elevation: _____ Grade Rod Readings @ Benchmark: _____ @ Top of Utility: _____ Notes: TH REQUESTED 115 KV DUE TO ROW-ASH COLLIS NOT DIG THROUGH TO FIND UTILITY, DUG 3' SET PK IN CENTER OF TH
--	---

 YORK RD VERNER WAY 11' 6" 4.7' WHITE LINE PK SET 6 SW TIE FOR TIE TO BEAVER RUN LN TO WIGHT AVE FLC	Site Diagram / Location Details: Scale: (NTS) Site Diagram Field Chk. by: _____
--	--

APPENDIX H

Cathodic Protection Report

REVISED REPORT
CATHODIC PROTECTION DESIGN
YORK ROAD PHASE 5
WATER MAIN REPLACEMENT
BALTIMORE COUNTY BOA 2019-01
CONTRACT NO. 24125-WXO
JOB ORDER NO. 231-203-0050-0466

Submitted by

Chester Dacres
DACCO SCI, INC.
10260 Old Columbia Road
Suite A1
Columbia, Maryland 21046

Submitted to

John Blondell
KCI Technologies Inc.
936 Ridgebrook Road
Sparks, Maryland 21152

July 31, 2025

DSI-KCI-2433



DACCO SCI, INC.

CORROSION ENGINEERING - MATERIALS TECHNOLOGY - ELECTROCHEMISTRY

10260 OLD COLUMBIA ROAD, SUITE A1, COLUMBIA, MARYLAND 21046
BALT. (410) 381-9475 • DC (301) 596-7019 • FAX (410) 381-9643

July 31, 2025

John Blondell, P.E.
KCI Technologies Inc.
936 Ridgebrook Road
Sparks, Maryland 21152

**RE: CATHODIC PROTECTION DESIGN – YORK ROAD PHASE 5 WATER
MAIN REPLACEMENT– BALTIMORE COUNTY BOA 2019-01 –
CONTRACT NO. 24125-WXO**

Dear Mr. Blondell:

DACCO SCI, INC. was tasked by KCI Technologies Inc. to provide a cathodic protection system design for the York Road Phase 5 Water Main Replacement (WMR) Project.

DACCO SCI, INC. recommends a galvanic cathodic protections system (GCPS) utilizing tape coating, bonded joints, magnesium sacrificial anodes, insulating joints, and test stations.

The proposed GCPS will be completed at an estimated cost of \$123,932.31. The design calculations, cost and time estimates are included in this report.

If there are any questions or revisions to the report, please do not hesitate to contact me.

Sincerely,

Chester Dacres, Ph.D., P.E.
President

CMD/rc

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Location of Project.....	1
RECOMMENDATIONS.....	2
CATHODIC PROTECTION SYSTEM DESIGN PROCEDURE.....	3
Current Requirement Calculations.....	4
Size and Location of Anodes	4
DESIGN CALCULATIONS AND COST ESTIMATES	4
Engineers Construction Cost and Completion Time Estimate	6

EXECUTIVE SUMMARY

Location of Project

DACCO SCI, INC. designed a galvanic cathodic protection system for the York Road Phase 5 Water Main Replacement (WMR) Project. The proposed alignment contains approximately 4,300 feet of six (6), eight (8), ten (10), 12, 24, and 30-inch diameter ductile iron pipe (DIP) located near Cockeysville in Baltimore County, Maryland. Figure 1 below shows the site vicinity map of the WMR project.

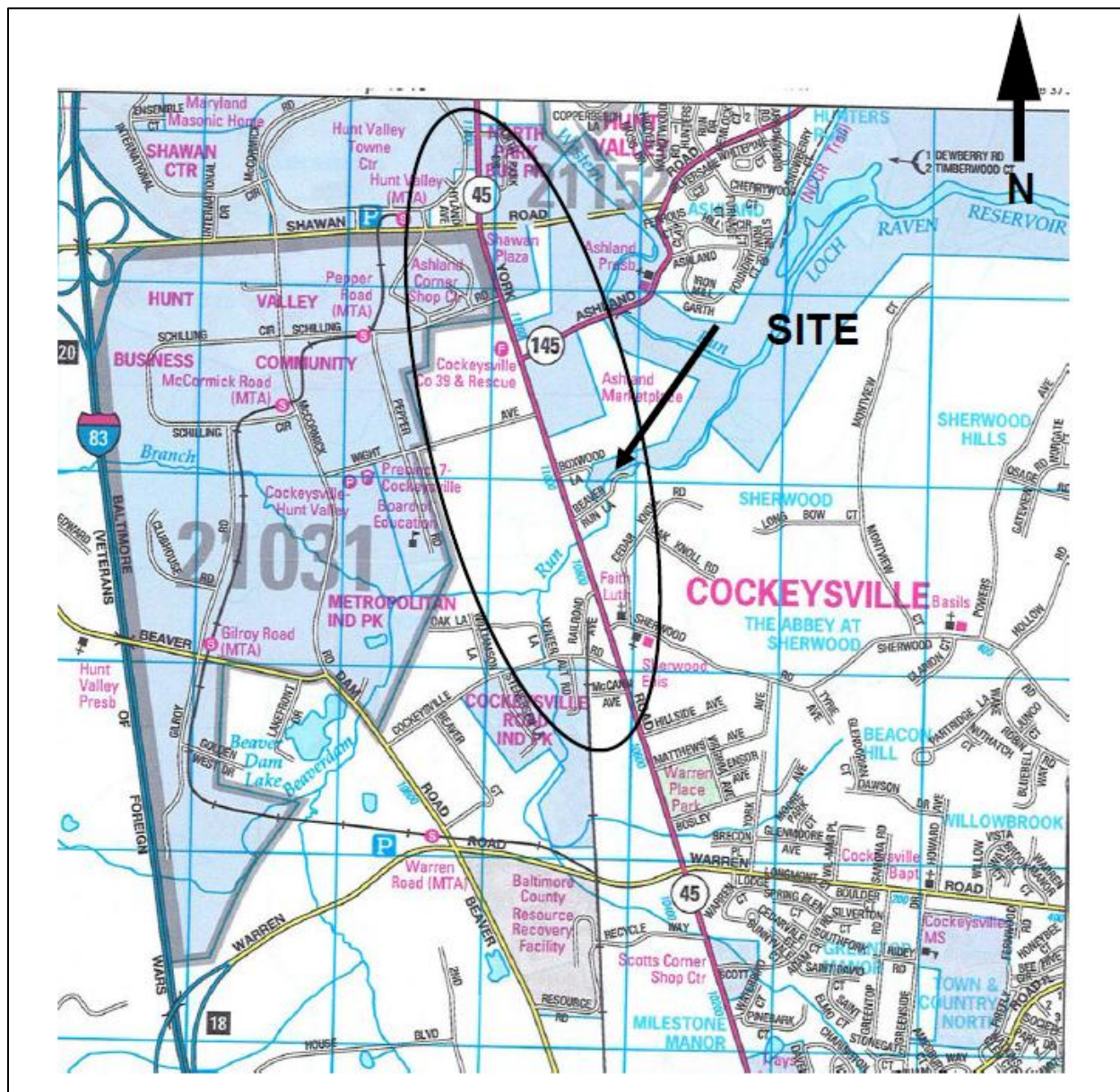


Figure 1 – Map of York Road Phase 5 WMR

Soil Resistivity

At the request of Baltimore County, data from reports by Russel Corrosion Consultants, LLC (2014), *24-Inch Water Transmission Main York Road from Cockeysville Road to Shawan Road Baltimore County, Maryland* and The Robert B. Balter Company (2014), *Geotechnical Evaluation 24-Inch Water Main York Road Between North Park Drive and Cockeysville Road RBB Contract No. 16571-0 MD* were used to design the cathodic protection system. An average soil resistivity at pipe depth of 5,857 ohm-cm was used in the design calculations.

RECOMMENDATIONS

DACCO SCI, INC. recommends, based on the Baltimore County – Public Works Design Manual – Water Design:

1. Coat the proposed water main, branches and fire hydrants with dielectric tape coating.
2. Install electrical bond wire across the pipe joints, fittings, and valve vaults to establish electrical continuity along the proposed water main, up to but not across the insulating joints.
3. Install insulating joints (IJ) at all connections between the proposed and existing water mains using a Dresser Style 39 insulating coupling (or equivalent).
4. Install insulated corporation stops for all water house connections less than four (4) inches in diameter using Mueller N-30045N (or equivalent).
5. Install 13 IJs to isolate the proposed water mains from the connections to the existing water main and fire hydrants.
 - a. Two (2) test stations should be installed without anode beds.
 - b. 11 test stations should be installed with anode beds to protect the proposed water main.
6. Install anode beds with:
 - a. Two (2) 40-lb magnesium anodes using GA-MG-40 HP or equivalent,
 - b. Placed horizontally at minimum of two (2) feet away parallel from the water main, at a depth equal to the bottom of the pipe depth,
 - c. Anodes spaced one (1) foot apart end-to-end.
7. A summary of the test station and anode bed locations are shown in Table 1 below.

Table 1 – Test Station Schedule for Contract No. 24125-WXO

TEST STATION SCHEDULE FOR CONTRACT NO. 24125-WXO - York Road WMR Phase 5								
SHEET	TEST STATION			ANODES			PIPE	
NO.	NO.	LOCATION	TYPE	QUANTITY	SIZE (LB)	MATERIAL	DIAMETER (IN)	STATION NO.
11	1	YORK ROAD	IJ/A	2	40	MAGNESIUM	24	232+36
11	2	YORK ROAD	IJ/A	2	40	MAGNESIUM	6	236+06
11	3	YORK ROAD	IJ/A	2	40	MAGNESIUM	6	238+50
11	4	ASHLAND ROAD AND YORK ROAD	IJ/A	2	40	MAGNESIUM	12	0+56
11	5	YORK ROAD	IJ/A	2	40	MAGNESIUM	8	240+74
12	6	SCHILLING ROAD AND YORK ROAD	IJ				24	1+30
12	7	SCHILLING ROAD AND YORK ROAD	IJ/A	2	40	MAGNESIUM	24	1+30
12	8	YORK ROAD	IJ/A	2	40	MAGNESIUM	6	251+86
12	9	YORK ROAD	IJ/A	2	40	MAGNESIUM	10	253+43
12	10	YORK ROAD	IJ/A	2	40	MAGNESIUM	10	260+59
12	11	YORK ROAD	IJ/A	2	40	MAGNESIUM	6	260+91
12	12	YORK ROAD	IJ				30	261+17
13	13	SHAWAN ROAD	IJ				6	5+84
13	14	SHAWAN ROAD	IJ/A	2	40	MAGNESIUM	12	6+42

Note: IJ/A – Insulating Joint with Anodes

CATHODIC PROTECTION SYSTEM DESIGN PROCEDURE

The cathodic protection design has followed specified American Society of Metals (ASM) guidelines¹ and examples from the American Iron and Steel Institute publication.² Design procedures vary among organizations, but DACCO SCI, INC. is observing the following general guidelines based on the Association for Materials protection and Performance (AMPP) practices.³

1. Determination regarding whether impressed current or sacrificial anodes will be used;
2. Determination regarding the design life of the system;
3. Calculation of the maximum electric current required;
4. Determination of the number and type of anodes required and their respective spacing;
5. Calculation of the lead wire size; and
6. Determination of the location of the anodes.

¹ Robert H. Heidersbach, "Cathodic Protection" reprinted in Metals Handbook: Ninth Edition, Volume 13 Corrosion, ASM International, 1987, pp. 470-477.

² "Handbook of Corrosion Protection For Steel Pile Structures In Marine Environments", 1st edition, American Iron and Steel Institute, 1981.

³ "CP 3-Cathodic Protection Technologist COURSE MANUAL", Version 1.0, NACE International, 2014.

Current Requirement Calculations

Current requirements are calculated by determining the amount of ductile iron exposed to a corrosive environment and historical soil resistivity data. The pipelines for the York Road Phase 5 WMR Project are assumed to be 98% coated.

The calculation of the current required to maintain cathodic protection is based on the following:

1. Determine the type of anode material to use as sacrificial anode anodes.
2. Calculate the current required to maintain protection of the coated ductile iron pipe for 30 years.

Size and Location of Anodes

The following three (3) factors were taken into consideration in designing the size of the anodes:

1. Total current requirement
2. Designed life of anodes
3. Soil resistivity

The total weight of anode material required to maintain protection of the pipe is dependent on the following:

1. Consumption rate of the anode material,
2. Efficiency factor of the anode material,
3. Utilization factor of the anode material,
4. Average total current to protect the pipe,
5. Design life

After the total weight of the anode material was determined, the anode resistance was calculated.

DESIGN CALCULATIONS AND COST ESTIMATES

Table 2 displays the results of the galvanic anode cathodic protection system design calculations. Table 3 and Table 4 display the cost and time estimate for the cathodic protection system design.

Table 2 – Cathodic Protection Calculations

CATHODIC PROTECTION CURRENT REQUIREMENT ANALYSIS					
Design Parameters					
Nominal Pipe Diameter:	24,8,6,12,10 in				
Pipe Outer Diameter:	25.8,9.05,6.9,13.2,11.1 in				
Length:	4230 ft				
Design Life:	30 yrs				
Estimated Surface Area at Time of Installation					
Total:	23,962 ft ²				
Coated:	23,482 ft ²				
Uncoated:	479 ft ²				
Current Requirement Analysis					
Current Required:	0.96 A				
SACRIFICIAL ANODE SYSTEM CALCULATIONS					
Anode Bed Requirement Analysis					
Anode Type	Working Potential (Volts)	Consumption Rate (lbs / A × yr)	Efficiency Factor	Utilization Factor	Anode Weight* (lbs)
GA-MG-40 HP	-1.70	17.50	50%	0.85	593
* Based on Current Requirement Analysis.					
Anode Bed Design					
Input					
Anode Type:	GA-MG-40 HP				
Number of Anodes Used (N):	22				
Anode Mass (Each):	40 lbs				
Anode Length (L):	4.98 ft				
Anode Diameter (d):	4.09 in				
Anode Consumption Rate (CR):	17.50 lbs / A · yr				
Center-to-Center Spacing (S):	7 ft				
Anode Working Potential:	-1.70 V (vs Cu/CuSO ₄)				
Structure Potential:	-0.850 V (vs Cu/CuSO ₄)				
Soil Resistivity (r):	5,857 Ohm · cm				
Output					
Total Anode System Mass:	880 lbs				
Single Anode Resistance (R _v):	16.74 Ohm				
Anode Bed Resistance:	9.65 Ohm				
Anode System Resistance (R _{gb}):	0.88 Ohm				
Anode Bed Output					
Current Output:	0.97 A				
Anode Driving Potential:	0.85 V				
Anode Consumption:	597 lbs				

Engineers Construction Cost and Completion Time Estimate

Table 3 and Table 4 below display the detailed cost and time estimates for construction of the cathodic protection system including labor. The cathodic protection construction time estimate is expected to be accomplished concurrently (not sequentially) with construction efforts.

Table 3 – Cost Estimate

QUANTITY	UNIT	MATERIALS ITEM	MATERIALS		INSTALLATION	
			UNIT COST	TOTAL COST	UNIT COST	TOTAL COST
22	each	High Potential Magnesium Anodes (GA-MG-40 HP)	\$283.35	\$6,233.70	\$75.00	\$1,650.00
14	each	Test Stations	\$65.00	\$910.00	\$150.00	\$2,100.00
22	each	Splice Kits (#8 AWG)	\$60.00	\$1,320.00	\$33.00	\$726.00
14	each	Cu-CuSO4 Reference Electrode	\$135.00	\$1,890.00	\$33.00	\$462.00
30	ft	Cable Trenching	\$0.00	\$0.00	\$6.50	\$195.00
514	ft	24-inch #2 AWG HMWPE Jumper Bond	\$7.71	\$3,962.94	\$0.00	\$0.00
314	ft	24-inch #4 AWG HMWPE Jumper Bond	\$5.44	\$1,708.16	\$0.00	\$0.00
516	ft	#8 AWG HMWPE Cable	\$1.98	\$1,021.68	\$0.00	\$0.00
644	ft	#6 AWG THWN Cable	\$1.50	\$966.00	\$0.00	\$0.00
644	ft	#12 AWG THWN Cable	\$0.40	\$257.60	\$0.00	\$0.00
83	each	20Pk Thermite Weld Metal (#2, #4 AWG)	\$65.00	\$5,395.00	\$440.00	\$36,520.00
4	each	20Pk Thermite Weld Metal (#6, #8, #10, #12 AWG)	\$55.00	\$220.00	\$440.00	\$1,760.00
21	each	50 Use Thermite Weld Mold (#2 AWG)	\$105.00	\$2,205.00	\$0.00	\$0.00
13	each	50 Use Thermite Weld Mold (#4 AWG)	\$105.00	\$1,365.00	\$0.00	\$0.00
1	each	50 Use Thermite Weld Mold (#6 AWG)	\$105.00	\$105.00	\$0.00	\$0.00
1	each	50 Use Thermite Weld Mold (#8, #10, #12 AWG)	\$105.00	\$105.00	\$0.00	\$0.00
169	each	10Pk Handicaps (#2, #4, #6 AWG)	\$16.50	\$2,788.50	\$0.00	\$0.00
2	each	20Pk Handicaps (#8, #10, #12 AWG)	\$6.50	\$13.00	\$0.00	\$0.00
28	cubic ft	Concrete	\$5.07	\$141.96	\$75.00	\$2,100.00
1	lot	Misc. Supplies	\$1,000.00	\$1,000.00	\$0.00	\$0.00
7	days	Testing	\$0.00	\$0.00	\$500.00	\$3,500.00
1	each	Test Report	\$0.00	\$0.00	\$2,000.00	\$2,000.00

Subtotal	\$31,608.54	\$51,013.00
20% contingency	\$6,321.71	\$10,202.60
Subtotal	\$37,930.25	\$61,215.60
Cathodic Protection Cost		\$99,145.85
25% Contractor Markup		\$24,786.46
Total Cathodic Protection Cost		\$123,932.31
USE		

Table 4 – Completion Time Estimate

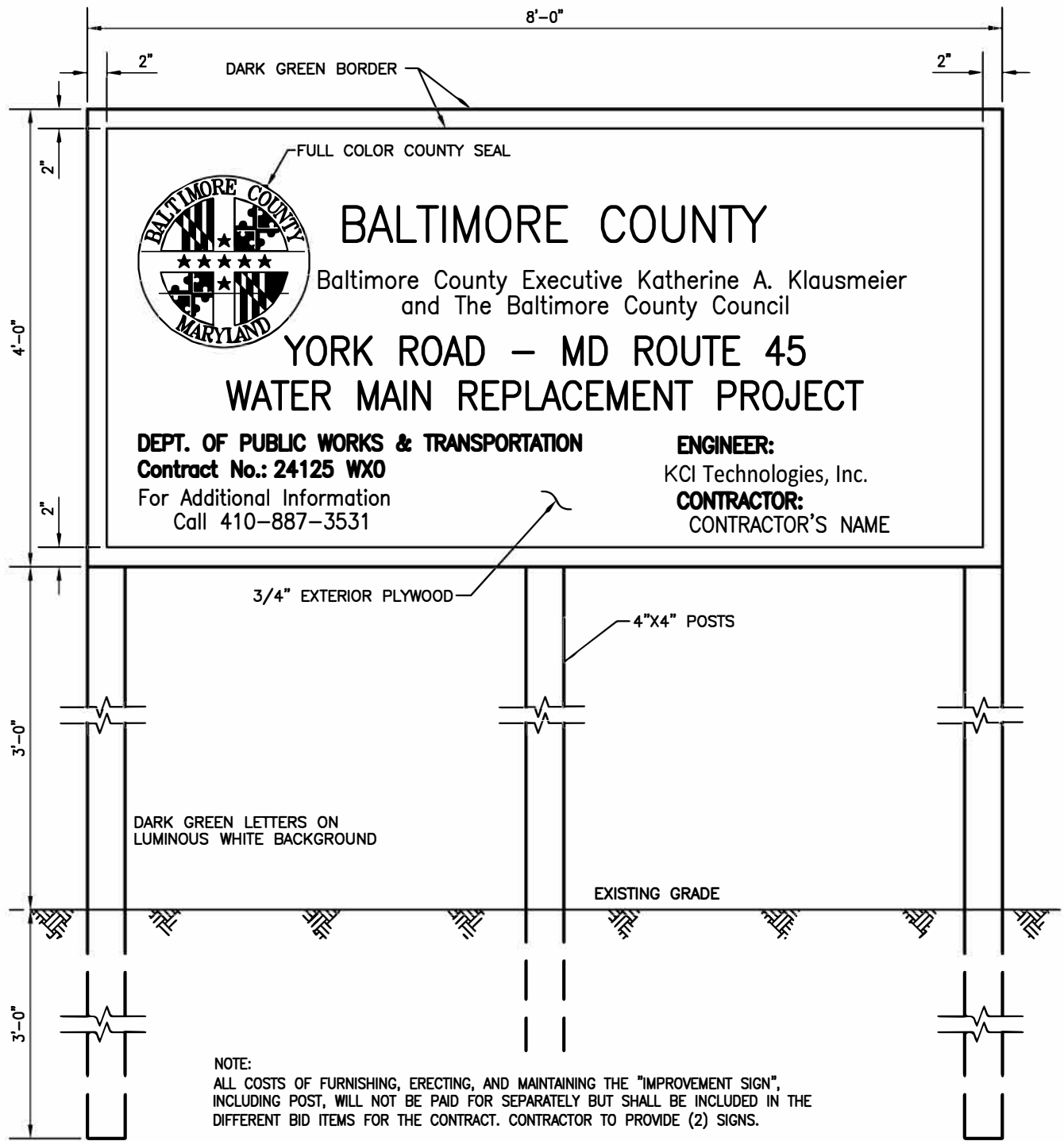
Item	Quantity	Items Per Day	Total Days
Test station Installatio	14	1.0 TS/day	14
Anode Bed	11	1.0 Anode bed/day	11
IJ Installation	14	1.0 IJ/day	14
Wire Bond Connection	828	12.0 Bonds/day	69

SUBTOTAL	108
Contingencies (10%)	11

TOTAL DAYS	119
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APPENDIX I

Construction Site Sign



CONSTRUCTION SITE SIGN

NOT TO SCALE

NO.	DATE	REVISIONS	INT.	TITLE:		
				YORK ROAD CONSTRUCTION SITE SIGN		
				JO: 231-203-0050-0466	DRAWN BY: JAB	CHECKED BY: EAM
				DATE: 8/29/2024	REF. DWG. Improv Sign	DRAWING NO. 1
				BALTIMORE COUNTY, DPW&T WATER DESIGN SECTION		
				COCKEYSVILLE, MARYLAND		

APPENDIX J

Baltimore County Grading Permit (see Pages 266-267 of the Permits Section)

S E C T I O N I I I

Permits



THE MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION (MDOT SHA)

320 West Warren Road
Hunt Valley, MD 21030

Utility Permit

Permit Number: SHA-4-BA-0073-25

U.C. Ref or Job ID#: 231-203-0050-0466

Project Number:

Route No.: MD 45

Route Name (optional): YORK RD - MD 45

Limits : WIGHT AVE - CO 425 to NORTH PARK DR **Mile Point :** 8.750, 9.420

Issue Date : 1/31/2025

Expiration Date : 1/29/2027

Anticipated Start Date :

Duration of Work :

So far as the MDOT State Highway Administration has the right and power to grant same, permission is hereby given to:

Permittee :

Baltimore County Government
111 W. Chesapeake Avenue
Room 200
Towson, MD 21204

Attention :

Erin McKenna-Streyle
Phone#: (470) 887-8545
Email:
emckenna-streyle@baltimorecountymd.gov

Description of Work:

Construction of replacement 24-inch diameter ductile iron water main to replace aging 12-inch diameter water main. Existing water main to be abandoned in place.

The following Special Conditions apply to this permit.

- ✓ Permittee must communicate with the MDOT/SHA Utility Inspector one (1) week prior to the commencement of work being executed under this permit to discuss Maintenance of Traffic.
- ✓ An approved MDOT/SHA Traffic Control Permit shall be required prior to commencement of work.
- ✓ All facilities must be placed in accordance with current MDOT/SHA's "Accessibility Policy & Guidelines for Pedestrian Facilities Along State Highways".
- ✓ All excavation outside of paved section shall be backfilled using suitable material as stated in the MDOT/SHA Specification Book (current revision) or approved by MDOT/SHA Utility Inspector.

- ✓ Pavement section must be patched using 19 mm PG64-22 base course HMA and (2") inches surface course 12.5mm PG64-22 HMA or as directed by MDOT/SHA Utility Inspector.

Steel Plates - All excavation in MDOT/SHA State Right-of-Way shall be backfilled or plated daily. All steel plates shall be recessed, pegged on all four (4) corners, properly shimmed/wedged, and filled around the edges to provide smooth transition. If more than one plate is utilized adjacent to each other, they shall

- ✓ be supported from the underside and tack welded to prevent flexing and shifting. All steel plates shall have identification. Inspections of steel plates must occur twice daily using approved MDOT/SHA Inspection Report. Any steel plate placed between December 1st and March 30th, shall have pre-approval from MDOT/SHA Utility Inspector and paving restoration plan/schedule must be identified.

- ✓ Cold Mix Asphalt is PROHIBITED unless approved by MDOT SHA Utility Inspector. Only approved cold patch materials (CPM) identified on the MDOT/SHA List of Qualified Products is approved for use on Maryland State roadways. CPM's are only to be utilized as a temporary repair until full roadway restoration can be achieved.

- ✓ Any temporary roadway patch placed between October 30th and April 15th must consist of at least six (6") inches of Hot Mixed Asphalt (HMA) with last two (2") inches being placed by paver and monitored weekly by the Permittee until permanent repair is completed. All roadway patches shall have spray painted identification.

- ✓ Trench repair less than six (6') feet in width will require a two (2') foot cut back in accordance with MDOT/SHA Standard 578.01 using an approved dry/fresh backfill material as specified in the MDOT/SHA Specification Book or per the MDOT/SHA Utility Inspector.

- ✓ ROADWAY RESTORATION: All backfill must be compacted and tested. Compaction reports must be provided to SHA (trenches of a 1000' or longer). Roadway repair may require a (2") inch grind and overlay a minimum of (20') feet (max. 250') feet on each side of excavation as directed by MDOT/SHA Utility Inspector. If permanent patch is not compatible to existing roadway, patch will be grinded (2") inches in depth and (20') feet on each side of patch, the entire width of the lane(s) and overlaid using an approved MDOT/SHA Hot Mix Asphalt (HMA) or as directed by MDOT/SHA Utilities Inspector. Any temporary roadway patch placed between October 30th and April 15th must consist of at least (6") inches HMA and monitored weekly by Permittee until permanent repair is completed. All roadway patches MUST have spray painted identification.

- ✓ Prior to any work being performed in the State Highway Administration Right-of-Way, a pre-construction meeting shall be held with representatives of the State Highway Administration. The Permittee is required to schedule the per-construction meeting with the MDOT SHA Utility Area Engineer before any excavation can start.

Notifications:

- Permittee must notify **SAMUEL WALTO**, the MDOT State Highway Administration **District Utility Inspector**, at **(410) 321-2772** or **swalto@mdot.maryland.gov**, 48 hours prior to commencement of any activities related to this permit.
- The permittee will designate the Traffic Manager for this permit and a 24 hour emergency number at the pre-construction meeting.

c. All work for this permit shall be in conformance with the above referenced documentation supplied by the utility company.

d. The Permittee is **requested** to provide Geographic Information System (GIS) coordinates of any of its facilities, infrastructure, and appurtenances installed within the permitted area(s) to MDOT SHA District Office within Sixty (60) calendar days (or agreed upon timeline) of the completion of the Permittee's installation. The GIS coordinates should be provided on As Constructed Plans or other agreed upon mechanism. Please see the 2022 UTILITY PERMIT GENERAL PROVISIONS, Section 001.03.03.06 As Constructed Deliverables.

THIS PERMIT IS ISSUED WITH THE REQUIREMENT THAT IT WILL BE ENFORCED WITH THE UTILITY PERMIT GENERAL PROVISIONS. A COPY OF THE UTILITY PERMIT GENERAL PROVISIONS SHALL BE ATTACHED TO EACH AND EVERY INDIVIDUAL WORK ORDER PERMIT ALONG WITH ANY SPECIAL PROVISIONS, ATTACHMENTS, PLANS, AND ADDENDA IN ORDER TO CONSTITUTE A COMPLETE AUTHORIZED UTILITY PERMIT. THE COMPLETE AUTHORIZED UTILITY PERMIT OR DISTRICT OFFICE PERMIT WHICH MUST BE FOUND ON THE JOB SITE **AT ALL TIMES**.

A handwritten signature in black ink that reads "Brian T. Jender". The signature is written in a cursive, flowing style.

FOR

By: _____

MYERS, CLAUDINE

District Engineer

MDOT State Highway Administration

PROJECT INFORMATION FORM

Utility / Access Permit #

Work Start Date:

Utility Company/Field Inspector Contact & #:

Contractor Company/Contact & #:

Traffic Control Company/Contact & #:

Lane Closure Permit # (Leave Blank):

Excavation in Roadway:

- ☐ Yes
☐ No

Excavation in Sidewalk:

- ☐ Yes
☐ No

* Make sure to add first & last name under contact info!

* A copy of the Traffic Control Managers MOT Card must be submitted

* **Must Contact SOC at (410)-582-5650 (Prior To & After Work)**

Route #:

Work End Date:

Field Inspector Email Address:

Contractor Email Address:

Traffic Control Email Address:

Signature

Date

UTILITY PERMIT GENERAL PROVISIONS
Effective January 1, 2025

01.01 DESCRIPTION. The Maryland Department of Transportation State Highway Administration (MDOT SHA) issues Utility Permits to only those companies, local governments, and municipalities that have been approved by the MDOT SHA as an Authorized Public Utility. The Permittee shall not perform any work within MDOT SHA rights-of-ways without a Complete Authorized Utility Permit for each location as per § 8-646 of the Transportation Articles of the Annotated Code of Maryland. The MDOT SHA issues Utility Permits in two (2) parts which, when combined, comprise a Complete Authorized Utility Permit. (hereinafter referred to as Complete Authorized Utility Permit).

01.01.01 Part 1–Utility Permit General Provisions.

- (a) These Utility Permit General Provisions contain the general requirements, conditions, procedures, and contact information required for all communications of activities performed within MDOT SHA right-of-way (ROW).
- (b) The Permittee shall download, sign, date, and return (to the appropriate District Office) the Utility Permit General Provisions Acknowledgement Form acknowledging the Permittee’s acceptance to abide by the Utility Permit General Provisions’ terms and conditions.

01.01.02 Part 2–Individual Work Order Permits.

- (a) Utility Construction Permits, Utility Relocation Permits (for MDOT SHA projects), Utility Blanket Permits, and Utility Permit Extensions, hereinafter referred to Individual Work Order Permits, grants the Permittee permission to perform limited work within various MDOT SHA ROW when combined with these Utility Permit General Provisions.
 - (1) **Utility Construction Permits** are issued for the installation, construction, and relocation; significant removal, replacement, or adjustment; and **major maintenance** of utility infrastructure as needed and requested by the Permittee.

Major Maintenance is any maintenance that is beyond the normal, routine upkeep of the facility; beyond cyclical or planned maintenance; new service installations; any activity requiring excavations except in emergency situations; and the removal or replacement of poles. Major maintenance activities include any scheduled preventative maintenance involving excavations except in emergency situations, including test pitting in non-emergency situations, and require a Utility Construction Permit.
 - (2) **Utility Relocation Permits** are issued for the installation, construction, removal, relocation, replacement and adjustment of utility infrastructure as required by the MDOT SHA. Utility Relocation Permits are issued specifically in connection with MDOT SHA projects.

- (3) **Utility Blanket Permits** are issued for **minor maintenance** of utility infrastructure and utility work required in **emergency situations**. A Utility Blanket Permit is issued biennially from the appropriate districts for emergencies and minor maintenance activities, so the Permittee would not need to submit numerous individual site-specific Utility Permit Application Packages; however, this does not exempt the Permittee from obtaining required Traffic Control Permits in non-emergency situations.

Minor Maintenance is maintenance required to keep an existing utility facility in a good state of repair without adding to its physical makeup or changing its physical capacity. **Minor Maintenance** activities are routine, low in cost, straightforward, and expedient to correct which are normally accomplished as part of the annual operation and maintenance. Such activities covered in the Utility Blanket Permit would include existing customer service work, overhead work and pole attachments, lighting repairs, and splicing cables or other work in existing manholes/structures and vaults. Tree trimming activities required to access and maintain the Permittee's facilities are also covered in the Utility Blanket Permit.

Emergency is a situation resulting from a sudden, unexpected event or incident which presents a clear and imminent danger requiring immediate action to prevent or mitigate loss or damage to life, health, property or essential public services (including interruption of utility services). Emergency work is any activity, including roadway excavation, to make necessary temporary and permanent repairs to existing or potential unsafe conditions; and includes any work associated with the Emergency, thereafter, including roadway excavation, to temporarily and permanently repair/restore essential public services and property, including MDOT SHA rights-of-ways. Emergency work is covered in the Utility Blanket Permit.

- (4) **Utility Permit Extensions** are issued for the extension of previously issued Utility Construction Permits and/or Utility Relocation Permits when the proposed utility work will not be completed by the expiration date of said permits. Utility Permit Extensions apply to only Utility Construction Permits and Utility Relocation Permits.

Utility Blanket Permits shall require the issuance of a new permit upon their expiration.

- (b) Individual Work Order Permits are issued by the appropriate district office under the signature of the District Engineer (or their approved designee).
- (c) **Part 1 and Part 2 combined.** The Permittee shall attach both parts of the Utility Permit together in order to constitute a Complete Authorized Utility Permit prior to beginning any work within the MDOT SHA's ROW.

01.01.03 Utility Access. Individual Work Order Permits alone or the Utility Permit General Provisions alone DOES NOT grant permission to the Permittee to work within the MDOT SHA ROW. Only a Complete Authorized Utility Permit grants permission to the Permittee access to the MDOT SHA ROW to perform the Permittee's work in accordance with and as defined in the Complete Authorized Utility Permit.

01.02 MATERIALS. Not Applicable.**01.03 CONSTRUCTION.****01.03.01 GENERAL CONDITIONS.**

- (a) **Acceptance of terms and specifications.** It is agreed and understood that the issuance of any Complete Authorized Utility Permit will be construed to indicate complete acceptance of the terms and specifications outlined herein.
- (b) **Work.** All work shall be performed in accordance with the provisions of any Complete Authorized Utility Permit.
- (c) **Right to modify.** In the event of a safety concern, differing site conditions, design errors or omissions, restoration concerns, changes in laws, regulations or requirements, or any other unforeseen changes or issue which might affect any permit or permit provision, the MDOT SHA reserves the right to modify any permit or permit provision at any time to ensure safety, compliance, and restoration is acceptable to the MDOT SHA Standard Specifications. The Permittee will first be provided the opportunity to demonstrate its compliance with the permit or address the modification before any permit, or permit provision, is modified.
- (d) **Unsafe operations.** In the event the MDOT SHA determines that any operation is detrimental to the safe operation of the (State) highway system, the MDOT SHA will notify the Permittee. The Permittee shall suspend its operation(s) and then work with the MDOT SHA in good faith to determine if and/or how the Permittee's operation(s) can be continued or resumed in a manner that is not detrimental to the safe operation of the (State) highway system. If the Permittee's operation(s) cannot be continued or resumed in a manner that is of a safe operation of the (State) highway system, the MDOT SHA reserves the right to halt the Permittee's operation(s).
- (e) **Right to revoke.** In the event the Permittee's fails to comply with the terms of a Complete Authorized Utility Permit, the MDOT SHA will notify the Permittee of its non-compliance. The Permittee will then be provided the opportunity to cure its non-compliance before any permit, or permit provision, is modified or revoked. If the Permittee fails to cure its non-compliance, the MDOT SHA reserves the right to revoke the Complete Authorized Utility Permit.
- (f) **Permission.** Permission, when granted, to place utility facilities within the limits of MDOT SHA ROW is revocable at any time by the MDOT SHA. Any such revocation will have no bearing on any other facility of the Permittee under a franchise authorized under the Annotated Code of Maryland, Public Utilities Article.
- (g) **Complete Authorized Utility Permit-job site.** A copy of the Complete Authorized Utility Permit must be on the job site at all times during the performance of all work identified in the Individual Work Order Permits in order that the Permittee's personnel and/or the Permittee's contractor is in a position to comply with the requirements of the Complete Authorized Utility Permit. The Procurement Officer shall have the option of stopping work on MDOT SHA projects where the Permittee's representative does not

have a copy of the Complete Authorized Utility Permit on the job site and/or is not familiar with the contents of the permit.

- (h) **Property interest.** Permits issued by the MDOT SHA do not convey any property interest to the Permittee or to any successor of the Permittee.
- (i) **Future road improvements.** In the event future road improvements require the relocation, adjustment, and/or removal of facilities installed under any Complete Authorized Utility Permit, all costs associated with the relocation, adjustment, and/or removal of said facilities shall be borne by the Permittee.
- (j) **Non-compliance.** In the event that the Federal Highway Administration (FHWA) or any other federal authority with jurisdiction over the subject matter determines that a specific use of the MDOT SHA ROW (or the terms of such use) noncompliant with applicable federal authority, the MDOT SHA shall have the right to direct the Permittee to take the necessary actions to bring any such use (or the terms of such use) into compliance with the applicable federal authority without assuming the liability of any user/Permittee of such ROW. The Permittee will be provided with information on the authority's determination. The Permittee shall provide maximum cooperation to the MDOT SHA and any such Federal authority to assure prompt compliance is achieved.
- (k) **Hold harmless and insurance requirements.** Hold Harmless, Indemnification, and Insurance provisions (as required by Section GP-7.13 of the most current "MDOT SHA Standard Specifications for Construction and Materials, as may be revised from time to time) are hereby required of the Permittee. The Permittee covenants and agrees to require all contractors and subcontractors or other parties that the Permittee uses to perform work within any MDOT SHA rights-of-way, including both MDOT SHA controlled access rights-of-way and MDOT SHA secondary roads (collectively, "ROW") to abide by the same provisions and requirements. The State of Maryland, the Maryland Department of Transportation and the State Highway Administration ("MDOT SHA") must be listed as additional named insureds on all insurance policies. Self-Insured companies may provide a self-insurance letter. Certificates and letters of self-insurance must be mailed to the State Highway Administration, Attn. Statewide Utility Engineer, Office of Construction, 7450 Traffic Drive, Hanover, MD 21076 prior to the commencement of any work within MDOT SHA ROW.
- (l) **Liability requirements.** The Permittee shall be responsible for, defend (at the State's option), indemnify, and hold harmless the State of Maryland, MDOT, and MDOT SHA, their respective members, officers, agents, and employees, against and from any and all liability or claim of liability for bodily injury (including death) or property damage (including reasonable attorneys' fees) related to involving or arising, in whole or in part from any act or failure to act or out of the use, occupancy, conduct, or operation, construction, maintenance, or management of or upon any portion of state rights-of-way (as approved and authorized in the Complete Authorized Utility Permit) by the Permittee, its principals, contractors, employees, agents, licensees, lessees, or invitees in accordance with the most current GP-7.13 RESPONSIBILITY FOR DAMAGE CLAIMS, Standard Specifications For Construction And Materials, including, by way of example only: (a) any work or thing whatsoever done or not done on state rights-of-way (as approved and authorized in any Complete Authorized Utility Permit) by or on behalf of the Permittee;

or (b) any breach, default, or Event of Default by the Permittee in performing any of its obligations under the provisions of these Utility Permit General Provisions, Individual Work Order Permits, or applicable law. The Permittee agrees that the indemnification as described in this Section shall include any liability or claim of liability that occurs during the Term (or that occurs after the Term where the Permittee has obligations under any Complete Authorized Utility Permit that remain following the expiration or termination of the Term), even if the injury does not become apparent or does not manifest itself until after expiration of any Complete Authorized Utility Permit. In no event shall the mention of “any portion of state rights-of-ways” within this Section be interpreted to grant the Permittee rights to use portions of state rights-of-ways other than those expressly approved by the State on any Complete Authorized Utility Permit, nor shall any mention of “licensees” or “lessees” in this Section be interpreted to allow the Permittee to assign or otherwise transfer any rights or obligations it has under any Complete Authorized Utility Permit.

- (m) **No waiver of immunity.** Nothing in any Complete Authorized Utility Permit shall constitute a waiver of any immunity to which the State of Maryland, MDOT, or MDOT SHA may be entitled under any federal law or under the laws of the State of Maryland, as they may be amended from time to time.
- (n) **Compliance with laws and regulations.** The Permittee shall comply with all Federal, State, and local laws, regulations and ordinances applicable to their activities.
- (o) **Right to Inspect.** The MDOT SHA reserves the right to inspect any operation, work or material which may impact safety, integrity of the roadway or restoration of the MDOT SHA’s ROW. On large projects, weekend work, or night work, requiring significant or extensive inspection which exceeds the staffing resources the MDOT SHA, the MDOT SHA may need to assign inspection forces while work is being accomplished within MDOT SHA ROW at the expense of the Permittee. The MDOT SHA will inform the Permittee if its intent to assign inspection forces prior to commencement of the permit work.
- (p) **Permits Not Assignable.** Complete Authorized Utility Permits are not assignable. The use of any Complete Authorized Utility Permit by any party not specifically indicated on the Utility Permit General Provisions AND the Individual Work Order Permit shall constitute the immediate revocation of the permit. Contractors and subcontractors authorized by the Permittee are authorized to carry out the work allowed under a Complete Authorized Utility Permit on behalf of the Permittee.
- (q) **Cost of repairs.** The Permittee will be responsible for the cost of any repairs to roadway embankments, drainage facilities, or any other facilities owned or maintained by the MDOT SHA should they become necessary or as caused by the construction, existence or failure of this utility or utility facility.
- (r) **Restore.** Upon completion of work, MDOT SHA rights-of-ways affected by any Complete Authorized Utility Permit shall be restored to its original condition to the complete satisfaction of the Permit Inspector and the District Utility Engineer.
- (s) **Traffic control plan.** A copy of the Work Zone Traffic Control Plan approved by the MDOT SHA shall be attached to the Complete Authorized Utility Permit at all times.

- (t) **Prior notifications.** The Permittee shall contact all offices and persons prior to the start of utility work, in accordance with the Complete Authorized Utility Permit - Notifications requirements.
- (u) **Additional easements.** The Permittee shall be solely responsible for obtaining any additional easements; right of entry's, etc. from abutting property owners necessary for the Permittee to perform any approved work under said Complete Authorized Utility Permit.
- (v) **Open cutting.** Open cutting of any paved surface is strictly prohibited unless specifically authorized in the Individual Work Order Permit.
- (w) **Abide by terms and conditions.** The Permittee shall (i) initially when requesting to be approved as an Authorized Public Utility; and (ii) again at each notification that the Utility Permit General Provisions have been revised; sign, date, and return the Utility Permit General Provisions Acknowledgement Form acknowledging the Permittee's acceptance to abide by the Utility Permit General Provisions' terms and conditions.
- (x) **Deactivated or taken out-of-service.** When the Permittee's work is to replace, renew, or for the facilities to be deactivated and be taken out-of-service (retired), the Permittee shall remove what was the original main line, service, or appurtenance unless otherwise agreed to, in writing, by the MDOT SHA and the Utility. In the past, what was referred to as abandon, abandoned, and/or abandonment is no longer acceptable. As the connotation of the terms implied that there was no further responsibility for the facility, these terms are no longer used. The Permittee is still responsible for any utility facility that is approved to remain in the MDOT SHA rights-of-way. A Letter of Agreement (LOA) shall be executed and a requirement prior to any permit's approval and issuance.
 - (1) The Utility shall deliver an electronic file and/or a hard copy with georeferenced coordinates of the deactivated or taken out-of-service facilities' location when it is agreed upon that the deactivated and be taken out-of-service (retired) facility will remain in the State's ROW. The electronic file may be a MicroStation drawing .dgn file, As Constructed As-Built plan set with georeferenced coordinates (latitude and longitude out six decimal places or the most current available version), collection of data by the Utility's staff with State provided ESRI Survey123 ArcGIS Online account (AGOL) and collector application, or other agreed to mechanism.

01.03.02 NOTIFICATIONS.

01.03.02.01 Traffic Controls. Certain State roads require a Traffic Control Permit from the District Office Traffic Section. Contact the District Utility Permit Section, as identified on the Individual Work Order Permit, a minimum of five working days prior to beginning work to obtain the required Traffic Control Permit(s). The Permittee must comply with all Traffic Control Notification Procedures.

01.03.02.02 Roadside Tree Care. The Permittee is responsible for contacting the Maryland Department of Natural Resources - Forest Service (DNR-FS) prior to the start of construction and shall obtain necessary permits, if any, to comply with the Roadside Tree Care Section of the Annotated Code of Maryland. Any work that involves tree felling, or tree branch pruning, or excavation which impacts the roots of roadside trees, requires a DNR-FS Permit.

The Roadside Tree Law Permit Application can be accessed on the MDOT SHA website under the Business Utility Permit General Provisions (12/14/2023) Standards and Specifications / Roadside Tree Law Summary at

<https://www.roads.maryland.gov/mdotsha/pages/Index.aspx?PageId=221>.

The Utility Permit will not be issued to the Permittee until a copy of the DNR-FS Permit is submitted to the District Utility Engineer.

01.03.02.03 Landscaping. The Permittee shall perform landscape construction in conformance with Category 700 – Landscaping of MDOT SHA Standard Specifications for Construction and Materials, and in conformance with the permit documents and any landscape plans approved for the permit. Inspections will be performed by the Office of Environmental Design’s Quality Assurance Division and Landscape Programs Division in conformance with MDOT SHA Standard Specifications. Questions regarding approved landscape plans or modifications should be addressed to oadprojectreview@mdot.maryland.gov.

01.03.02.04 MDOT SHA Signal Facilities. Care shall be exercised when working adjacent to traffic signal facilities. The MDOT SHA Office of Traffic and Safety Signal Operation Section having jurisdiction over the traffic signals involved must be notified a minimum of three (3) business days before the start of construction work in order to coordinate any work to be performed near MDOT SHA traffic signal facilities. The Contact number for the MDOT SHA Office of Traffic and Safety Signal Operation Section is 410-787-7650.

01.03.02.05 Signs and Street Lighting Facilities. Care shall be exercised when working adjacent to MDOT SHA signs and street lighting facilities. The District Maintenance Engineer in the appropriate MDOT SHA district must be notified a minimum of three (3) business days before the start of construction work in order to coordinate any work to be performed near MDOT SHA signs and street lighting facilities.

01.03.02.06 MDOT SHA Communication Facilities. Care shall be exercised when working adjacent to MDOT SHA communication facilities (fiber optic, telecom, etc.). The MDOT SHA Office of CHART & ITS Development Communications Division at 410-747-8590 must be notified a minimum of three (3) business days before the start of Utility work in order to coordinate any work to be performed near MDOT SHA communication facilities.

01.03.02.07 MDOT SHA Automated Traffic Counting Station (ATR’s). Care shall be exercised when working adjacent to ATR facilities. The Office of Planning & Preliminary Engineering Data Services Engineering Division at 410-545-5523 must be notified a minimum of three (3) business days before the start of utility work in order to coordinate any work to be performed near MDOT SHA ATR facilities.

01.03.02.08 MDOT SHA Construction Projects. If any work under any Complete Authorized Utility Permit is to be performed in any proximity of a MDOT SHA construction project, or will have any effect whatsoever on any work performed on a MDOT SHA construction project, or will affect maintenance of traffic concerning any other roadway network system in conjunction with any MDOT SHA construction project, the Permittee is required to notify the Contractor’s Utility Coordinator and/or the State’s Project Engineer for that project at least three (3) business days in advance of any commencement of work and is, therefore, required to coordinate all work performed under any Complete Authorized Utility Permit with the Contractor’s Utility Coordinator and/or the MDOT SHA Project Engineer.

01.03.02.09 MDOT SHA Maintenance Projects. If any work under any Complete Authorized Utility Permit is to be performed in any proximity of a MDOT SHA maintenance project, or will have any effect whatsoever on any work performed on a MDOT SHA maintenance project, or will affect maintenance of traffic concerning any other roadway network system in conjunction with any MDOT SHA maintenance project, the Permittee is required to notify the Resident Maintenance Engineer and/or the District Maintenance Office for that area at least three (3) full business days in advance of any commencement of work and is, therefore, required to coordinate all work performed under any Complete Authorized Utility Permit with the District Maintenance Office or Resident Maintenance Engineer.

01.03.02.10 Miss Utility. The Permittee must contact “Miss Utility” in compliance with Title 12 - Underground Facilities of the Public Utilities Articles of the Annotated Code of Maryland via the internet at www.missutility.net two (2) business days (call in day does not count) in advance of performing any excavating or similar work. If the Permittee is unable to contact Miss Utility via the internet, the Permittee may call Miss Utility at 1-800-257-7777 or 1-800-441-8355 (for Kent, Queen Anne’s, Talbot, & Caroline counties). Ticket life is twelve (12) business days after day on which the ticket is transmitted to the Permittee. The Permittee shall be charged a locate fee of up to Thirty-five (\$35.00) dollars by the MDOT SHA for locating MDOT SHA facilities.

01.03.02.11 MDOT SHA District Utility Engineer. The Permittee shall notify the appropriate contact person listed in the Individual Work Order Permit a minimum of three (3) business days before the start of construction, in accordance with the Complete Authorized Utility Permit requirements, with the name of its representative for the job; verification that the Permittee has notified all other offices previously listed; and that the Permittee has coordinated work with said offices. Failure to do so will result in immediate suspension of work until proper notifications are made.

01.03.02.12 Other Utility Companies. The Permittee must contact the appropriate Utility Companies prior to performing any work near their respective facilities in order to determine any clearance requirements; coordinate any construction activities; and/or dig test holes/test pits, if needed, at their own cost.

01.03.02.13 Environmental Permit Requirements. The Permittee shall comply with all Federal, State, and local environmental requirements and must obtain all environmental permits necessary to perform the work under said permit prior to commencement of any work.

01.03.03 DESIGN AND CONSTRUCTION STANDARDS, PROCEDURES, AND POLICIES.

01.03.03.01 Design and Construction. Design and construction associated with this permit shall be performed in complete conformance with standards, procedures, and policies of the following MDOT SHA publications:

- (a) Maryland Manual on Uniform Traffic Control Devices (MdMUTCD)
- (b) Standard Specifications for Construction and Materials
- (c) Book of Standards for Highway & Incidental Construction
- (d) Maryland Standard Method of Tests, Materials Manual, Laboratory and Field Procedures

- (e) MDOT SHA Utility Policy
- (f) Manual for Controlling and Reducing the Frequency of Pavement Utility Cuts
- (g) Occupational Safety & Health Administration (OSHA)
- (h) Maryland Occupational Safety and Health (MOSH)
- (i) Standard Specifications for Subsurface Explorations
- (j) Supplemental Specifications and Provisions

Note: Copies of the above-mentioned publications can be obtained from the MDOT SHA website: roads.maryland.gov. Any changes to these Utility Permit General Provisions will be noted in the individual permits.

01.03.03.02 Laws & Regulations. The Permittee is responsible for compliance with all laws and regulations included, but not limited to, those of the Federal Highway Administration, Maryland Public Service Commission, National Electric Safety Code, Maryland Occupational Safety and Health Administration, County or Municipal Planning and Zoning Boards, Army Corps of Engineers, Maryland Department of Natural Resources, Maryland Department of Environment, PHMSA, and USDOT. The Permittee shall comply with the High Voltage Line Act of the Labor and Employment Article of the Annotated Code of Maryland and OSHA's Cranes and Derricks in Construction Directive. This permit DOES NOT release the Permittee from acquiring any additional permits that these or other agencies may require.

01.03.03.03 Railroad. The Permittee is responsible for obtaining the required permits prior to performing any work on or adjacent to railroad facilities or ROW (ROW) thereof.

01.03.03.04 Underground Facilities. All underground utility facilities placed within the ROW of the MDOT SHA MUST maintain a minimum cover of three (3') feet on secondary roadways at all times between the top of any buried duct or cable and finished grade or pavement surface which includes the bottom of any ditch lines as outlined in the MDOT SHA Utility Policy. On expressway/freeways, buried facilities must be placed at least five (5') feet below finished grade or pavement surface which includes the bottom of any ditch lines. The MDOT SHA District Utility Engineer reserves the right to require any facility to be placed at depths greater than three (3') feet at their discretion to facilitate operations of the MDOT SHA. If at a later date, it is discovered the facilities installed under this permit do not meet this requirement, the Permittee will be required to make necessary adjustments solely at their cost, regardless of who is performing the work. Information about MDOT SHA highways can be found here MDOT SHA's [Highway Location Reference](https://roads.maryland.gov) located on the MDOT SHA website at: roads.maryland.gov.

01.03.03.05 Revised Plans. The MDOT SHA reserves the right to stipulate modifications to the approved construction plans whenever necessary. The MDOT SHA will notify the Permittee of any modifications, required by the MDOT SHA, to the approved construction plans prior to performance of the work. The Permittee shall be entirely responsible for all additional costs and expenses associated with these changes. It is agreed and understood that significant deviation by the Permittee from the plans submitted shall be reported immediately to the MDOT SHA contact person listed in the Individual Work Order Permit and a revised plan showing changes shall be submitted to the MDOT SHA in accordance with TC-4.01 – Working Drawings for approval prior to performance of the work. Relocation and/or adjustment of any public or private utility shall be the responsibility of the Permittee.

01.03.03.06 As Constructed Deliverables. MDOT SHA follows the American Society of Civil Engineers (ASCE) 75-22 Standard Guideline for Recording and Exchanging Utility Infrastructure Data. The Permittee shall submit an electronic file and/or a hard copy of As Constructed Plan Sets with georeferenced coordinates.

The Permittee is required to provide Geographic Information System (GIS) coordinates of any of its facilities, infrastructure, and appurtenances installed within the permitted area(s) to MDOT SHA District Office within Sixty (60) calendar days or agreed upon timeline of the completion of the Permittee's installation.

To comply with this requirement, the Utility As-Constructed Plan Sets submitted to the MDOT SHA shall be as follows:

Utility location data of any new construction, to include but not limited to the installation, adjustment, and/or relocation of facilities, appurtenances, and/or infrastructure asset(s) shall be georeferenced with GPS coordinates.

- (a) for aerial construction: the coordinates shall be provided for items to include but not limited to pole installations, adjustments, or relocations.
- (b) for underground construction: the coordinates shall be provided for items to include but not limited to manholes, hand holes, pedestals, valve covers, vents, clean-outs, and/or any demarcation point at the beginning, along the path of, and at end of the installation, adjustment, or relocation.
- (c) The electronic file may be a MicroStation drawing .dgn file, As Constructed As Built plan set with georeferenced coordinates (latitude and longitude out six decimal places or the most current available version), collection of data by the Utility's staff with State provided ESRI Survey123 ArcGIS Online account (AGOL) and collector application, or other agreed to mechanism.

01.03.04 MAINTENANCE OF TRAFFIC.

01.03.04.01 Work Zone Traffic Control. Work Zone Traffic Control is to be in complete conformance with the current and latest specifications, standards, provisions and policies of these Provisions Section 001.03.03 – DESIGN AND CONSTRUCTION STANDARDS, PROCEDURES, AND POLICIES. In addition to the documents referenced above, design and construction associated with Work Zone Traffic Control shall be performed in complete conformance with, and with particular attention to, the following MDOT SHA publications:

- Work Zone Safety and Mobility Policy
- High Visibility Apparel Policy
- Maryland Manual on Uniform Traffic Control Devices (MdMUTCD)
- Traffic Control Devices Design Manual
- Traffic Control Analysis's Guidelines
- Maryland Standard Sign Book
- Book of Standards for Highway & Incidental Structures
- Standard Specifications for Construction and Materials
- Supplemental Specifications and Provisions
- Accessibility Policy & Guidelines for Pedestrian Facilities along State Highways

- SHA Bicycle and Pedestrian Design Guidelines

Copies of the above-mentioned publications can be obtained from the MDOT SHA's website: roads.maryland.gov.

01.03.04.02 Approved Work Zone Traffic Control Plan. An approved Work Zone Traffic Control Plan (WZTC) is required for all work performed within MDOT SHA right of way. The Permittee is responsible to submit a carefully designed WZTC Plan to the District Utility Engineer (or approved designee) for any relocation or permit work affecting a highway. This plan must be in complete accordance with Temporary Traffic Control Typical Applications detailed in the MDOT SHA's Book of Standards for Highway and Incidental Structures and the MdMUTCD. The WZTC plan shall address vehicular, bicycle, and pedestrian traffic on or along any transportation facility in accordance with MDOT SHA's Work Zone Safety and Mobility Policy; and on any specific directions received from the appropriate District Engineer (or approved designee). The WZTC Plan should indicate the time during which work is to be performed as well as the proposed placement of signs and layout of traffic control devices. When speed of traffic is noted, this means the posted speed or prevailing travel speed; whichever is higher, unless otherwise specified. All changes, modifications, or alterations to the approved WZTC Plan shall be submitted in writing to the District Utility Engineer in advance for review and approval. A copy of the approved Work Zone Traffic Control Plan is always to be attached to the permit. All closures are to be performed in complete accordance with the approved Work Zone Traffic Control Plan. Traffic Control Plan revisions shall be submitted per the 2017 Standard Specifications for Construction and Materials, Section 104.01 – Traffic Control Plan.

01.03.04.03 Work Zone Modifications. All changes, modifications, or alterations to the approved Work Zone Traffic Control Plan must be submitted in writing to the MDOT SHA District Utility Engineer at least ten (10) business days in advance for review and approval. The MDOT SHA reserves the right to modify and/or expand the methods of traffic control specified if in the opinion of the Engineer or Inspector, the Permittee's operations are a detriment to the safe and efficient flow of traffic. In the event that the construction plans are revised, or differing site conditions are encountered, the WZTC Plan shall be reviewed and revised, if necessary, to comply with the MDOT SHA's Book of Standards for Highway and Incidental Structures and the MdMUTCD.

01.03.04.04 Traffic Control by MDOT SHA. In the event that the MDOT SHA is required to provide traffic control, due to the Permittee failing to maintain a safe work zone or if a Permittee requests the MDOT SHA to provide traffic control, all costs and applicable overhead shall be billed directly to the Permittee. In the event that a 3rd party caused a situation or emergency which required the MDOT SHA and/or the Permittee to provide traffic control, all costs and applicable overhead shall be billed directly to the 3rd party that caused the situation or emergency.

01.03.04.05 Traffic Manager's Responsibility. A MDOT SHA certified Traffic Manager must be specifically designated for each permit application. This identification must include a 24-hour contact telephone number for someone that will respond to Work Zone Traffic Control situations. The Traffic Manager will be responsible for ensuring the proper implementation and maintenance of the Work Zone Traffic Control Plan as well as conducting regular day and night inspections of the traffic control devices and overall traffic operations. Permittee Personnel may obtain an approved Traffic Manager certification from the Maryland Transportation Builders and

Materials Association (MTBMA). Information on Traffic Manager certification can be obtained from MTBMA's website at <http://www.mtbma.org>.

01.03.04.06 Traffic Control Devices. All traffic control devices must comply with performance criteria published in the National Cooperative Highway Research Program (NCHRP) Report 350, "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

- (a) Traffic Control signs or devices identified as unsatisfactory by the District Utility Engineer or their representative must be replaced immediately.
- (b) High performance wide-angle retro-reflective sheeting for signs, fluorescent orange in color, shall be used on projects along interstate highways and other freeways, unless otherwise specified.
- (c) Type VI (vinyl micro-prismatic) retro-reflective sheeting conforming to Federal Highway Administration's Standard Specifications for Construction of Roads and Bridges and AASTM D-4956 is acceptable for use on roll up signs and channelizing devices.
- (d) Upon initial installation, temporary traffic control signs shall have at least 70 percent of the reflectivity over 90 percent of the reflectorized surface as specified in Section 950.03-Reflectorization of Signs and Channelizing Devices and in Section 104.08.03 of the Standard Specifications for Construction and Materials, Dated 2017.
- (e) When temporary traffic control signs are not indicative of actual conditions (e.g. temporary shutdowns, overnight, or other periods when work is not being performed) the signs shall be removed, turned away from traffic, or completely covered.
- (f) At least 90 percent of all reflective barrier markers, warning lights, and raised pavement markers shall be operational at any given time.
- (g) Flashing arrow boards as early warning devices shall be used whenever a lane is closed unless considered unnecessary by the District Engineer.
- (h) Under certain circumstances, a variable message sign (VMS) may be required. The corresponding job-specific permit will provide details about what message must be displayed; how much advance notice must be given, etc. Messages displayed on the VMS will be coordinated with the District Utility Engineer and have prior approval of the District Traffic Engineer.
- (i) The Permittee shall correct any deficiencies within 24 hours after notification.

01.03.04.07 Lane, Ramp, and Shoulder Closures. The Permittee shall apply for and obtain a Traffic Control Permit from the appropriate District Office prior to closing any lanes. The District Utility Engineer (or approved designee) will approve the time schedules and numbers of lanes involved for lane closings. All Traffic Controls will be allowed only during off peak hours. Lane and shoulder closures on wet roadways are strictly prohibited. Travel lanes and shoulders must be restored immediately in the event of precipitation. All Travel lanes shall be restored immediately in the event of accident or emergency within or adjacent to the work area. Delay to motorists traveling through work zone lane, ramp, or shoulder closures shall not exceed the thresholds in accordance with MDOT SHA's Traffic Control Analysis's Guidelines. All lane and shoulder closures will be cleared immediately at the specific direction of any representative

of the MDOT SHA. The Permittee is responsible to coordinate all Traffic Control activities with adjacent contractors. When a lane, ramp, or shoulder closure is in effect, work must begin within one hour after the lane is closed. Once work is completed, travel lanes and shoulders are to be restored immediately.

01.03.04.08 Road Closures. Full or temporary roadway closures for non-emergency situations are not permitted without prior approval of the MDOT SHA District Utility Engineer. The Permittee is responsible for coordinating Maryland State Police Assistance for any temporary roadway closure. No temporary roadway closure can exceed 15 minutes in duration. The Permittee must provide a minimum of two Variable Message Signs (VMS) for any temporary roadway detour or roadway closure. VMS sign messages must be approved by the District Utility Engineer prior to display. The delay to motorists traveling through work zone lane, ramp, or shoulder closures shall not exceed fifteen (15) minutes unless there is an emergency and it is approved by the District Utility Engineer. Prior to reopening, all travel lanes and shoulders must be completely cleared of all materials, equipment, and debris.

01.03.04.09 Travel Lanes. No travel lane shall be reduced to less than ten (10') feet in width at any time.

01.03.04.10 Emergency Crossovers. The use of emergency crossovers is strictly prohibited.

01.03.04.11 Pedestrian & Bicycle Traffic. The Permittee shall provide for safe bicycle and pedestrian access through work zones for all permits and projects where applicable and to the maximum extent feasible. Provisions for bicycle and pedestrian access shall be clearly shown on the WZTC plan. The Permittee shall submit plans for all proposed road closings or detours to MDOT SHA's Bicycle and Pedestrian Coordinator for review and comment. Provisions for bicycle and pedestrian access through the work zone must be Americans with Disabilities Act (ADA) compliant. Information about MDOT SHA's ADA requirements can be found in MDOT SHA's Accessibility Guidelines for Pedestrian Facilities along State Highways located on the MDOT SHA website at: roads.maryland.gov.

01.03.04.12 Flaggers. All flagging operations are to be performed by individuals who have successfully completed MDOT SHA's Approved Flagger training course. Each flagger is always to have in their possession an approved MDOT SHA flagger training card. Flagging is to be conducted utilizing stop/slow paddles in complete accordance with Part VI Section 6F of the current edition of the MdMUTCD. Flaggers are always to be appropriately attired. Flaggers must wear a reflective vest, meeting the requirements of MDOT SHA's High Visibility Apparel Policy, always while flagging. Contractor Personnel may obtain an approved Flagger certification from the American Traffic Safety Services Association (ATSSA). Information on Flagger certification can be obtained from ATSSA's website at <http://www.atssa.com/>

01.03.04.13 Dry Road. Precautions shall be taken, particularly in freezing temperatures, to keep water off travel lanes.

01.03.04.14 Driveway Access. The Permittee is responsible to insure safe pedestrian and vehicular access to private and public driveways, entrances, and roadways always.

01.03.04.15 Emergency Access. Access to fire hydrants, firehouses, hospitals, and mailboxes is always to be maintained.

01.03.04.16 Working Hours: Work done that will impact on MDOT SHA roadway and shoulder areas is allowed only during certain hours. The following sub-sections describe generally when this work is permitted:

- (a) Work is permitted Monday through Friday only. Generally, working hours for MDOT SHA roadway and shoulder closures are restricted to between 9:00 AM and 3:00 PM and 9:00 PM and 5:00 AM. Work not adjacent to travel lanes is permitted between 7:00 AM and 7:00 PM. Exceptions to these hours may be specified in the individual permit. The Permittee shall confirm allowable lane and shoulder closure hours with the District Utility Engineer prior to work. All requests for additional special exceptions must be provided in writing to the Office of the District Utility Engineer.

The District Utility Engineer has the authority to require reimbursement for MDOT SHA inspection if the work is to take place during non-standard hours even if the MDOT SHA requires weekend work, nighttime work, or when the location and/or duration of the work is an undue burden to the State due to safety of the operation or travelling public. An agreement must be in place before the work starts.

- (b) Night work and weekend work is prohibited in residential areas unless authorized by the District Utility Engineer.
- (c) No work is allowed on the day(s) of major holidays or holiday weekends, or days preceding and following said holiday(s) or holiday weekends. Holiday restrictions may vary by location. Information regarding specific holiday restrictions can be obtained from the Office of the District Utility Engineer prior to each holiday. The National holidays mentioned are listed as follows: (These may or may not be the same as the State holiday).

NATIONAL HOLIDAYS:

New Year's Day, January 1
 Martin Luther King's Birthday, the third Monday in January
 Washington's Birthday, the third Monday in February
 Memorial Day, the last Monday in May
 Juneteenth National Independence Day, typically June 19th
 Independence Day, July 4
 Labor Day, the first Monday in September
 Columbus Day, the second Monday in October
 Veteran's Day, November 11
 Thanksgiving Day, the fourth Thursday in November
 Christmas Day, December 25

- (d) Work may also be restricted for special events occurring along specific routes. Information regarding specific special event restrictions can be obtained from the Office of the District Utility Engineer prior to any special event. Additional work restrictions, if any, will be noted in the Individual Work Order Permit. Reimbursement for MDOT SHA inspection may be required.
- (e) Any deviation from the approved traffic control standard for the Individual Work Order Permit, such as when construction plans are revised, or differing site conditions encountered, must be approved by the MDOT SHA Permit Inspector prior to the

commencement of work. The MDOT SHA reserves the right to modify and/or restrict working hours or deny permission to work within MDOT SHA rights-of-way at any time if, in the opinion of the Engineer or Inspector, the Permittee's operations are a detriment to the safe and efficient flow of traffic.

01.03.04.17 Specific Signing Instructions. Signing shall be placed in accordance with the MdMUTCD, the MDOT SHA's Standard Highway Sign Book, and the Complete Authorized Utility Permit. All work area warning signs shall be 48 in. x 48 in. unless otherwise specified. MDOT SHA's Standard Highway Sign Book may be obtained from the Office of Traffic and Safety, Traffic Engineering Design Division. Refer to Section 104.08 TEMPORARY TRAFFIC SIGNS (TTS) for a detailed description of the requirements to furnish, install, and maintain TTS on or along all MDOT SHA transportation facilities. The following are additional requirements for TTS:

- (a) Sign details are available from the Office of Traffic & Safety, Traffic Engineering Design Division.
- (b) Construction Identification signs (Hat and Shovel) G2-1(1), G2-1(2), or G2-1(3) shall be installed at each approach and end of all projects greater than two (2) months in duration unless otherwise noted or directed by the Engineer.
 - (1) The initial sign will be installed between the one mile and one-half mile advance warning signs unless otherwise specified. See MDOT SHA Standard No. MD 104.01-04 (≥ 40 mph) and MDOT SHA Standard No. MD 104.01-04 (≤ 40 mph) for placement.
- (c) The ROADWORK (W20-1) sign and END ROAD WORK (G20-2) sign shall be installed at each approach and end of all projects greater than two months in duration, unless otherwise noted or directed by the Engineer.
 - (1) The Hat and Shovel sign installed near the end of the project will not replace the End Road Work sign. See MDOT SHA Standard No. MD 104.01-04 (≥ 40 mph) and MDOT SHA Standard No. MD 104.01-04 (≤ 40 mph) for placement.
- (d) When highway alignment changes occur throughout the work area due to phase changes, install a supplemental panel beneath the Construction Length sign stating, "NEW TRAFFIC PATTERNS." The supplemental panel shall remain up for a maximum of 30 days unless otherwise specified.
- (e) Where parts of a mile are designated on a sign, fraction to the nearest $\frac{1}{2}$ -mile shall be used instead of decimals.
- (f) In areas where longitudinal paving joints are left exposed to traffic, warning signs shall be erected indicating UNEVEN PAVEMENT. For sign placement, see MDOT SHA Standard No. MD 104.06-15 thru MD 104.06-20.
 - (1) They shall be placed in advance of the uneven joints and spaced at appropriate 1500' intervals throughout the area of the uneven joint.
 - (2) In areas of exposed lateral paving joints, the warning sign message shall be BUMP (W8-1).

- (3) When milling a pavement, (removing the top layer to smooth the roadway) a ROUGH ROAD (W8-8) sign or a GROOVED PAVEMENT W8-8(1) sign shall be the warning message.
- (g) Along two and three-lane, two-way roadways where a standard centerline is not provided and passing is not permitted (due to resurfacing, etc.), DO NOT PASS (R4-1) signs shall be erected at the beginning of such zones along the right side and at appropriate intervals throughout the project. For sign placement, see MDOT SHA's Standard No. MD 104.06-14.
 - (1) A NO PASSING ZONE pennant (W14-3) shall be erected at the beginning of such zones on the left-hand side of the roadway across from the first DO NOT PASS sign.
 - (2) The NO PASSING ZONE pennants shall be used only at the beginning of such zones and shall not be placed at intermediate points throughout the zone.
 - (3) Standard no passing centerlines may be installed at the direction of the Engineer or Inspector if site conditions (at a particular location) or past accident history indicates that this would be a prudent thing to do.
- (h) When complete pavement markings are not in place, and passing may be permitted, sign(s) shall be erected indicating WARNING: PASSING ZONES UNMARKED W14-3(1) with supplemental plate "NEXT X MILES".
 - (1) These signs shall be placed in advance of the unmarked zone and at appropriate intervals throughout the unmarked zone where passing is permitted.

001.03.04.18 Pavement Drop-off. During construction and maintenance activities involving pavement surfacing and resurfacing work, including shoulders, it often becomes necessary to maintain traffic along side or near lanes and shoulders having different elevations (drop-offs). Special traffic control devices are needed to safely protect and guide traffic through such areas. The following are the traffic control requirements for pavement drop-off situations:

(a) Uneven Joints for Traffic Crossings:

Uneven joints where traffic can be anticipated to cross (i.e. intersections) are to be tapered with a minimum of two (2) feet of a bituminous concrete product for the entire width of the travel lane crossing.

(b) Pavement Drop-offs of 2 ½ Inches or Less (between Traffic Lanes):

- (1) Adjacent pavement elevation differences, drop-offs, of 2 ½ inches or less may be freely crossed by traffic.
- (2) Drop-offs of 2 ½ inches or less shall be indicated to traffic through the use of the UNEVEN PAVEMENT warning signs placed in advance of and repeated throughout the limits of the drop-off in accordance with the Book of Standards for Highway & Incidental Structures, Standard No. MD 104.06-15. When needed, the GROOVED warning supplemental sign plate shall be mounted below each sign. The sign size and spacing, and how it complements other traffic control devices is covered in the Standard Specifications for Construction and Materials and the MdMUTCD.

- (3) The UNEVEN PAVEMENT warning sign is to be placed supplemental to other work zone traffic control. The sign size and spacing, and how it complements other traffic control devices is covered in the Standard Specifications for Construction and Materials and the MdMUTCD.
- (4) Temporary transverse tie-in transitions during the paving operation shall be in accordance with Standard Specifications for Construction and Materials Section 504.03.10 (2017 Spec book). The transverse tie-in shall be completed prior to traffic being allowed on the pavement.

(c) Pavement Edge Drop-offs of 2 ½ Inches or Less (between Traffic Lanes and Shoulder):

- (1) Pavement edge drop-offs of 2 ½ inches or less shall be in compliance with the Book of Standards for Highway & Incidental Structures, Standard No. MD 104.06-16.
- (2) UNEVEN PAVEMENT warning signs shall be placed in advance of and repeated throughout the limits of the drop-off in accordance with Standard No. MD 104.06-16. The UNEVEN PAVEMENT warning sign is to be placed supplemental to other work zone traffic control. The sign size and spacing, and how it complements other traffic control devices is covered in the Standard Specifications for Construction and Materials and the MdMUTCD.
- (3) Temporary transverse tie-in transitions during the paving operation shall be in accordance with Standard Specifications for Construction and Materials Section 504.03.10 - Tie-in. The transverse tie-in shall be completed prior to traffic being allowed on the pavement.

(d) Pavement Drop-offs of Greater Than 2 ½ inches (between Traffic Lanes):

- (1) Adjacent pavement elevation differences, drop-offs exceeding 2½ inches shall be paved to match with the abutting lanes or shoulders on the same working day in accordance with Standard Specifications for Construction and Materials Section 504.03.09 (2017 Spec Book). As a result of this, the complete pavement section including shoulders shall be at the same elevation at the end of each working day.
- (2) Drop-offs of 2½ inches or less shall be indicated to traffic through the use of the UNEVEN PAVEMENT warning signs placed in advance of and repeated throughout the limits of the drop-off in accordance with Standard No. MD 104.06-15. When needed, the GROOVED warning supplemental sign plate shall be mounted below each sign.
- (3) The UNEVEN PAVEMENT warning sign is to be placed supplemental to other work zone traffic control. The sign size and spacing, and how it complements other traffic control devices is covered in the Standard Specifications for Construction and Materials and the MdMUTCD.
- (4) While it is intended that traffic traveling in the same direction drive to one side of the drop-off or the other, such traffic may be permitted to drive along both sides under properly controlled conditions, but such traffic may not be permitted to freely cross.

- (5) Temporary transverse tie-in transitions during the paving operation shall be accordance with Standard Specifications for Construction and Materials Section 504.03.10. The traverse tie-in shall be completed prior to traffic being allowed on the pavement.

(e) Pavement Edge Drop-offs Greater Than 2 ½ Inches, But Equal to or Less Than 5 Inches (between Traffic Lanes and Shoulder):

- (1) Drop-offs between lane and shoulder or shoulder and earth grading, exceeding 2 ½ inches, but equal to or less than 5 inches shall be provided with an abutting wedge with a slope of 4:1 or flatter at all times while no work is being performed as referenced in the Book of Standards for Highway & Incidental Structures, Standard No. MD 104.06-17.
- (2) Drums or other suitable channelizing devices are used to mark the area even when a traversable wedge is in place.
- (3) Drop-offs exceeding 2 ½ inches, but equal to or less than 5 inches shall be indicated to traffic through the use of the UNEVEN PAVEMENT warning sign placed in advance of and repeated throughout the limits of the drop-off in accordance with Standard No. MD 104.06-17.
- (4) The UNEVEN PAVEMENT warning sign is to be placed supplemental to other work zone traffic control. The sign size and spacing, and how it complements other traffic control devices is covered in the Standard Specifications for Construction and Materials and the MdMUTCD.

(f) Pavement Edge Drop-offs Greater Than 5 inches WITHOUT an Adjacent Lane Closure:

- (1) Continuous drop-offs exceeding 5 inches if next to or within 12 feet of a lane of traffic, shall be provided with a temporary concrete barrier or other suitable barrier as may be approved by the District Utility Engineer or Inspector, to preclude crossing the drop-off throughout its entire length. See the Book of Standards for Highway & Incidental Structures, Standard No. MD 104.06-18.
- (2) The sign size and spacing, and how it complements other traffic control devices is covered in the Standard Specifications for Construction and Materials and the MdMUTCD.

(g) Pavement Edge Drop-offs Greater Than 5 Inches WITH an Adjacent Traffic Control:

- (1) Continuous drop-offs exceeding five (5") inches, but greater than twelve (12') feet away from traffic (and not protected with an approved barrier) shall be provided with an abutting wedge with a slope of 4:1 or flatter at all times while no work is being performed. See the Book of Standards for Highway & Incidental Structures, Standard No. MD 104.06-19.
- (2) Drums or other suitable channelizing devices are required to mark the area. When traffic is permitted to occupy the adjacent lane(s) to this work, drums or other suitable channelizing devices shall be placed in front of and completely across the

excavated area, in addition to the traffic control requirements for the lane or shoulder work.

- (3) For a series of drop-offs within a lane or shoulder, typically as a result of concrete joint or pavement repair, all areas where the pavement material has been removed shall be repaired the same working day.
- (4) The decision to use a positive barrier to separate the workspace from traffic will be determined by the Utility Permit Inspector. The Inspector should consider such things as traffic volumes, vehicle speeds and weaving, trucks, highway geometrics, length of workspace, duration of work, etc.
- (5) The sign size and spacing, and how it complements other traffic control devices is covered in the MDOT SHA Standards and Specifications and the MdMUTCD.

001.03.04.19 Traffic Markings, Signing, Lighting, and Signalization:

- (a) Traffic signs are not to be removed or relocated without permission of the District Utility Engineer.
- (b) The Permittee is to exercise extreme caution when in the vicinity of signalized intersections so as to protect and maintain in good work order, all traffic signal poles, wires, conduits, and equipment associated with traffic signalization.
- (c) All pavement markings and symbols shall be completely replaced immediately upon the completion of milling or resurfacing, prior to the reopening to traffic.
- (d) The Permittee shall inventory existing pavement markings in the work area prior to disturbance and application.
- (e) Pavement marking material shall be submitted to the MDOT SHA for approval prior to application.
- (f) The Permittee shall submit a pavement marking plan and the name of the pavement marking sub-contractor to the District Utility Engineer for approval prior to the start of pavement work.

01.03.05 SAFETY.

01.03.05.01 Excavation.

- (a) Cuts or excavations will not normally be permitted to remain open overnight and at any time when work is not in progress at the cut or excavation area. The Permittee should excavate only as far as can be backfilled in the same working day.
- (b) If a trench must remain open during non-working hours, it must be steel plated or protected by a positive barrier. Existing guardrail, permanent concrete barrier, or temporary concrete barrier wall will be required to meet OSHA, MOSH, and MDOT SHA regulations. Suitable protective measures approved by the MDOT SHA, will be required at any excavation.
- (c) No excavated or construction material shall be stored within thirty feet (30') of the edge of the existing traveled pavement. Material shall be stored in a way, which does not reduce driver sight distances nor interfere with roadway drainage.

- (d) All equipment and material shall be removed from the MDOT SHA ROW or located a minimum of thirty feet (30') from the edge of the existing traveled pavement of MDOT SHA roadway during non-working hours and when not being used in daily construction operations unless it is stored behind a positive protective barrier. In no case will construction material or equipment be allowed to remain in the median or a divided highway when the materials or equipment is not in use.
- (e) All mud and debris tracked or spilled on the state highway shall be removed promptly to eliminate potential hazards.
- (f) Precautions shall be taken, particularly in freezing temperatures, to keep water off the traveled lane.
- (g) No access is permitted from interstate roadways or from any connecting ramp for purposes of construction, maintenance, or expansion to another facility.
- (h) Private automobiles and non-essential construction vehicles are not allowed to be parked on the MDOT SHA ROW. The Permittee must transport workers to the job site from a safe parking site procured by the Permittee.
- (i) All work areas are to be continuously maintained in a neat and clean condition.
- (j) Guy wires within six (6') feet of the ground will be sheathed in heavy high visibility plastic tubing.
- (k) Appropriate protective measures, approved by the MDOT SHA, including warning signs, safety fence, and barricades, shall be placed at all excavations.
- (l) The Permittee shall take all necessary precautions to protect the traveling public, pedestrians, and workers, including ADA compliance, as necessary. Information about MDOT SHA's ADA requirements can be found in MDOT SHA's Accessibility Guidelines for Pedestrian Facilities along State Highways located on the MDOT SHA website at: <http://www.roads.maryland.gov/Index.aspx?PageId=26>.
- (m) The MDOT SHA may halt any operation it considers to be in any manner detrimental to the safe operation of MDOT SHA's highway system.
- (n) The Permittee shall maintain vertical and horizontal clearances from all existing utility facilities as required by the respective utility agencies.

01.03.06 PROTECTIONS OF HIGHWAYS.

01.03.06.01 Materials and Equipment. No metallic tread equipment shall be driven or towed on any MDOT SHA road surface or surfaced shoulder. Material or equipment not provided with wheels will not be dragged or skidded across paved surfaces. No excavated or backfill materials are to be placed or stockpiled on any improved surface within the jurisdiction of the MDOT SHA (or within MDOT SHA rights-of-ways). The excavation of any MDOT SHA roadway, which has been recently resurfaced, shall be strictly prohibited for a period of two (2) years from the date the resurfacing has been accepted for maintenance unless approved in writing by the appropriate District Utility Engineer.

01.03.07 QUALITY CONTROL.

MDOT SHA inspectors shall be authorized to inspect all work performed and all material furnished under this permit which may impact safety, integrity of the roadway or restoration of the MDOT SHA's ROW to the complete satisfaction of the MDOT SHA. 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 as per MDOT SHA's Standard Specifications for Construction and Materials, Sections GP-5.01 AUTHORITY OF THE PROCUREMENT OFFICER and GP-5.07 AUTHORITY AND DUTIES OF INSPECTORS.

- (a) At MDOT SHA's discretion, the MDOT SHA may assign inspection forces to the Permittee's work being performed within MDOT SHA's ROW at the expense of the Permittee as per Section 001.03.01 (o) Right to Inspect. The Permittee shall provide the MDOT SHA inspector with an intended work schedule and shall inform the MDOT SHA inspector of any subsequent changes to the schedule. The MDOT SHA reserves full control over said roads, highways, and rights-of-ways and the subject matter of this permit.
- (b) The Permittee, or the Permittee's contractor or subcontractor, if authorized by the Permittee to carry out the work allowed under a Complete Authorized Utility Permit on behalf of the Permittee, shall be responsible for providing effective on-site supervision at all times to ensure compliance with all plans and permit specifications, regulations, and conditions. All work areas are to be continuously maintained in a neat and clean condition. The Permittee will be responsible for maintaining its facilities installed within MDOT SHA ROW in a safe working condition.
- (c) The Permittee shall be responsible to respond to and correct citizen complaints regarding work performed adjacent to private properties immediately upon notification.

01.03.07.01 Testing.

- (a) The Permittee shall perform all testing required for all work performed under the Individual Work Order Permit in accordance with all appropriate regulations and current applicable industry codes. The Permittee shall make available all test data and results to the MDOT SHA upon request of the MDOT SHA inspector. Depending on the type of work and site conditions, the MDOT SHA may require any additional tests or testing, at the MDOT SHA's discretion, at the Permittee's expense.
- (b) The additional applicable testing required, if applicable, may include, but not limited to, compaction or pavement surface profile testing or geophysical surveys to detect subsurface voids for work performed under the Individual Work Order Permit.
- (c) The MDOT SHA may require, if applicable, the collection of video imagery of any drainage or open pipe systems running within MDOT SHA rights-of-ways and to provide that video imagery to the MDOT SHA for review.
- (d) All piping installed within the MDOT SHA ROW shall be tested as required by USDOT – Pipeline and Hazardous Materials Safety Administration.
- (e) Carrier pipes of all pressurized utilities shall be pressure tested before start-up in accordance with all appropriate regulations and current applicable industry codes.

01.03.08 CONSTRUCTION. All work must be performed in complete conformity with the approved construction plans.

- (a) All changes, modifications, or alterations to the approved construction plans must be submitted in writing to the District Utility Engineer for review and approval. Attachments to bridges and other structures are prohibited unless specifically authorized in individual permit applications. Open cutting of any paved surface is strictly prohibited except when authorized by individual permit applications. The adjustment and/or relocation of any public, private, or MDOT SHA owned facility or utility required by work performed in accordance with this permit will be the complete responsibility of the Permittee.
- (b) The Permittee is responsible to verify the location of all existing buried facilities within or adjacent to the work area to prevent damage to existing utilities. The Permittee is responsible for maintaining vertical and horizontal clearances from all existing utility facilities as required by the respective utility agencies.
- (c) The Permittee shall take all necessary measures to protect any facilities owned or maintained by the MDOT SHA while performing any work within MDOT SHA rights-of-ways.

01.03.09 EXCAVATION.

01.03.09.01 Trenching. All excavations and trenching shall be performed in complete accordance with all requirements set forth by OSHA, MOSH, and MDOT SHA regulations.

- (a) When the MDOT SHA allows excavations within MDOT SHA rights-of-ways, the Permittee shall minimize excavations performed within pavement areas. All excavations, open cuts, or trenching to be performed across pavement areas shall be saw cut to the full depth of the pavement prior to removal.
- (b) Sheet piling, shoring, and/or bracing shall be required for any excavations or trenches within the Roadbed Area of Influence per the MDOT SHA's Utility Policy- Chapter 4- Section 4.07.02; as required by MOSH and/or OSHA; and/or as determined by the MDOT SHA to prevent failure of the embankments and to maintain safe access.
- (c) Cuts or excavations will not be permitted to remain open at the end of a work shift, or when work is not actively in progress. For excavations that cannot be closed the same day as opened, the MDOT SHA may require the following: steel plates; installation of concrete barriers and impact attenuators; and/or any other measures deemed appropriate by MDOT SHA to maintain the safety of the excavation. In addition, the perimeter of all open excavations such as access, working or receiving pits shall be secured using chain link fencing or other approved pedestrian protection along with orange safety fencing suitably installed.
- (d) All spoil material is to be completely removed from MDOT SHA ROW. The Permittee will be responsible for repairing any damage due to settlement of backfill.

01.03.09.02 Sheet piling. In order to prevent failure of the embankments and to maintain safe access sheet piling, shoring, and/or bracing shall be required for any excavations within the Roadbed Area of Influence as per MDOT SHA's Utility Policy- Chapter 4, Section 4.07.02;

within the Zone of Influence of any structure as per MDOT SHA's Utility Policy - Chapter 9 - Figure 9.04-1 – Zone of Influence; as required by MOSH and/or OSHA; and/or as determined by the MDOT SHA.

- (a) Tight sheeting will be required where the distance off the roadside edge of any excavation is less than the depth of the excavation. The roadside face must be tightly sheeted and braced securely against skeleton sheeting on the opposite or far side of the excavation. The Permittee shall install all tight sheeting in accordance with all OSHA, MOSH, and MDOT SHA regulations. Sheeting shall be furnished and installed as per MDOT SHA's Standard Specifications for Construction and Materials, Sections 402.03, 402.04.02, & 405.03. All sheeting must be completely removed upon the completion of excavation and backfill activities.
- (b) Metal sheeting systems may be used with prior approval of the MDOT SHA and pulled only as tamped fill progresses. If the excavation is to be left open, it shall be tight sheeted, and the Permittee must notify the MDOT SHA Permit Inspector.
- (c) A trench box support may be used with the prior approval of the MDOT SHA.

01.03.09.03 Steel Plates. Whenever steel plates are required, the following provisions will apply:

- (a) For non-emergency situations the Permit Inspector must be notified at least 48 hours in advance of any steel plates being placed in the roadway.
- (b) Steel plates are to be monitored and maintained by the Permittee as agreed to by the MDOT SHA, which may be at least twice daily, seven (7) days a week including, but not limited to nights, weekends, holidays, and snow events until they are removed. Steel plates will not be left in the roadway longer than seven (7) calendar days without prior written permission of the MDOT SHA.
- (c) Steel plates shall be installed as per MDOT SHA's Book of Standards for Highway & Incidental Structures, Standard No. MD 104.01-85, Steel Plate – Method 1, Greater Than 40 mph; or Standard No. MD 104.01-86, Steel Plate – Method 2, Equal To or Less Than 40 mph as appropriate.
- (d) Steel shall conform to the current ASTM A36 standard. All steel plates must be at least one (1") inch thick and sized to effectively carry traffic with a maximum one (1") inch deflection. Steel plates must be large enough to allow a minimum of one (1') foot of bearing on all four sides of the pavement surrounding the excavation and securely held in place with six (6") inch pins installed on all corners.
- (e) In the event that more than one plate is required, the steel plate shall be large enough to allow a minimum of two (2') feet of bearing on three (3) sides of the plate and securely held in place with pins installed on all corners of each plate. For trench widths equal to or greater than five (5') feet, the steel plate support system shall be designed and stamped by a Professional Engineer licensed in the State of Maryland and approved by the MDOT SHA. Steel plate bridging is prohibited on expressways and freeways.

01.03.09.04 Multiple Steel Plates. When placing multiple plates, the MDOT SHA shall determine which of the following methods may be used by the Permittee:

- (a) Two plates or more shall be welded together. This consists of placing three welds Twelve (12") inches in length on each abutting plate. One weld placed one foot from each edge and one weld placed in the center of the plate [six (6") inches from center in each direction]. All welds shall be performed by an American Welding Society certified welder, certified by the State of Maryland. Approach plates and ending plates shall be attached to the roadway by a minimum of one anchor pre-drilled into the corners of the plate and drilled a minimum two (2") inches into the pavement.
- (b) Two plates or more shall be held together. This consists of placing three six (6") inch by twelve (12") inch by one (1") inch blocks to one side of the plate. One block to be placed one (1') foot from each edge and one block placed in the center of the plate. The two end blocks on the underside of the plate, the middle block to be placed on the topside of the plate.

01.03.09.05 Steel Plate Safety Measures. To minimize the hazard to the traveling public, the use of a bituminous concrete product is required on all exposed edges of the plates to ensure a smooth transition from the pavement to the surface of the steel plate. The material must be tapered from the height of the steel plate to the existing road surface and extend a minimum distance of one (1') foot to provide a suitable taper.

- (a) At the sole discretion of the MDOT SHA, the Permittee may be required to recess the steel plate such that the top of the steel plate is flush with the surrounding pavement and pinned in place. For roadways with travel speeds greater than 40 mph, the steel plates shall be required to be recessed.
- (b) Plates must be removed from the MDOT SHA ROW within twenty-four (24) hours once they are removed from the roadway. Plates may never be left within the roadway, shoulders, or any other area within the ROW, which could jeopardize motorist safety.
- (c) Should an emergency condition occur that MDOT SHA forces must correct, the Permittee shall be charged for any and all costs, including but not limited to; labor, equipment, overtime, overhead, inspection, etc., associated with restoring the condition to a safe and acceptable level. The Permittee shall be responsible for any additional costs incurred by the MDOT SHA for emergency repairs performed during snow emergencies.

01.03.09.06 Sign Requirements. Sign requirements for steel plates are as follows:

- (a) "STEEL PLATE:" warning signs, W8-8(4), shall be 48" x 48" and shall conform to the MdMUTCD and Maryland's Sign Standard Book.
- (b) When steel plates are used to bridge open cut excavations within MDOT SHA pavement areas, signs shall be placed approximately 500 feet in advance of the steel plates.
- (c) Location and spacing of these signs will depend on field conditions and is subject to approval by the MDOT SHA's Permit Inspector.
- (d) The identification of the Permittee, contact individual, and 24-hour telephone number shall be clearly marked on the rear face of the "STEEL PLATES" warning sign.
- (e) From October through April, steel plates shall be additionally identified by the placement of a grade stake located at the pavement edge immediately adjacent to the steel plates for

identification during snow events. The stake is to be at least three (3') feet high, painted international orange and must be visible to the traveling public.

- (f) The identification of the Permittee must be clearly marked in orange paint on the surface of the steel plate or adjacent roadway.
- (g) Permittee Identification Signs. The Permittee is required to install signs identifying their organization and telephone number. Signs shall be at least 14" in height by 22" in width. Signs shall have white letters and numerals on a dark blue background and must provide all of the following information:
 - (1) The name of the owner of the Permittee.
 - (2) The name of the contractor that is performing the work.
 - (3) A 24-hour telephone number for the contractor.
 - (4) Overall dimensions may be modified to fit the name of the Permittee with approval of the appropriate District Utility Engineer (or approved designee).
 - (5) The number and spacing of these identifying signs shall be subject to the approval of the MDOT SHA District Utility Engineer.
 - (6) MDOT SHA facilities will not be used to provide or install the signs or their supports.
 - (7) Identifying signs shall be erected immediately before the start of the Permittee's work operations and must be removed immediately upon completion of permanent construction and restoration.

01.03.10 BLASTING. All blasting operations, including the storage and handling of explosives and blasting agents, shall be performed in conformance with the applicable provisions of Section TC-6.07 and Section 201.03.04(b)(c) of the Maryland Standard Specifications for Construction and Materials, Dated July 2017.

01.03.10.01 Requirements.

- (a) Blasting within MDOT SHA ROW is strictly prohibited without prior approval. To obtain authorization, a blasting plan (of type, charge, pattern, and method) must be submitted for approval a minimum of forty-five (45) days in advance of the anticipated commencement of work. Blasting cannot begin until the blasting plan is approved and authorized by the MDOT SHA and all other appropriate agencies.
- (b) A (Maryland) licensed blaster is required to perform all blasting work associated with the work to be accomplished under the terms of this permit. The Permittee is required to furnish proof of a Maryland Blaster's License before beginning any blasting operations.
- (c) The Permittee may be required to provide proof of additional insurance in an amount to be specified by the MDOT SHA prior to commencing any blasting activity.
- (d) The District Utility Engineer must be notified three (3) business days prior to beginning any blasting work.
- (e) All blasting is to be performed in complete compliance with the approved blasting plan.

- (f) Blasting is not to be performed within one hundred (100') feet of any residence or structure.
- (g) A thorough site inspection, including representatives of the MDOT SHA, the Permittee, and other affected parties shall be conducted prior to the commencement of blasting. The existing conditions of all culverts, inlets, retaining walls, and other structures is to be fully documented using photographs and/or videotape supplied at the expense of the Permittee. A copy of a complete set of this documentation is to be provided to the MDOT SHA District Utility Engineer prior to the commencement of blasting. A follow up inspection is to be performed upon the completion of blasting to identify any new damage to existing facilities. All damage to existing facilities shall be repaired to the complete satisfaction of the MDOT SHA at the sole expense of the Permittee. All necessary repair or replacement work is to begin immediately and be completed as soon as practicable.
- (h) The Permittee is solely responsible to resolve to the complete satisfaction of the MDOT SHA all damage claims resulting from any activity associated with blasting performed under this permit. The Permittee shall be required to repair or replace all facilities damaged by blasting operations at no cost to the MDOT SHA.
- (i) All shots shall be matted to control flying rock and debris so as to prevent damage to persons or structures.
- (j) Equipment used for drilling blast holes shall use a positive means of dust control.
- (k) Seismic readings may be required to monitor blasting operations. When required, a copy of readings indicating peak particle velocities shall be made available to a representative of the MDOT SHA after each shot.
- (l) Blasting shall not be performed closer than fifty feet (50') from any water, gas, sewer, cable, or conduit unless said facilities have been completely exposed, definitively located and suitably backfilled prior to blasting in strict accordance with the specific requirements of the representative utility agencies. In no case will blasting be permitted closer than two (2') feet from any utility facility ten (10") inches or smaller in diameter, and no closer than five (5') feet from any utility facility larger than ten inches in diameter.
- (m) All possible caution is to be exercised to ensure that drilling and blasting operations minimize overbreak and blast damage to adjacent unexcavated ground.
- (n) All blasting is to be carefully balanced and controlled to provide a uniform distribution of charge that will fracture the rock so that it may be excavated to the required contours without fracturing rock beyond the excavation limits. Modify the blasting round as necessary to achieve the best obtainable results and to keep the air blast over pressure, vibrations and noise within the limits herein specified. It shall be the Permittee's responsibility to produce a satisfactory excavated surface by determining the proper relationships of the factors of burden, spacing, depth of charge, amount and type of explosive, hole size, and delay pattern, and other necessary considerations to achieve the required results.

- (o) Controlled blasting is a method used to remove rock in which the various elements of the blast, hole, size, depth, spacing, burden, charge size, explosive charge weight per delay, distribution, and delay sequence, are carefully balanced and controlled to provide a distribution of the charge that will fracture the rock so it may be excavated to the required contours and minimize overbreak and fracturing of the rock beyond the contour line. Smooth wall blasting, pre-splitting, cushion blasting, and line drills are examples of operations included in the term “controlled blasting”.
- (p) The Permittee shall be responsible for providing material to replace broken rock that is unsuitable for trench backfill use.
- (q) In the event that air blast pressure, vibration, noise, flying debris, or over breakage exceed specified limits, all blasting operations are to be immediately suspended until a modified blasting plan is submitted and approved.
- (r) All blasting shall comply with MDOT SHA’s Standard Specifications for Construction and Materials, Section TC-6.07- Use of Explosives.

01.03.11 TEST HOLES & TEST PITS. All test holes and/or test pit excavations performed within the MDOT SHA ROW shall be in accordance with Standard Specifications for Construction and Materials, Section 205 - Test Pit Excavation, Section 210 – Tamped Fill, and Standard Specifications for Subsurface Explorations.

- (a) All test holes performed in pavement areas shall be by saw cut an area not to exceed Twelve (12”) by twelve (12”) square and then shall be excavated by the vacuum method. Test holes shall be of the size, depth, and location in accordance with Title 12 (Miss Utility) location requirements as approved by the MDOT SHA and restored by tamped six (6”) lifts and sealed with approved cold mix asphalt.
- (b) All test pits should generally be 3-feet to 4-feet square or rectangle dimensions depending upon the depths of the excavation needed. However, all test pit excavations shall be kept to the minimum required for satisfactory completion of the work. Test pits shall be of the size, depth, and location as approved by the MDOT SHA.
- (c) All damaged paving shall be repaired with flowable fill or other MDOT SHA approved material and replaced in kind as soon as practicable and to the satisfaction of the MDOT SHA.
- (d) At the discretion of the District Utility Engineer, the Permittee shall completely backfill test holes to match existing grade with non-shrink grout. Repairs are to be completed within forty-eight (48) hours.
- (e) When a Permittee open cuts or excavates for test holes and/or test pits in the pavement of a state roadway, the cut shall be marked with the appropriate color code as designated by Miss Utility (see section 001.03.19 – MARKING ROAD REPAIRS). The initials of the Permittee are required to be painted within the cut area.
- (f) The MDOT SHA reserves the right to require the Permittee to mill and overlay the roadway due to the amount and location of the said test pits.

01.03.12 TRENCHLESS INSTALLATIONS.

01.03.12.01 Trenchless installation activities are to be performed in complete accordance with submitted plans and specifications approved by the MDOT SHA. The Permittee assumes responsibility in the event of any roadway failure to replace any or all pavement as required in the opinion of the District Utility Engineer and/or Resident Maintenance Engineer's Office. The Permittee shall submit, with the Utility Permit Application of any proposed trenchless installation within MDOT SHA rights-of-ways. Plans should* be signed by a Professional Engineer licensed in the State of Maryland. Prior approval from the MDOT SHA shall be obtained prior to any construction using any method of trenchless installation. All materials used shall be adequate for the intended purpose and method of installation; and shall be approved by the MDOT SHA. * Refer to the MDOT SHA Utility Manual Section 1.01.02 Terms and Definitions.

01.03.12.02 Tunneling. All plans for tunneling operations must be approved/signed by a Professional Engineer licensed in the State of Maryland. For any proposed tunneling within MDOT SHA rights-of-ways, the Permittee shall submit a request for review and approval from both the MDOT SHA Office of Structures and the appropriate District Utility Engineer (or approved designee).

- (a) The Permittee shall have approved plans, and approval of a method to support the face and periphery of the excavation, before doing any work.
- (b) A heavy timber shaft at either end of the tunnel must be provided in order to prevent failure of the embankments and to maintain access to the tunnel. The tunnel liner plates shall be installed by tunnel methods using an approved method to support the face and periphery of the excavation, of which, all supports shall be adequately strong, braced, and shored. This support shall be maintained during non-working hours in order to prevent cave-ins. Access shafts are required at both ends of the tunnel.
- (c) Tunnel excavation shall be advanced in increments not to exceed two (2') feet. Tunnel liner plates shall be installed immediately upon the completion of each excavation increment. Excavation is to be conducted so that the voids behind the tunnel liner plates are kept to a minimum.
- (d) Voids behind tunnel liner plates are to be filled with grout placed under pressure. At least two (2) grout plugs are to be provided per ring to appropriately fill all voids. Grouting is to begin as soon as a sufficient length of tunnel liner plate has been installed to insure a proper seal. Grouting is to proceed progressively with each adjacent set of holes provided in liner plates. All voids shall be completely filled prior to the end of each shift.
- (e) Bulkheads must be sufficiently secured to ensure proper seal and prevent the leakage of grout under pressure. Grouting equipment shall have a minimum capacity of one-half (½) cubic yard to assure that adequate grouting material is available within a reasonable period of time to avoid the setting up of grout from the previous batch. Upon the completion of grouting, all holes are to be plugged with an appropriate fitting provided.
- (f) Access to the shaft is to be protected at all times to deny unauthorized pedestrian entry. Since the definition of tunneling compared to other trenchless technologies is that workers are present inside the tunnel, the safety of the operators is most important. The

Permittee shall operate and maintain an installed ventilation system to meet all OSHA, MOSH, and other pertinent safety requirements for the duration of the tunnel project.

- (g) Approval for any proposed tunneling shall be from the appropriate District Utility Engineer (or approved designee) via the Complete Authorized Utility Permit unless work is 3rd Party Utility Work incorporated into the MDOT SHA's construction project.

01.03.12.03 Jacking & Boring. All plans for jacking and boring operations must be reviewed and stamped by a Professional Engineer licensed in the State of Maryland.

- (a) A heavy timber shaft at either end of the jacking pit is required to prevent embankment failure and maintain access to the pit. This support shall be continuously maintained to prevent cave-ins. Pipes and sleeves shall have sufficient length to extend beyond the ditch line or shoulder edges as directed by the MDOT SHA. Excavation in shoulder areas to push or install pipes or sleeves is prohibited. For jacked and bored pipe crossings under MDOT SHA roadways, the bore hole diameter is not to exceed the outside diameter of the pipe or sleeve.
- (b) The jetting of pipes or sleeves is not permitted.
- (c) The allowable jacking strength capacity of the casing pipe shall be capable of withstanding the maximum jacking forces imposed by the operation. Steel casing pipe shall have minimum yield strength of 35,000 psi. To prevent cave-ins, pipes and sleeves shall be installed simultaneously with augering. In the event of a false start, the void will be backfilled by grouting or other method approved by the MDOT SHA.
- (d) The Permittee is responsible to repair or replace any pavement area or areas damaged as a result of jacking and boring operations. The extent of repairs or replacement shall be determined at the sole discretion of the MDOT SHA. Repairs or replacement shall be performed immediately.
- (e) Jack and bore pits shall be protected at all times to prohibit unauthorized vehicular and pedestrian access.
- (f) The minimum allowable depth of a Jack and Bore installed casing pipe under the road and shoulder surface is five (5') feet. Any deviation shall require prior approval from the appropriate District Utility Engineer (or their approved designee). In locations where the road surface is super elevated, the minimum depth of the bore shall be measured from the lowest side of the pavement surface. In addition, a minimum three (3') foot depth shall be maintained in all other features including ditch bottoms unless otherwise directed by the appropriate District Utility Engineer (or their approved designee).
- (g) Upon completion of the work, the Permittee shall remove and properly dispose of all excess materials and equipment from the work site.

01.03.12.04 Directional Boring. All plans for directional-boring operations should* be approved and stamped by a Professional Engineer licensed in the State of Maryland. * Refer to the MDOT SHA Utility Manual Section 1.01.02 Terms and Definitions.

- (a) As per the standard for horizontal directional drilling, a minimum of three (3') foot cover within non-controlled access ROW and five (5') foot cover within controlled access ROW is required from existing grade to the top of all buried cables and ducts and must be

maintained under paved sections. The top of all cables and ducts must be buried a minimum of five feet below streambeds when crossing waters or wetlands.

- (b) The discharge of all effluent resulting from directional boring operations is to be directed into a tank or truck and suitably disposed of at an authorized waste site.
- (c) Drilling sites shall be protected at all times to prohibit unauthorized vehicular and pedestrian access. Exposed cables and ducts at splicing locations are to be protected utilizing orange safety fence installed a minimum height of four (4') feet and as prescribed in Section 104.20.03 of the 2017 Standard Specifications for Construction and Materials. Perimeter safety fencing around ducts and cables is to be securely maintained at all times.
- (d) Support for exposed cables or ducts at splicing locations must be installed by the Permittee. The temporary attachment of cables or ducts to existing poles, signs, trees, or other existing fixed objects is strictly prohibited. Splicing and handhole installation is to proceed with cable or duct installation.
- (e) Unless otherwise agreed to by the Permittee and the MDOT SHA, and responded to with a written letter, restoration activities must be commenced within seven (7) days of the placement of cable or duct between each handhole location. Upon completion of the work, the contractor shall remove and properly dispose of all excess materials and equipment from the work site.

01.03.12.05 Other Methods. Prior approval from MDOT SHA must be obtained prior to any construction using any other methods of trenchless installation. The Permittee must request, in writing, permission from the MDOT SHA to use any other methods of trenchless installation, attaching plans and specifications for MDOT SHA's review.

01.03.13 EROSION & SEDIMENT CONTROL.

001.03.13.01

- 01.03.13.01** All erosion and sediment control measures and devices shall be constructed in conformance with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control published by the Maryland Department of the Environment, Water Management Administration, and all revisions thereof.
- 01.03.13.02** The Permittee is required to install and maintain all sediment control devices specified in assigned job-specific permit or other permits which have or should have been obtained by the Permittee. The Permittee is solely responsible for securing all permits necessary to accomplish the work outlined in the assignment permit.
- 01.03.13.03** The Permittee is responsible for compliance with all state and local sediment control regulations.
- 01.03.13.04** All disturbed areas are to be temporary stabilized within 48 hours following completion of excavation activities.
- 01.03.13.05** Restoration and permanent stabilization of all areas is to be completed within seven (7) days of the completion of excavation activities.

- 01.03.13.06** The discharge of any material or liquid, other than clean water, into any drainage facility is strictly prohibited.
- 01.03.13.07** The discharge of any material or liquid into Waters of the United States is strictly prohibited.
- 01.03.13.08** Stabilized construction entrances are required for access to work areas adjacent to roadways. Construction entrances shall be shown on permit plans and are to meet the sight distance standards.
- 01.03.13.09** Any work or activity within twenty-five feet (25') of any wetland area is strictly prohibited.
- 01.03.13.10** All dewatering is to be performed utilizing an approved dewatering device, approved by a Maryland Professional Engineer, to ensure the removal of sediment from effluent.
- 01.03.13.11** All surface drains, swales, and ditches are to be maintained free of debris at all times.
- 01.03.13.12** The Permittee shall take all steps necessary to keep erosion and siltation into the MDOT SHA's right of way to a minimum during construction.
- 01.03.13.13** The Permittee shall avoid and minimize construction impacts to wetlands and waterways and shall restore affected areas to their preconstruction condition.
- 01.03.13.14** A MDOT SHA certified Erosion and Sediment Control Manager must be specifically designated for each permit application. The Erosion and Sediment Control Manager shall supervise implementation of the sediment and erosion plan for all work that involves soil disturbance or excavation. The Erosion and Sediment Control Manager shall possess current MDOT SHA certifications.
- 01.03.13.15** The MDOT SHA Quality Assurance Division provides quality assurance of erosion and sediment control devices in conformance with Section 308 of the 'Standard Specifications'.

01.03.14 DRAINAGE. All drainage structures must function while work is in progress, as well as upon completion of work. If damaged, storm drain facilities, including but not limited to pipe, inlets, headwalls, underdrain, and ditches etc., shall be replaced "in kind" by the Permittee in accordance with MDOT SHA publications heretofore referenced (Section 001.03.03.01 - DESIGN and CONSTRUCTION). Should any disturbances be made to the existing surface drain ditches, it will be necessary to restore the drainage ditches to their original condition by re-sodding or seeding and mulching, leaving them in a neat and orderly condition as determined by the MDOT SHA. Unpaved drainage ditches shall be restored in accordance with MDOT SHA's Standard Specifications for Construction and Materials, Category 300 - Drainage and MDOT SHA's Book of Standards for Highway & Incidental Structures, Category 300 - Drainage. All streambeds must be left free of debris so as to provide for a free flow of water at all times. Concrete ditch reconstruction shall be in accordance with the standards.

01.03.15 VALVES AND MANHOLES. The MDOT SHA shall not be responsible for repair of any damage to valves, manholes, or other structures, improperly installed and/or maintained by the Permittee, within the roadway or shoulder areas; or damage caused by others. The Permittee will assume the full responsibility for any injury or damage to MDOT SHA personnel

and equipment as a result of MDOT SHA equipment striking valves, manholes, or other structures, improperly installed and/or maintained by the Permittee such as during snow removal operations.

01.03.16 BACKFILL AND TEMPORARY PATCHING.

001.03.16.01

01.03.16.01 Backfill. The Permittee shall backfill all excavated areas as per the approved permit drawings or as directed by the District Utility Engineer.

01.03.16.02 Saw cuts. All excavation across pavement areas is to be full depth saw cut prior to removal.

01.03.16.03 Backfill placement. For areas approved to be backfilled with excavated material or selected backfill material, all backfill is to be placed in horizontal layers not to exceed six (6") inches in depth. Each layer is to be uniformly tamped and compacted by means of a mechanical or vibratory compacting device in accordance with Standard Specifications for Construction and Materials Sections 210 Tamped Fill and 916 Soil and Soil Aggregate Borrow.

(a) **Excavating in pavement areas.** When the excavation is located within pavement areas, the backfill will be placed to within one foot of the bottom of the specified permanent patch depth; the remaining depth of the trench shall be temporarily backfilled with dense graded aggregate and compacted and approved by the MDOT SHA before permanently repairing the road.

01.03.16.04 Flowable fill. For areas approved to be backfilled with flowable fill, the Permittee shall place and cure the Controlled Low Strength Material as directed by the MDOT SHA and in accordance with MDOT SHA's Standard Specifications for Construction and Materials, Section 314 - Flowable Backfill. The Permittee will be required to mill and overlay after this process at the direction of the District Utility Engineer.

01.03.16.05 Repairing disturbed areas. The Permittee shall upon completion of backfilling the excavation, immediately repair all disturbed areas. The Permittee may temporarily patch the disturbed areas with the approval of the District Utility Engineer, otherwise all repairs will be permanent.

01.03.16.06 Temporary repairs outside roadway. Temporary repair of areas outside the paved section shall be restored to their original condition, and shall include replacing topsoil, seeding and other work in general conformance with the MDOT SHA Environmental Guide for District, Access and Utility Permits Applicants, and as specified in the landscape plan developed for the project, or as directed by the District Utility Engineer. All reconstruction shall be in accordance with MDOT SHA's Standard Specifications for Construction and Materials, Category 700 – Landscaping. Inspections will be performed by the Office of Environmental Design's Quality Assurance Division and Landscape Programs Division in conformance with MDOT SHA Standard Specifications.

01.03.16.07 Temporary shoulder repair. Temporary repair of shoulder areas after backfilling shall consist of a minimum of three (3") inches of cold patch placed into the excavated shoulder area and mechanically compacted as directed by the District Utility Engineer.

01.03.16.08 Temporary roadway patching. The MDOT SHA may, at its discretion, allow a temporary patch of roadway area for a short period of time, not to exceed thirty (30) days unless agreed to and responded to in writing between the Permittee and the MDOT SHA as long as the patching remains acceptable for driving conditions. The period of time is subject to weather conditions allowing for the work to be completed. Temporary repair of bituminous concrete areas after backfilling shall consist of a minimum of three (3") inches HMA placed into the excavated roadway area and mechanically compacted or as directed by District Utility Engineer.

01.03.17 ROADWAY AND SHOULDER REPAIR AND RESTORATION. Installation of underground utilities under paved roadways and shoulders may require repairing hot mix asphalt pavement or Portland cement concrete pavement. Repairs shall be completed meeting the requirements of sections 504 Asphalt Pavement, 505 Asphalt Patches, and 522 Portland Cement Concrete Pavement Repairs of the Maryland Standard Specifications for Construction and Materials dated 2017; and Standard No. 578.01 – Repairing Pavement Openings for Utility Trenches; Standard No. MD 578.03 – Permanent Patching for Flexible Pavement Using Approved Asphalt Mix; Standard No. 578.03-01 – Permanent Patching for Composite Pavement in the Book of Standards for Highway and Incidental Construction as follows:

001.03.17.01

01.03.17.01 Permanent pavement repairs. The Permittee shall permanently repair all roadway and shoulder areas (including intersecting roads and streets) in accordance with MDOT SHA's Book of Standards for Highway & Incidental Construction and MDOT SHA's Standard Specifications for Construction and Materials. MDOT SHA's Book of Standards for Highway & Incidental Construction, Standard 578.01 Repairing Pavement Openings for Utility Trenches is a minimum guideline only. The MDOT SHA reserves the right to change permit repair specifications to suit any changes that may occur on site.

01.03.17.02 Pavement restoration. Final pavement restoration is to occur within thirty (30) days of the completion of the work unless agreed to in writing between the Permittee and the MDOT SHA.

01.03.17.03 Permanent roadway and shoulder repairs. Permanent repair of shoulder and roadway areas excavated by the Permittee shall consist of the removal of any temporary repairs placed and must extend a minimum of two (2') feet beyond the limits of the excavation on all sides. The MDOT SHA may require resurfacing of the roadway up to a maximum of two hundred (200') feet on each side of a trench crossing a highway. This distance is a maximum and the appropriate District Engineer (or approved designee) may approve resurfacing down to a minimum of two (2') feet on each side of the excavation when road, traffic, and excavation conditions permit. All pavement repairs shall be as determined by the District Utility Engineer.

01.03.17.04 Milling. Milling and overlay of pavement surfaces may be required at the direction of the District Utility Engineer.

01.03.17.05 Surface structure protection. Exposed utility surface structures in milled areas are to be protected around their entire circumference with a minimum taper of two (2') feet of a bituminous concrete product.

- 01.03.17.06 Overlay milled pavement.** Milled surfaces are to be resurfaced within seven (7) days.
- 01.03.17.07 Restriping.** Traffic markings and symbols are to be replaced in milled and resurfaced areas prior to the reopening of pavement to traffic. Restriping of these areas with in-kind material will be completed immediately upon resurfacing entirely at the Permittee's expense.
- 01.03.17.08 Settlement in roadway repair.** The Permittee will be responsible for a period of one (1) year for any settlement of any repair, even if the Permittee met the required compaction requirements during the backfilling and installation. At the discretion of the District Utility Engineer, the area of settlement must be cut out and replaced to match the existing profile.
- 01.03.17.09 Concrete Roadway and/or Shoulders.** All concrete pavement disturbed is to be replaced with at least a ten (10') foot length of reinforced concrete patch or to the length required by MDOT SHA's Book of Standards for Highway & Incidental Construction, Standard MD 578.01 and placed in accordance with standard requirements of the MDOT SHA Specifications for Construction and Materials, Section 522 Portland Cement Concrete Pavement Repairs. Concrete Mix No. 9 per Standard Specifications for Construction and Materials Section 902.10 shall be used. Curing of the concrete patch shall be in compliance with the MDOT SHA's Specifications.
- (a) **Extending the patch.** In the event the edge of the trench is within six (6') feet of a construction joint, the reinforced concrete patch must be extended to the construction joint. All trenches must be sawed full depth with a concrete saw. The roadway openings must be compacted as specified under "Backfill" Section of this permit.
- (b) **Accelerator for Concrete Pavements.** When in the opinion of the MDOT SHA a concrete accelerator is required, the accelerator shall be approved by the MDOT SHA and used in accordance with manufacturer's specifications to obtain 350 psi split tensile strength within 12-16 hours.
- 01.03.17.10 Bituminous Concrete Roadway and Shoulders.** All bituminous concrete pavement disturbed is to be replaced as indicated under Concrete Roadway, as shall be applicable, except that the length of concrete patch will be a minimum of six (6') feet and a minimum depth of ten (10") inches. The concrete patch shall be overlaid with HMA, placed and thoroughly compacted, in accordance with MDOT SHA's Standard Specifications for Construction and Materials Sections 504 – Asphalt Pavement and 505 – Asphalt Patches, MDOT SHA's Book of Standards for Highway and Incidental Structures Standard No. MD 578.01 and as directed by the District Utility Engineer.
- (a) **Full Depth Bituminous Concrete Shoulders.** At the sole discretion of the MDOT SHA, pavement repairs to full depth bituminous concrete shoulders may be composed of a variable depth HMA base covered with two (2") inches of HMA surface SC. The total thickness of HMA used for shoulder repairs must be equal to or greater than the thickness of the existing shoulder pavement.
- 01.03.17.11 Chip Seal Surface Treated Shoulders.** All Chip Seal Surface Treated Shoulders disturbed shall be replaced with twelve (12") inches of dense graded aggregate base, placed and compacted in two (2) horizontal lifts of thickness not exceeding six (6") inches and graded to match the existing shoulder slope. The Chip Seal Surface Treatment

shall be performed in accordance with MDOT SHA's Standard Specifications for Construction and Materials, Section 503 – Chip Seal Surface Treatment and as directed by the MDOT SHA. The Permittee shall maintain the disturbed shoulder area for a minimum of six (6) months after completion of all work.

01.03.17.12 Dense Graded Aggregate Shoulders. All unpaved stone shoulders disturbed by the Permittee's operations shall be repaired by the Permittee with twelve (12") inches of dense graded aggregate base in accordance with Standard Specifications for Construction and Materials Section 501, placed and compacted meeting the requirements of Standard Specifications for Construction and Materials, Section 501.03.10 - Compaction in two (2) horizontal lifts of thickness not exceeding six (6") inches and graded to match the existing shoulder slope. The material must have a dual treatment of calcium chloride consisting of one pound per square yard each treatment, with treatments 14-90 days apart as required in the opinion of the Permit Inspector. The Permittee shall maintain the disturbed shoulder area for a minimum of six (6) months after completion of all work.

01.03.17.13 Driveway Entrances. Private entrance aprons shall be replaced in accordance with MDOT SHA's Guidelines for Residential Entrances to State Highways and the Residential Permit Application Package. Commercial entrances damaged by the Permittee's activities shall be replaced in accordance with the Complete Authorized Utility Permit or as directed by the MDOT SHA. Pavement repair to existing driveway entrances are to be composed of material in type and thickness identical to that which existed prior to excavation. Existing concrete entrance aprons, if damaged, will be replaced in their entirety, using MDOT SHA Mix No. 6 concrete.

01.03.18 ROAD-SIDE RESTORATION.

01.03.18.01 General.

- (a) **Replace, repair, or restore damaged property.** The Permittee will be responsible for replacing, repairing, or restoring anything removed or damaged as a result of any activity performed under this permit including but not limited to all curbs, medians, gutters, drains, fences, sidewalks, steps, rails, walls, signs, structures, crosswalks, mailboxes, etc. to their original condition to the complete satisfaction of the MDOT SHA and adjacent property owners.
- (b) **Remove, adjust, or relocate property.** Any removal, adjustment, or relocations of traffic barrier, guardrails, posts, or end treatments is strictly prohibited except when authorized by individual permit applications. Traffic barriers shall be replaced in accordance with MDOT SHA's Book of Standards for Highway & Incidental Structures, Category 6 – Shoulders; Standard Specifications for Construction and Materials, Section 604 - Concrete Traffic Barriers, Section 605 – Metal Traffic Barriers, and Section 605 - Traffic Barrier End Treatments; and Guidelines for Traffic Barrier Placement and End Treatment Design.
- (c) **Restore or replace fencing.** (Chain link) Fencing removed for construction is to be restored to its original condition. All fence openings shall be completely restored prior to the end of each working shift. Fences shall be replaced in accordance with MDOT SHA's Standard Specifications for Construction and Materials- Category 600 Shoulders,

and MDOT SHA's Book of Standards for Highway & Incidental Structures- Standards Nos. MD 690.01 thru MD 692.01 as applicable.

- (d) **Remove, adjust, or relocate traffic control devices.** The removal, adjustment, or relocation of signs, delineators, markers, crosswalks, and other traffic control facilities or devices is strictly prohibited except as specifically authorized by the Complete Authorized Utility Permit. MDOT SHA traffic control facilities or devices shall not be removed until immediately prior to the permit activity requiring removal and shall be replaced in their original locations immediately upon completion of said permit activity. MDOT SHA traffic control facilities or devices disturbed or damaged by the Permittee's activities shall be repaired, replaced, or otherwise restored to the satisfaction of the MDOT SHA in accordance with MDOT SHA's Book of Standards for Highway & Incidental Structures; Standard Specifications for Construction and Materials; and the Maryland Manual on Uniform Traffic Control Devices. Delineators removed for construction shall be replaced to their original height and position upon the immediate completion of activities in accordance with MDOT SHA's Book of Standards for Highway & Incidental Structures, Standard Nos. MD 665.01 thru MD 665.06; and the Maryland Manual on Uniform Traffic Control Devices.

01.03.18.02 Curbs.

- (a) **Limits of replacing curbs.** Any existing curbs disturbed shall be replaced to the limits as indicated for concrete roadway repair with the exception that in the event the edge of the trench is within four feet (4') of a construction joint, the new concrete curb must be continued to said construction joint and must conform with the existing curbs, and to be constructed in accordance with MDOT SHA's Book of Standards for Highway & Incidental Structures and Standard Specifications for Construction and Materials.
- (b) **Concrete curb specifications.** Existing concrete curb or combination curb and gutter is to be replaced using MDOT SHA Mix No. 3 concrete to its original condition in accordance with the current version of the MDOT SHA Book of Standards for Highway & Incidental Construction, Standard Number MD 620.02, MD 620.02-1, and MD 620.03 as appropriate.
- (c) **Bituminous curb.** Existing bituminous curb is to be replaced to its original condition in accordance with the MDOT SHA Book of Standards for Highway & Incidental Construction, Standard Number MD 615.01.
- (d) **ADA.** Any existing curbs and/or combination curb & gutters disturbed shall be replaced in compliance with MDOT SHA's ADA policy.

01.03.18.03 Sidewalks.

- (a) **Permanent sidewalk repairs.** Permanent repairs to concrete sidewalk shall consist of removal of the entire blocks of concrete sidewalk affected and the entire area replaced with MDOT SHA Mix No. 3 concrete (if applicable, type will be specified in job-specific permit), five (5") inches thick and finished to a true grade and alignment of the existing sidewalk – finished as now exists.
- (b) **Curb specifications.** All work and materials shall be in accordance with the requirements of the MDOT SHA's Standard Specifications for Construction and

Materials, Section 603- Sidewalks and MDOT SHA's Book of Standards for Highway & Incidental Structures, Standard Nos. MD 655.01 thru MD 655.22. It will be the Permittee's responsibility to contact the Permit Section of the Department of Public Works of the County affected to obtain any necessary permits for all work involving the disturbance of sidewalks.

- (c) **Accessibility requirements (ADA Compliance).** Both Maryland and Federal law require that new construction and reconstruction of any public facilities be done in a manner that ensures the facility is accessible by all users, including those with disabilities. Therefore, it is mandatory that work completed under this permit which includes construction or reconstruction of curbs, curb ramps, sidewalk/pedestrian walkways, crosswalks, or installation or modification of any type of obstructions contained within a sidewalk or pedestrian walkway be built in accordance with the MDOT SHA's Accessibility Policy and Guidelines for Pedestrian Facilities Along State Highways, available on MDOT SHA's Internet Site at roads.maryland.gov. These requirements include providing a minimum sixty (60") inch width path of travel, clear of obstructions within or protruding into the sidewalk/pedestrian walkway. If an object within the limits of the construction already exists within the sidewalk/pedestrian walkway, every reasonable effort should be made to relocate the object as part of the work performed under this permit. If an object cannot be placed or relocated entirely outside of the sidewalk/pedestrian walkway, then the object should be placed or relocated in a manner that provides the maximum possible clear width, which in no case shall be less than thirty-six (36") inches. The work done under this permit shall in no way reduce or negatively impact the accessibility of the curb ramps, sidewalk/pedestrian walkway, crosswalks, etc. from what existed prior to construction under this permit. If the sidewalk to be installed is less than five (5') feet in width, a waiver must be approved by the MDOT SHA ADA department.

01.03.18.04 Landscape Restoration. Landscape restoration shall begin immediately upon completion of excavation activities, and shall include replacing topsoil, seeding, sodding, tree installation, and other work in general conformance with the MDOT SHA Environmental Guide for District, Access and Utility Permit Applicants, and as specified in the landscape plan developed for the project, or as directed by the District Utility Engineer. All reconstruction shall be in accordance with MDOT SHA's Standard Specifications for Construction and Materials, Category 700 – Landscaping. Inspections will be performed by the Office of Environmental Design's Quality Assurance Division and Landscape Programs Division in conformance with MDOT SHA Standard Specifications.

01.03.19 MARKING ROAD REPAIRS.

When a Permittee open cuts within MDOT SHA ROW, the cut shall be marked with the appropriate color code as designated by Miss Utility (see below). The initials of the utility company are required to be painted within the cut area.

When the Permittee open cuts pavement of a State roadway, they shall mark the repaired road or shoulder area with the appropriate color as designated by Miss Utility. The initials of the utility company are also required to be painted within the repaired area.

Utility Color Codes as designated by Miss Utility:

<u>Color</u>	<u>Utility</u>
Red...	Electric Power Lines, Cables, Conduit, and Lighting Cables
Yellow	Gas, Oil, Steam, Petroleum or Gaseous Materials
Orange	Communication, Alarm or Signal Lines, Cables or Conduit incl. CATV
Blue	Potable Water
Purple	Reclaimed Water, Irrigation and Slurry
Green...	Storm Drain Lines/Sewer
Pink...	Survey Markings
White	Proposed Excavation

STATE HIGHWAY ADMINISTRATION

**ACKNOWLEDGEMENT
of the
MDOT SHA UTILITY PERMIT GENERAL PROVISIONS
Issued: January 1, 2025
By**

Utility Company

Address

Address

City State Zip

Utility Company intends to request permission from the Maryland Department of Transportation State Highway Administration (MDOT SHA) to perform limited work within various state right of ways by submitting Utility Permit Application Packages to the appropriate District Offices for Utility Construction Permits, Utility Relocation Permits (for MDOT SHA projects), Utility Blanket Permits (Tree Trimming, Utility Infrastructure Maintenance/Emergency Work) and/or Utility Permit Extensions, (hereinafter collectively referred to as Individual Work Order Permits).

It is hereby agreed and understood that:

- This acknowledgement form shall be construed to indicate that _____ has
Utility Company downloaded the Utility Permit General Provisions from MDOT SHA's website and accepts the terms and specifications outlined therein.
- A copy of the Utility Permit General Provisions shall be attached to each and every Individual Work Order Permit along with any attachments, plans and addenda in order to constitute a Complete Authorized Utility Permit.
- The Utility Permit General Provisions by itself or any Individual Work Order Permit by itself DOES NOT grant permission to _____ to work within MDOT SHA rights- of-ways.
Utility Company
- The issuance of any Complete Authorized Utility Permit shall be construed to indicate complete acceptance of the terms and specifications outlined therein.
- Any proposed work performed by _____ shall be performed and
Utility Company completed in accordance with all applicable County, State, and Federal laws, rules, regulations and ordinances, and subject to the inspection and control of the MDOT SHA.

I hereby certify that I have authorization to sign this Acknowledgement Form and that _____ agrees to all the above terms and conditions.

Utility Company

Print Name Signature Date

Telephone Number: _____ Email: _____

**Utility Master Agreement
By and Between
Maryland Department of Transportation State Highway Administration
And**

This Utility Master Agreement (this "Agreement"), made this _____ day of _____, Choose a Month _____, 20____, by and between the Maryland Department of Transportation State Highway Administration, acting for and on behalf of the State of Maryland (hereinafter referred to as "MDOT SHA") and _____, a _____ corporation, with a Federal Employer Identification Number of _____ and a principal place of business at: _____
(insert address) (hereinafter referred to as "the Company").

WHEREAS, MDOT SHA has established, operates and maintains a State highway system within the State of Maryland, under the authority granted by Title 8 of the Transportation Article of the Annotated Code of Maryland; and

WHEREAS, the Company has requested MDOT SHA to allow the placement of the Company's facilities ("Company Facilities") within MDOT SHA's rights-of-way ("ROW") in order to provide _____ services within the State of Maryland; and

WHEREAS, the Company Facilities shall include, but not be limited to, such things as _____; and

WHEREAS, the Company has submitted to MDOT SHA a New Public Utility Company Application Package (hereinafter defined) for MDOT SHA to review and approve, as a prerequisite to MDOT SHA issuing the Company the necessary Utility Permits (hereinafter defined and referred to as "MDOT SHA Utility Permits") which will allow the Company to access MDOT SHA's ROW in order to install the Company Facilities; and

WHEREAS, MDOT SHA and the Company desire to enter into this Agreement to evidence each party's acceptance of the terms and conditions set forth herein for the installation of the Company Facilities within the MDOT SHA's ROW; and.

WHEREAS, there is nothing contained in this Agreement to be construed or interpreted to give, grant or convey any rights or interests in any property of the State of Maryland.

NOW THEREFORE, be it understood that MDOT SHA and the Company do hereby agree as follows:

SECTION 1. NEW PUBLIC UTILITY COMPANY APPLICATION PACKAGE

A. The New Public Utility Company Application Package (hereinafter referred to as “NPUCAP”) which has been submitted by the Company to MDOT SHA and which requests MDOT SHA to approve the Company as an Authorized Public Utility in order to obtain MDOT SHA Utility Permits to install the Company Facilities within MDOT SHA’s ROW. The NPUCAP consists of the following:

- 1) Documentation that the Company qualifies under one of the following conditions:
 - a) The Company is under the jurisdiction of the Maryland Public Service Commission; or
 - b) The Company is under the jurisdiction of the Federal Communications Commission; or
 - c) The Company is covered by the Cable Communications Policy Act of 1984 codified as 47 USC Section 541 and 556, as amended; or
 - d) The Company is governed by Title 9 of the Environmental Articles of the Annotated Code of Maryland 24/7 contact information.
- 2) Documentation that the Company maintains a permanent office in Maryland, manned 7 days a week, 24 hours a day. The Company shall provide to MDOT SHA the Company’s 24/7 contact information on Company letterhead, and shall revise it as needed.
- 3) Documentation that the Company is an “owner-member” of the “One-call system” as defined and required in Title 12 – Underground Facilities - of the Public Utilities Article of the Annotated Code of Maryland if the Company has or will have any underground facilities.
- 4) Documentation that the Company is insured in accordance with MDOT SHA’s [Standard Specifications For Construction And Materials](#), Sections GP-7.14 Liability Insurance and TC-5.01 Insurance.
 - a) The Maryland State Highway Administration shall be listed as a “Certificate Holder” on the “Certificate of Insurance” form.
- 5) The completed, dated and signed Utility Permit General Provisions Acknowledgement Form acknowledging the Company’s acceptance to agree to and abide by the Utility Permit General Provisions’ terms and conditions.

B. Once MDOT SHA has executed this Agreement, the NPUCAP will be deemed to be an approved Authorized Public Utility and the Company may apply for the MDOT SHA Utility Permits.

SECTION 2. MDOT SHA UTILITY PERMITS

A. After execution of this Agreement, the appropriate MDOT SHA District(s) will be notified that the Company is an Authorized Public Utility, and that the appropriate MDOT SHA District(s) may begin to issue the MDOT SHA Utility Permits to the Company.

B. MDOT SHA issues Utility Permits in two (2) parts which when combined comprise a Complete Authorized Utility Permit.

1) Part 1: Utility Permit General Provisions

a) The Company shall download the Utility Permit General Provisions from MDOT SHA's internet web site.

2) Part 2: Individual Work Order Permits

a) Individual Work Order Permits are issued by the appropriate District office under the signature of that District Engineer or their approved designee or designee.

3) The Company shall attach **BOTH PARTS** of the Utility Permit together in order to constitute a Complete Authorized Utility Permit prior to beginning any work within MDOT SHA ROW.

2.01. UTILITY PERMIT GENERAL PROVISIONS

A) The Utility Permit General Provisions contains the general requirements, conditions, procedures and contact information required for all activities performed within MDOT SHA's ROW. Because the Utility Permit General Provisions apply to all Utility Permits, MDOT SHA provides the Utility Permit General Provisions via MDOT SHA's website. As such, it is the responsibility of the Company to: (i) obtain the Utility Permit General Provisions from MDOT SHA's website; (ii) attach the Utility Permit General Provisions to each and every Individual Work Order Permit obtained from the appropriate district office; and (iii) insure that the Complete Authorized Utility Permits are at all the job sites at all times.

B) The Company shall download both the Utility Permit General Provisions and the Utility Permit General Provisions Acknowledgement Form from MDOT SHA's web site initially when the Company is requesting to be approved as an Authorized Public Utility. Whenever the Company is notified by the appropriate MDOT SHA District(s) that the Utility Permit General Provisions have been revised, the Company shall again download both the Utility Permit General Provisions and the Utility Permit General Provisions Acknowledgement Form.

1) The Company shall (i) initially when requesting to be approved as an Authorized Public Utility; (ii) and again at each notification that the Utility Permit General Provisions have been revised; sign, date and return the Utility Permit General Provisions Acknowledgement Form acknowledging the Company's acceptance to agree by the Utility Permit General Provisions' terms and conditions.

- C) Utility Permit General Provisions are Part 1 of 2 and every Individual Work Order Permit is Part 2 of 2 of obtaining a Complete Authorized Utility Permit.
- 1) The Company shall attach a copy of the Utility Permit General Provisions to each and every Individual Work Order Permit to comprise a Complete Authorized Utility Permit to allow the Company access to MDOT SHA's ROW to perform specific activities as requested by the Company.
 - 2) The Utility Permit General Provisions by itself DOES NOT grant permission to the Company to work within MDOT SHA's ROW.

2.02. WORK ORDER UTILITY PERMIT(S)

- A) The appropriate MDOT SHA District issues various types of Utility Permits for specific types of utility work to be performed within MDOT SHA's ROW. These Utility Permits contain the special requirements, conditions, procedures and contact information required for job-specific activities performed by the Company and includes job-specific attachments, plans and addenda. (These Utility Permits are collectively hereinafter referred to as Individual Work Order Permits.) The types of Individual Work Order Permits issued are as follows:

- 1) **Utility Construction Permit** is issued for the installation, construction, removal, relocation, replacement, adjustment and significant maintenance of utility infrastructure as needed and requested by the Company.
- 2) **Utility Relocation Permit** is issued for the installation, construction, removal, relocation, replacement and adjustment of utility infrastructure as required by the MDOT SHA. Utility Relocation Permits are issued specifically in connection with MDOT SHA projects.
- 3) **Utility Blanket Permit** is issued for routine operations such as tree trimming and minor utility infrastructure maintenance activities. Utility Blanket Permits also include utility work required in emergency situations. A Utility Blanket Permit is issued annually from the appropriate districts for emergencies and these types of maintenance activities so the Company would not need to submit numerous individual site-specific Utility Permit Application Packages.
 - a) The Company shall notify the appropriate District of any work to be performed under a Utility Blanket Permit.
- 4) **Utility Permit Extension** is issued for the extension of previously issued Utility Construction Permits and/or Utility Relocation Permits when the proposed utility work will not be completed by the expiration date of the existing permits. Utility Permit Extensions apply to only Utility Construction Permits and Utility Relocation Permits.
 - a) Blanket Permits shall require the issuance of a new permit upon their expiration.
 - b) The requirement for submitting an annual Utility Permit Application Package for Utility Blanket Permit(s) will be as determined by each of the MDOT SHA District(s).

- B) Individual Work Order Permits are Part 2 of obtaining a Complete Authorized Utility Permit.
- 1) The Company shall submit Utility Permit Application Package for all installation, construction, relocation, removal, replacement, adjustment and significant maintenance of utility infrastructure requested by the Company, for review and approval, to the appropriate MDOT SHA District(s).
 - a) The appropriate MDOT SHA District(s) may issue a Individual Work Order Permit provided the Utility Permit Application Package submitted by the Company is reviewed, approved and in compliance with MDOT SHA's Utility Policies.
 - b) Individual Work Order Permits are issued under the signature of the appropriate District Engineer or designee.
 - 2) The Company shall attach a copy of the Utility Permit General Provisions to each Individual Work Order Permit to comprise a Complete Authorized Utility Permit to allow the Company access to MDOT SHA's ROW to perform specific activities as requested by the Company.
 - 3) An Individual Work Order Permit by itself DOES NOT grant permission to the Company to work within MDOT SHA's ROW.
- C) Individual Work Order Permits have a term of twelve (12) months or until the work specified in the Work Order Utility Permit has been completed, whichever is shorter.

2.03. UTILITY PERMIT APPLICATION PACKAGE

- A) The Company shall submit a Utility Permit Application Package for all installation, construction, relocation, removal, replacement, adjustment and significant maintenance of utility infrastructure requested by the Company, for review and approval, to the appropriate MDOT SHA District(s). Significant maintenance work will be as determined by the appropriate MDOT SHA District(s).
- B) The Company shall submit the Utility Permit Application Package to the appropriate District(s) which is to be submitted as three (3) separate packages and each individual package neatly folded to an 8½" X 11" size and shall contain the following items:
- 1) A copy of the completed and signed permit application.
 - 2) A copy of an 8½" X 11" vicinity map (1" = 1000') with the area of work indicated with a colored pen or pencil.
 - 3) A complete set of plans for the proposed work within MDOT SHA's ROW.
 - 4) A copy of the completed and signed Traffic Control Permit Application.
 - 5) A copy of the Traffic Control Plan ("TCP") for the work or an applicable TCP template.
 - 6) One electronic set of plans as determined by MDOT SHA

SECTION 3. COMPLIANCE WITH MDOT SHA UTILITY POLICIES

A. In return for permitting the Company to install Company Facilities within MDOT SHA's ROW, the Company agrees to comply with MDOT SHA's Utility Policies, Permits and the provisions of this Agreement. Any infraction of this Agreement or any issued MDOT SHA Utility Permits shall be just cause for immediate revocation or termination of the MDOT SHA Utility Permits in accordance with **SECTION 6.A. CONSEQUENCES OF NON-COMPLIANCE**.

B. The Company, on behalf of itself, its successors and assigns, agrees that it shall relocate the Company Facilities at its own expense if the Company Facilities are impacted by future changes to the State highway system or State needs.

C. The Company agrees to meet MDOT SHA's construction schedule requirements and to coordinate with MDOT SHA any design, removal, relocation(s), and/or adjustment(s) to the Company Facilities.

D. The Company agrees that upon receipt of MDOT SHA's construction schedule or any plans of proposed highway improvements that may impact the Company Facilities, that the Company shall, with due diligence, inform MDOT SHA in writing of said impacts and the estimated magnitude of the design, removal, relocation(s), and/or adjustment(s) to the Company Facilities.

E. On MDOT SHA construction projects where the Company requests the Company's utility relocation and adjustment work to be incorporated into the MDOT SHA project, the MDOT SHA and the Company will execute a separate Utility 3rd Party Work Agreement. This Utility 3rd Party Work Agreement shall consist of all essential terms and conditions to include the utility work into MDOT SHA's project and shall contain project-level details and specific provisions such as financial responsibility, project changes, progress and final billing, etc.

F. Any Company construction and maintenance activities not performed in accordance with MDOT SHA construction schedules provided by MDOT SHA shall constitute an infraction of this Agreement and any contractor delay claims incurred by MDOT SHA as a result of the Company's non-compliance shall be reimbursed to MDOT SHA by the Company in accordance with **SECTION 6.A. CONSEQUENCES OF NON-COMPLIANCE**.

G. Any Company construction and maintenance activities not performed in accordance with this Agreement, the issued MDOT SHA Utility Permits, MDOT SHA Utility Policy and/or construction schedules provided by MDOT SHA shall constitute an infraction of this Agreement and any infraction of any issued MDOT SHA Utility Permits and may result in the MDOT SHA immediately revoking or terminating the MDOT SHA Utility Permits in accordance with **SECTION 6.A. CONSEQUENCES OF NON-COMPLIANCE**.

SECTION 4. CONSENT BY MDOT SHA TO ASSIGNMENT - SUCCESSORS AND ASSIGNS

A. ASSIGNMENT

The Company hereby acknowledges and agrees for itself and its successors and assigns that it will not: (a) assign any of its rights under this Agreement; or (b) make or permit any voluntary or involuntary total or partial sale, assignment, conveyance, or other transfer of any or

all of the Company Facilities or the occupancy or use of the MDOT SHA's ROW (each of which is hereinafter referred to as a "Transfer") without first obtaining the express written consent of the MDOT SHA Statewide Utility Engineer (which consent shall not constitute a consent to any subsequent Transfer, whether by the party hereinabove named as "the Company" or by any other party). The use of the terms "sale" "conveyance", and such other terms herein shall not be interpreted in any manner that would give the Company, or any permitted assignee of the Company, anything other than a mere right of use under this Agreement, it being understood and agreed by the Company that no interest in the MDOT SHA ROW or any other State property is created or intended to be created by this Agreement. Any party to whom any Transfer is attempted without first having obtained the above consents from MDOT SHA shall have no claim, right or remedy whatsoever hereunder against MDOT SHA, and MDOT SHA shall have no duty to recognize any party claiming under or through the same. No Transfer made with or without the consent of Statewide Utility Engineer shall alter or impair the obligations of the Company hereunder before such Transfer. The Company shall only be released from its obligations hereunder upon a Transfer approved as set forth herein and only if the Company's assignee agrees in writing to assume all of the Company's obligations hereunder.

B. SUCCESSORS AND ASSIGNS

All of the terms, conditions, obligations and provisions contained in this Agreement shall inure to the benefit of and be binding upon the parties hereto and: (a) in the case of MDOT SHA, its successors and assigns; and (b) in the case of the Company, any successors or assigns that have been approved in accordance with the provisions of this Agreement.

SECTION 5 CONTACT INFORMATION AND NOTICES

A. The Company shall maintain a manned telephone number, 24 hours a day, seven (7) days a week, which number the Company shall have provided to MDOT SHA and shall update as needed, so that MDOT SHA may contact the Company promptly in case of emergency.

B. The Company shall maintain a mailing address and other contact information, including the name and title of a contact person with the person's email and telephone information so the person may be contacted both in emergency and in normal situations. In addition, the information may be used to send future construction plans along with a construction schedule of highway projects.

C. The Company shall notify MDOT SHA within seven (7) business days of any changes to any of the contact information. If the Company has been purchased or sold, the Company shall notify MDOT SHA within seven (7) business days of such occurrence and shall provide to MDOT SHA all contact information for the new entity so that MDOT SHA may easily contact the new entity, as needed.

D. Any notice, demand, consent, approval, request or other communication or document to be provided hereunder to a party hereto shall be in one of the following manners:

SECTION 6 COMMUNICATIONS BETWEEN THE PARTIES

- a) **Emergencies** - Shall be by telephone for immediate notification and followed by email or in writing, with the pertinent information regarding the emergency, within twenty-four (24) hours after notifying MDOT SHA by telephone. Emergency communications to MDOT SHA shall be to:

Statewide Operations Center
7491 Connelley Drive
Hanover, Maryland 21076
Telephone: 1-800-543-2515 or 410-582-5650

to the Company will be to:

(Name) _____

(Title) _____

(Address) _____

(Address) _____

Telephone: _____

Email: _____

- b) **Routine Communications** - Communications for routine matters, such as consent, approval, and request or other communication or document concerning a Utility Permit Application, may be by email or in writing. If communication is by email, the email shall be followed in writing, with the pertinent information that was contained in the email, within seventy-two (72) hours after the email to MDOT SHA. Routine communications to MDOT SHA shall be to:

DISTRICT 1	660 West Road, Salisbury, MD 21801	410-677-4000 or 410-667-4095
DISTRICT 2	615 Morgnec Road Chestertown, MD 21620	410-778-3061 or 410-778-3061
DISTRICT 3	9300 Kenilworth Ave., Greenbelt, MD 20770	310-513-7300 or 301-513-7350
DISTRICT 4	320 West Warren Road, Hunt Valley, MD 21030	410-229-2300 or 410-229-2340
DISTRICT 5	138 Defense Highway, Annapolis, MD 21401	410-841-1000 or 410-841-1039
DISTRICIT 6	1251 Vocke Road, LaVale, MD 21502	301-729-8400 or 301-729-8439
DISTRICT 7	5111 Buckeystown Pike, Frederick, MD 21704	301-624-8100 or 301-624-8116

to the Company will be to:

(Name) _____

(Title) _____

(Address) _____

(Address) _____

Telephone: _____

Email: _____

- c) **Other Communications** - All other communications to MDOT SHA for notice, consent, approval, request or other communication or document shall be given in writing and deemed to have been given seventy-two (72) hours after being sent by certified or registered mail in the United States mails, postage prepaid, return receipt requested. All other communications to MDOT SHA shall be to:

Deputy Administrator/Chief Engineer for Operations
State Highway Administration
707 North Calvert Street
Baltimore, MD 21202
Telephone: 410-545-0361

and to: State Highway Administration/Office of Construction
Statewide Utility Engineer
7450 Traffic Drive
Hanover, MD 21076
Telephone: 443-572-5264
E-mail: OOC_Uilities@sha.state.md.us

to the Company will be to:

(Name) _____

(Title) _____

(Address) _____

(Address) _____

Telephone: _____

Email: _____

SECTION 7 GENERAL

A. CONSEQUENCES OF NON-COMPLIANCE

1. In the event of non-compliance by the Company, its successors or assigns, with any terms of this Agreement or with the MDOT SHA Utility Permits, MDOT SHA shall have the right, but not the obligation, (a) to cancel the MDOT SHA Utility Permits thereby denying the Company the use of MDOT SHA ROW for the Company Facilities, and (b) to pursue any other legal remedies available.
2. Upon the revocation or termination of any issued MDOT SHA Utility Permits, the Company shall, at MDOT SHA's discretion and direction, remove all of the Company Facilities, and surrender possession of MDOT SHA ROW in good working order and condition.
3. Any representations, warranties, indemnifications and insurance requirements set forth in this Agreement or any issued MDOT SHA Utility Permits shall survive the revocation or termination of this Agreement and any MDOT SHA Utility Permits.
4. In the event of non-compliance by the Company, its successors or assigns, with any terms of this Agreement in meeting MDOT SHA project schedules, MDOT SHA shall have the right, but not the obligation, (a) to require the Company to reimburse MDOT SHA for any contractor delay claims incurred as a result of the Company's non-compliance, and (b) to pursue any other legal remedies available.

B. INSURANCE TO BE MAINTAINED BY THE COMPANY

The Company shall maintain liability insurance: (i) as required herein; (ii) as required by any of the MDOT SHA Utility Permits; and (iii) as are in accordance with General Provision 7.14 – Liability Insurance; and Terms & Conditions 5.01 – Insurance of MDOT SHA's [Standard Specifications For Construction And Materials](#), for May 2017, as may be revised, amended, replaced or updated from time to time on MDOT SHA Internet Web Site at [www.roads.maryland.gov/Business/Business Center/Business Standards and Specifications](http://www.roads.maryland.gov/Business/Business%20Center/Business%20Standards%20and%20Specifications), for so long as the Company, its successors or assigns, have Company Facilities within any MDOT SHA ROW.

The Company shall maintain at its expense during its use or occupancy of any MDOT SHA ROW or other State property or during any activities conducted thereon: (a) insurance against loss or liability in connection with bodily injury, death, property damage or destruction arising under this Agreement or out of the use of MDOT SHA ROW by the Company or its agents, employees, officers, invitees, visitors, and guests, under one or more policies of Commercial General Liability (CGL) insurance having such limits as to each as are reasonably required by MDOT SHA or the State of Maryland from time to time, but in any event of not less

than a minimum coverage of \$2,000,000 combined single limit per occurrence, and containing broad form CGL Endorsement or its equivalent; and (b) workers compensation insurance as may be required by applicable law.

The Commercial General Liability policy shall: (a) name the State of Maryland, MDOT SHA and MDOT each as an additional insured thereunder; (b) by its terms as it relates to the acts of the Company be considered primary and non-contributory with respect to any other insurance (if any) carried by MDOT SHA or its successors or assigns; (c) by its terms, provide MDOT SHA with thirty (30) days prior written notice before cancellation, non-renewal, or material change to a policy; and (d) be issued by an insurer of recognized responsibility that is licensed to issue such policy in Maryland. The Company shall obtain from its insurer and deliver to MDOT SHA a certificate to evidence that the State of Maryland, MDOT and MDOT SHA are named each as an additional insured on the Company's CGL policy and that MDOT SHA will be given thirty (30) days notice prior to cancellation, non-renewal, or material change to the policy.

Prior to the commencement of Company activities hereunder or in connection with the MDOT SHA Utility Permits, the Company shall deliver to MDOT SHA a certificate of insurance evidencing the insurance stipulated above. Thereafter, each time the policy is renewed, the Company shall provide MDOT SHA with an updated Certificate of Insurance. In the event the Company fails to pay any insurance premium as and when due, MDOT SHA shall have the option but not the obligation of paying such insurance premiums on behalf of the Company and the Company shall immediately, upon demand, repay such sum to MDOT SHA.

If the Company fails to carry and maintain any insurance as required, such failure shall constitute an "Event of Non-Compliance" and shall subject the Company to termination of its activities hereunder and under the MDOT SHA Utility Permits.

C. INDEMNIFICATION OF MDOT SHA

In accordance with General Provision 7.13 – Responsibility For Damage Claims of MDOT SHA's [Standard Specifications For Construction And Materials](http://www.roads.maryland.gov/Business/Business%20Center/Business%20Standards%20and%20Specifications), for May 2017, as may be revised, amended, replaced or updated from time to time on the MDOT SHA Internet Web Site at [www.roads.maryland.gov/Business/Business Center/Business Standards and Specifications](http://www.roads.maryland.gov/Business/Business%20Center/Business%20Standards%20and%20Specifications), the Company shall be responsible for, defend (at MDOT SHA's option), indemnify and hold harmless the State of Maryland, MDOT and MDOT SHA, their respective members, officers, agents, and employees, against and from any and all liability or claim of liability for bodily injury (including death) or property damage (including reasonable attorney's fees) related to, involving or arising, in whole or in part from any act or failure to act or out of the use, occupancy, conduct, or operation, construction, maintenance or management of or upon any portion of the MDOT SHA ROW by the Company, its principals, contactors, employees, agents, licensees lessees or invitees, including by way of example only: (a) any work or thing whatsoever done or not done on MDOT SHA ROW under this Agreement or under the MDOT SHA Utility Permits by or on behalf of the Company; or (b) any breach or default by the Company in performing any of its obligations under the provisions of this Agreement or applicable law. The Company agrees that the indemnification as described herein shall include any liability or claim of liability that occurs under this Agreement,

even if the injury does not become apparent or does not manifest itself until after expiration of this Agreement. The Company shall indemnify MDOT SHA and hold them harmless from any and all claims, causes of action or suits arising in whole or in part from involving any acts of the Company in connection with this Agreement or the MDOT SHA Utility Permits including, but not limited to, the placement or existence of any of the Company Facilities on or near any property, road or highway that is owner and/or maintained by MDOT SHA or the State of Maryland. This provision applies to claims or suits involving all facilities regardless of when they were placed, constructed or replaced and it applies to any and all claims, even those which accrued previous to the issuance of this permit.

MDOT SHA reserves the right to assign inspection forces while work is being accomplished within the ROW at the expense of the Company.

D. GOVERNMENTAL IMMUNITY

Nothing in this Agreement shall constitute a waiver of any immunity to which the State of Maryland, MDOT or MDOT SHA may be entitled under any federal law or under the laws of the State of Maryland, as they may be amended from time to time.

E. DAMAGE BY THE COMPANY

Anything contained in any provision of this Agreement or the MDOT SHA Utility Permits to the contrary notwithstanding, if any damage to MDOT SHA's ROW or to any person or property is caused by or results from any act, failure to act or omission of the Company, or any of its officers, contractors, employees, or agents, then the Company shall perform or pay to MDOT SHA or to any other party, as applicable, to have performed the cost of all repairs and restoration required to restore it to the condition that existed prior to such damage. However, if MDOT SHA or the other party elects not to restore, the Company shall pay to the MDOT SHA and/or to any other party, as applicable, on a fully installed replacement cost basis, the cost to restore MDOT SHA's and any other party's facilities, property, or equipment that have been damaged or destroyed.

F. NO WAIVER

MDOT SHA shall not be deemed to have waived the exercise of any right that it holds hereunder unless such waiver is made expressly and in writing (and no delay or omission by the State in exercising any such right shall be deemed a waiver of its future exercise). No such waiver made as to any instance involving the exercise of any such right shall be deemed a waiver as to any other instance, or any other right.

G. SEVERABILITY

No determination by any court, governmental body or otherwise that any provision of this Agreement or any amendment hereto is invalid or unenforceable in any one instance shall affect the validity or enforceability of: (a) any other such provision; or (b) such provision in any circumstance not controlled by such determination. Each such provision shall be valid and enforceable to the fullest extent allowed by law, and shall be construed wherever possible as being consistent with applicable law.

H. MARYLAND LAW AND MARYLAND COURTS

This Agreement and the rights and liabilities of the parties hereto shall be determined in accordance with Maryland law and in Maryland courts.

IN WITNESS WHEREOF, each party hereto has executed and sealed this Agreement or caused it to be executed and sealed on its behalf by its duly authorized representative, the day and year first above written.

ATTEST:

COMPANY:

BY: _____(SEAL)

Name: _____

Title: _____

Date of Execution: _____

WITNESS:

STATE HIGHWAY ADMINISTRATION

BY: _____ (SEAL)

Joseph Sagal
Deputy Administrator/Chief Engineer for Hanover
Operations

Approved for signature:

Date of Execution: _____

Nelson Smith, Statewide Utility Engineer

Approved as to form and legal sufficiency

Assistant Attorney General



TRAFFIC CONTROL PERMIT APPLICATION

Permit No. _____ District: _____ Date: _____

SECTION I – TYPE OF TRAFFIC CONTROL REQUEST (Check One Only)

- ☐ Normal Hours Closure
 ☐ Detour
☐ Nighttime/Weekend Closure
 ☐ Special Request (i.e. Ramps)

SECTION II – PERMITTEE INFORMATION

Company (Name): _____ Project Contact (Name): _____
 Address: _____ Title: _____
 City: _____ State: _____ Zip: _____ Email: _____
 Office Phone #: _____ Cell #: _____ Fax #: _____

SECTION III – LOCATION & DESCRIPTION OF TRAFFIC CONTROL

A. LOCATION

MDOT SHA Route #: _____ Also known as (street name): _____
 From: _____ To: _____
 MDOT SHA Proj. No. (if any): _____ Job ID or Company's Ref. #: _____
 MDOT SHA Contact Person: _____
 Office Phone #: _____ Cell #: _____ Fax #: _____

B. DESCRIPTION

Requested Date(s): _____ Day(s) of Work: _____
 Requested Time Period: _____

Travel Direction of Closure ☐ N ☐ S ☐ E ☐ W ☐ INNER LOOP ☐ OUTER LOOP

Closed Lanes: ☐ LT SH ☐ #1 ☐ #2 ☐ #3 ☐ #4 ☐ #5 ☐ RT SH ☐ OTHER

MDOT SHA Traffic Control Standard No: _____

Type of Work: _____

Traffic Control Manager (Name): _____ Fax #: _____

Contact Phone #: _____ Email : _____

Request for closure must be made **5 BUSINESS DAYS** prior to actual closure.

(Weekend requests must be in by Monday and Monday requests must be in by the previous Tuesday).

Permittee must coordinate with the Project Engineer if working within Construction Work Zone Limits, in order to receive permission to work in that area.

Permittee is responsible for implementation of all traffic control devices, which must be in compliance with noted traffic control standard and the MdMUTCD.

This permit is subject to revocation at the direction of the MSHA.

Permittee must have a copy of the approved Traffic Control Permit at the work site.

Please send completed form to:

The State Operations Center (SOC) must be contacted at 1-800-543-2515 each day the permit is in effect.

Permittee Must contact MDOT SHA District Office and the SOC 30 minutes prior to closing any MDOT SHA Roadway or shoulder.



WATER AND/OR SEWERAGE CONSTRUCTION PERMIT

Permit No.: 24-11-1146
Permit Fee: N/A

Date Issued: 5/21/2025
Expiration Date: 5/21/2028

This permit authorizes Baltimore County Department of Public Works and Transportation, Bureau of Engineering and Construction, to construct a water main replacement together with all appurtenances, at the site of York Road - MD Route 45 (from Wight Avenue to Shawan Road), Baltimore County, in accordance with an application dated 10/22/2024 and received by the Maryland Department of the Environment on 11/20/2024 titled in part:

**WATER MAIN REPLACEMENT – PHASE 5
YORK ROAD – MD ROUTE 45
(FROM WIGHT AVENUE TO SHAWAN ROAD)
BALTIMORE COUNTY CONTRACT NO. 24125WYO
SHEET NOS. 1 THRU 21 OF 21
AND SPECIAL PROVISIONS**

THIS PERMIT IS ISSUED SUBJECT TO THE ATTACHED FOLLOWING CONDITIONS:

Note: This permit may be suspended or revoked upon a final, unreviewable determination that the permittee lacks, or is in violation of federal, state or local approval necessary to conduct the activity authorized by this permit.

**Walid Saffouri, P.E., Program Administrator
Engineering & Capital Projects Program
Water and Science Administration**

GENERAL CONDITIONS FOR WATER OR SEWERAGE CONSTRUCTION PERMIT

- The structural adequacy and expected performance characteristics of the various components are not certified by this permit.
- This permit is not transferable.
- A copy of this permit must be posted at the work site during construction.
- This permit will expire, if not specifically extended, unless the construction authorized under this permit has been initiated. The permit will then remain valid for the remainder of construction for a period of up to five years from the start of construction.
- If any provision of this permit shall be held invalid for any reason, the remaining provisions shall remain in full force and effect, and such invalid provision shall be considered severed and deleted from this permit.
- Persons violating the requirements of this permit are subject to penalties of up to \$1000 per day as set forth in Environment Article 9-268 and 9-334 through 9-342, Annotated Code of Maryland.
- A copy of the plans and specifications, authorized for use under this permit, shall be made available at the work site during construction of this project. A revised construction permit in accordance with COMAR 26.03.12 is required prior to making substantive changes or material alteration to the construction authorized under this permit.
- The owner shall secure all Federal, State or local permits, including approval of Sedimentation and Erosion Control Plans that may be required before starting the construction of the project.
- The owner shall insure that this project is inspected during the progress of construction to assure substantial compliance with the approved plans and specifications. A log and construction records shall be maintained by the inspector and may be requested for review at any time by this office.
- The project engineer of the Maryland Department of the Environment (the 'Department') shall be notified prior to the start of construction.
- Inspectors of the Department shall be afforded access to the project site, at reasonable times and upon presentation of credentials:
 - a. to inspect construction authorized under this permit and to determine compliance with applicable regulations;
 - b. to have access to and copy any records required to be kept by this permit and by applicable regulations; and
 - c. to obtain any photographic documentation or evidence.
- Within 60 days after completion of construction, a copy of as-built drawings and the attached construction completion certificate (page 3 of this permit) shall be submitted to the Department. Where construction was completed in accordance with the original plans approved under this permit, the submittal of as-built drawings will not be required.
- The owner shall maintain a permanent record of the as-built drawings, or the original plans if as-built drawings are not required.

GENERAL CONDITIONS (CONTINUED)

- Pursuant to Labor & Employment Article 9-201, the owner shall ensure that the contractor and subcontractors involved in the construction of this project must carry workers' compensation insurance for their employees. If the owner determines to perform the project construction by his/her labor force, the owner shall provide the same. If the entity, undertaking the project construction, is not covered by a workers' compensation policy, a Certificate of Compliance shall be submitted and approved by the Workers' Compensation Commission before initiation of the construction.
- Approval must be obtained from the Department before this project may be placed into service. Any exception allowing partial use of this project shall have the prior written approval of the Department. Approval may be obtained pursuant to the following procedure:
 - a. Where large political subdivisions, commissions, authorities etc. have their own inspection capabilities (satisfactory to the Department), the attached construction completion certificate shall be completed by the director of Public Works or similar responsible person and submitted to the Department.
 - b. Where an acceptable local construction inspection program does not exist, the attached construction completion certification shall be completed by a Professional Engineer licensed to practice in the State of Maryland (preferably the same engineer whose seal and signature appear on the plans approved under this permit) and submitted to the Department.
 - c. Upon receipt of the signed certificate, the Department shall, within (30) working days of the receipt, 1) issue an approval, 2) require further review and on-site inspection or 3) reject the construction certification. Approval shall be automatic for projects that have not received some form of written notification from the Department within (30) working days of receipt of the signed certificate.

24-11-1146
Permit Number

Omar Abdelrahman
Omar Abdelrahman
Project Engineer
Engineering & Capital Projects Program

WATER AND SEWER CONSTRUCTION COMPLETION CERTIFICATION

The undersigned certifies that the construction authorized by this permit has been completed and inspected and that it substantially meets the terms of Environment Article 9-204, Annotated Code of Maryland.

Signature

Title

Date

The above project has been accepted by the Department within the terms of Environment Article 9-204, Annotated Code of Maryland.

Authorized Official

Date

Complete this certificate and return to:
Maryland Department of the Environment
Engineering & Capital Projects Program (ECPP)
Office of Budget and Infrastructure Financing
1800 Washington Boulevard
Baltimore, MD 21230

06/2022



NOTICE

Prior to starting construction, please notify Omar Abdelrahman, Project Engineer, by email at omar.abdelrahman@maryland.gov. Upon completion of the project, the construction must be certified with the signed permit returned to this office along with a set of as-built drawings.

Should you have any questions concerning the permit or its conditions, please contact me at (410) 537-3757 or at walid.saffouri@maryland.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Walid Saffouri". The signature is fluid and cursive, with the first name "Walid" and the last name "Saffouri" clearly distinguishable.

**Walid Saffouri, P.E., Program Administrator
Engineering and Capital Projects Program
Water and Science Administration**



Baltimore County, Maryland
Department of Permits, Approvals, and Inspections
BUILDING PERMIT

Permit Number: CEN25-000035

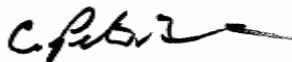
Permit Type: Commercial Environmental

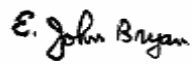
Sub Type: Grading

Date Issued: 05/12/2025

Expiration Date: 05/11/2027

Property Information	Lot Size and Setbacks
Property Address: Near Shawan Rd and York Rd City, State, Zip: Cockeysville, MD 21030 Tax ID: 0808000625 District: 08 Existing Use: Proposed Use: Is this property located in a Floodplain: NO Sprinkler to be Installed?: Plumbing Work?: Electrical Work?:	Size: Set Backs - Front Yard: Set Backs - Rear Yard: Set Backs - Right Side Yard: Set Backs - Left Side Yard:
Owner Information	
Owner: YORK AT SHAWAN LLC Owner Address: 11330 York Road, Cockeysville, MD, 21030-1910 Tenant: Applicant: JOHN A. BLONDELL	


C. Pete Gutwald, AICP, Director


E. John Bryan, Building Engineer

*Please log into your account to get up-to-date information regarding the permit process and related inspections. Refer to the Permit Number when making inquiries.



Baltimore County, Maryland
Department of Permits, Approvals, and Inspections
BUILDING PERMIT

Permit Number: CEN25-000035

Permit Type: Commercial Environmental

Sub Type: Grading

Date Issued: 05/12/2025

Expiration Date: 05/11/2027

Building Permit Contractor

Name of Contractor: TBD

Phone Number:

Address:

City, State, Zip: , ,

Is Owner Contractor?:

Building Permit Information

Description of Work: Grade 35,308sf for water main installation. Permit expires two years from date of issue.
No construction to begin until pre-construction meeting. Failure to comply will result in penalties. Schedule your pre-construction meeting in your portal

C. Pete Gutwald, AICP, Director

E. John Bryan, Building Engineer

*Please log into your account to get up-to-date information regarding the permit process and related inspections. Refer to the Permit Number when making inquiries.

SECTION I V

Proposal

**This Section to be
Completed by Time of Bid**

SECTION-IV
PROPOSAL

DESCRIPTION OF WORK

Bid Opening via Teleconference WebEx Thursday, November 20, 2025 at 10:30 a.m. EST
WebEx Phone Number 1-415-655-0001, Access Code Number 2302 464 1385##.

Begin Work Within Fifteen (15) Days After NOTICE TO PROCEED

Working Days for Completion: TWO HUNDRED AND SIXTY (260)

Liquidated and Other Damages: FIVE HUNDRED DOLLARS (\$500.00) per Working Day

Cost Group "F (\$5,000,001 to \$10,000,000)" (Prequalified contractors with a Cost Group restriction must bid within the dollar amount stated on their Certificate of Prequalification).

Work Classification: F-2 with a A-2 prequalified subcontractor

TO BALTIMORE COUNTY, MARYLAND: The work includes all labor, materials, and equipment necessary to furnish and install various diameter ductile iron water mains along York Road (MD Route 45) from Wight Avenue to Shawan Road. Cockeysville/Hunt Valley – District 8 c 3.

The following listed Drawing Number(s) are collectively the "Drawings", and are hereby incorporated in the Contract.

Job Order Number
231-203-0050-0466

Workday Number
030500466

Drawing Number(s)
2024-2221 through 2024-2241

A pre-bid meeting scheduled **ONLY for Prevailing Wage & Local Hiring and MBE/WBE requirements on **Wednesday, October 22, 2025 at 9:00 a.m. EST** via WebEx. *Phone-In (Audio Only)* – 1-415-655-0001, Meeting Number 2315 705 9888## *Video Conference* – Meeting Number 2315 705 9888, Password **n2MJNsJUD63**, go to <https://signin.webex.com/join>, or for the WebEx link go to www.baltimorecountymd.gov/departments/public-works/engineering/contracts/current-solicitations**

Last day for questions will be **Friday, October 31, 2025 at 4:00 p.m. EST.** Questions should be emailed to Pawan Poudel at ppoudel@baltimorecountymd.gov and Barbara Wentworth at bwentworth@baltimorecountymd.gov.

NOTE: No successful bidder may withdraw their bid within **NINETY (90) days after the opening thereof.**

The Contractor hereby declares that it has carefully examined the solicitation, plans and specifications, form of contract, Special Provisions and Drawings (collectively the "Contract Documents"). The Contractor also hereby declares that it has carefully examined the September 2023 "Standard Specifications for Construction and Materials" and "Standard Details for Construction", collectively the "Applicable County Law" and any and all Department of Public Works and Transportation revisions thereto as of the date of advertisement. The Contract Documents, the Applicable County Law and the Department of Public Works and Transportation revisions thereto are collectively the "Specifications" and are incorporated herein. Copies of any and all Department of Public Works and Transportation revisions including but not limited to the General Conditions Building Projects, are available online at www.baltimorecountymd.gov/departments/public-works/standards. Also, the Contractor has, to its satisfaction, examined the locality of the proposed work and agrees to furnish all labor, tools, materials, machinery, equipment, and other means of construction called for in the manner provided in the Specifications for the prices shown on the next page(s) and as evidenced by Contractor's signature on the last page thereof.

SCHEDULE OF PRICES

NOTE: The Bidder shall fill out this Proposal, write in the unit prices in clear numerals, and make the extensions.

For complete information concerning these items, see Specifications and contract forms.

CONTRACT PROPOSAL

YORK ROAD - MD ROUTE 45 24" WATER MAIN REPLACEMENT - PHASE 5 (from Wight Avenue to Shawan Road)

CONTRACT NUMBER: 24125 W XO

WORKDAY NUMBER: 030500466

JOB ORDER NUMBER: 231-203-0050-0466

WORKING DAYS: 260

CONTRACTOR:

ADDRESS:

PHONE:

BID ITEM	COMM. CODE		DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT
1	120500		MAINTENANCE OF TRAFFIC	LS	1		\$
2	130850		MOBILIZATION	LS	1		\$
3	130840		CONSTRUCTION STAKEOUT	LS	1		\$
4	110320		ENGINEERS OFFICE NO. 2	LS	1		\$
5	863060		6 INCH DUCTILE IRON PIPE AND FITTINGS - CLASS 54 (RESTRAINED JOINT)	LF	427		\$
6	863080		8 INCH DUCTILE IRON PIPE AND FITTINGS - CLASS 54 (RESTRAINED JOINT)	LF	29		\$
7	863100		10 INCH DUCTILE IRON PIPE AND FITTINGS - CLASS 54 (RESTRAINED JOINT)	LF	69		\$
8	863120		12 INCH DUCTILE IRON PIPE AND FITTINGS - CLASS 54 (RESTRAINED JOINT)	LF	694		\$
9	863240		24 INCH DUCTILE IRON PIPE AND FITTINGS - CLASS 54 (RESTRAINED JOINT)	LF	3038		\$
10	839040		4 INCH DEWATERING VALVE AND VAULT	EA	1		\$
11	848020		INSTALL AIR RELEASE VALVE AND VAULT - 2 IN.	EA	1		\$
12	836060		6 INCH GATE VALVE AND 48 INCH PRECAST MH	EA	14		\$

13	836080		8 INCH GATE VALVE AND 48 INCH PRECAST MH	EA	1		\$
14	WRITE-IN		10 INCH GATE VALVE AND ROADWAY BOX	EA	1		\$
15	836100		10 INCH GATE VALVE AND 48 INCH PRECAST MH	EA	1		\$
16	836120		12 INCH GATE VALVE AND 48 INCH PRECAST MH	EA	2		\$
17	836230		24 INCH GATE VALVE AND VAULT	EA	3		\$
18	WRITE-IN		30 IN. X 24 IN. TAPPING SLEEVE, VALVE AND VAULT	EA	1		\$
19	704345		PLACE FURNISHED TOPSOIL - 4" DEPTH	SY	100		\$
20	707301		SEEDING	SY	100		\$
21	842010		3/4 INCH WATER SERVICE TAP AND CORPORATION	EA	13		\$
22	842020		1 INCH WATER SERVICE TAP AND CORPORATION	EA	3		\$
23	842040		2 INCH WATER SERVICE TAP AND CORPORATION	EA	7		\$
24	843010		3/4 INCH COPPER WATER SERVICE AND FITTINGS	LF	324		\$
25	843020		1 INCH COPPER WATER SERVICE AND FITTINGS	LF	78		\$
26	843040		2 INCH COPPER WATER SERVICE AND FITTINGS	LF	251		\$
27	847060		6 INCH FIRE HYDRANT, FURNISH AND INSTALL	EA	9		\$
28	849110		REMOVE EXISTING FIRE HYDRANT AND ABANDON EXISTING VALVE	EA	7		\$
29	899200		HOT MIX ASPHALT - PERMANENT TRENCH REPAIR - STAGE 2	TON	320		\$
30	899210		HOT MIX ASPHALT - TEMPORARY TRENCH REPAIR - STAGE 1	TON	2690		\$
31	WRITE-IN		MILLING ASPHALT PAVEMENT - 2" DEPTH	SY	10340		\$

32	WRITE-IN		HOT MIX ASPHALT PERMANENT 2" OVERLAY	TON	1050		\$
33	585215		5 INCH SKIP YELLOW PAVEMENT MARKINGS USING EPOXY	LF	2300		\$
34	585225		5 INCH SOLID YELLOW PAVEMENT MARKINGS USING EPOXY	LF	4800		\$
35	585240		5" SOLID WHITE THERMOPLASTIC PAVEMENT MARKINGS	LF	1700		\$
36	585250		5" SKIP WHITE THERMOPLASTIC PAVEMENT MARKINGS	LF	2700		\$
37	585288		16 INCH WHITE TWO COMPONENT EPOXY PAVEMENT MARKINGS	LF	100		\$
38	585292		24 INCH SOLID WHITE THERMOPLASTIC PAVEMENT MARKINGS FOR STOP BARS	LF	110		\$
39	585402		PERMANENT PREFORMED PAVEMENT MARKING MATERIAL	EA	6		\$
40	655280		BRICK PEDESTRIAN CROSSWALK-SIDEWALK	SF	400		\$
41	WRITE-IN		CALCIUM CHLORIDE	TON	12		\$
42	109110	F	TEST PIT EXCAVATION / CONVENTIONAL EXCAVATION METHODS	CY	200	\$360.00	\$72,000.00
43	WRITE-IN	F	TEST PIT EXCAVATION BY VACUUM	CY	200	\$650.00	\$130,000.00
44	109205	F	CLASS 3 EXCAVATION/SELECT BACKFILL – PROPER DISPOSAL OF UNSUITABLE MATERIAL	CY	150	\$130.00	\$19,500.00
45	109305	F	BORROW FOR BACKFILLING TRENCHES - PROPER DISPOSAL OF UNSUITABLE MATERIAL	CY	250	\$80.00	\$20,000.00
46	109405	F	MIX NO. 1 CONCRETE	CY	10	\$450.00	\$4,500.00
47	388063	C	PORTABLE SEDIMENT TANK	EA	4		\$
48	388067		INLET PROTECTION - CURB	EA	19		\$
49	388100	C	SILT FENCE	LF	400		\$
50	844010	C	3/4" WATER SERVICE / SINGLE 5/8" METER & VAULT	EA	6		\$

51	844020	C	1" WATER SERVICE / SINGLE 3/4" METER & VAULT	EA	3		\$
52	844025	C	2" WATER SERVICE WITH 1-1/2" METER & VAULT	EA	3		\$
53	899220	C	GRADED AGGREGATE BASE FOR MAINTENANCE OF TRAFFIC/STAGE 1	TON	1000		\$
54	899300	C	REMOVE AND REPLACE EXISTING CONCRETE SIDEWALK	SF	390		\$
55	899350	C	REMOVE AND REPLACE EXISTING CURB AND GUTTER	LF	220		\$
56	WRITE-IN	C	SAWCUT UNDERLYING CONCRETE	SF	25600		\$
57	WRITE-IN	C	GEOTEXTILE CLASS SE	SY	1900		\$
58	WRITE-IN	C	TRENCH ROCK EXCAVATION WITH PROPER DISPOSAL	CY	200		\$
59	WRITE-IN	C	SCREW TYPE VALVE BOX AND COVER	EA	5		\$
60	WRITE-IN	C	FURNISH AND INSTALL ADDITIONAL 24" MJ RESTRAINED DUCTILE IRON 1/8 BENDS	EA	8		\$
61	WRITE-IN	C	PITCHER FILTER WITH SIX MONTHS OF REPLACEMENT CARTRIDGES	EA	10		\$
TOTAL COST FOR CONTRACT							\$

TOTAL COST FOR CONTRACT IN WORDS

OFFICER SIGNATURE

TITLE

PROPOSAL AFFIDAVIT

1. AUTHORIZED REPRESENTATIVE

I HEREBY AFFIRM THAT:

I am the [title]_____ and the duly authorized representative of [business]_____ (the "Business") and that I possess the legal authority to make this Affidavit on behalf of myself and the Business for which I am acting.

2. PROPOSAL CERTIFICATION

THE UNDERSIGNED HEREBY ACKNOWLEDGES receipt of the following Addenda (list by number and date):

Accompanying this Proposal is a Bid Bond in an amount of 5% of the bid, the exact amount to be determined by the difference between the low bid and the next lowest bid, if two or more bids are received, or 5% of the bid if one bid is received. This guarantees payment to Baltimore County of the amount thus determined as liquidated damages in case of default in any matter specified as required before award or in any matter resulting in failure to execute and deliver an Agreement, together with Payment and Performance Bonds, after award.

3. AFFIRMATION REGARDING BRIBERY CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, nor any of its officers, directors, partners, or any of its employees directly involved in obtaining or performing contracts with public bodies (as is defined in Section 16-101(f) of the State Finance and Procurement Article of the Annotated Code of Maryland), has been convicted of, or has had probation before judgment imposed pursuant to Section 6-225 of the Criminal Procedure Article of the 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]:

4. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, nor any of its officers, directors, partners, or any of its employees directly involved in obtaining or performing contracts with public bodies, has:

(1) Been convicted under state or federal statute of a criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract, 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 arising out of 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, Section 14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(5) 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), (2), (3), or (4) above;

(6) 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;

(7) 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 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]:

5. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, nor any of its officers, directors, partners, or any of its employees directly involved in 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 proceeding, 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]:

6. 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]:

7. SUB-CONTRACT AFFIRMATION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the 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.

8. AFFIRMATION REGARDING COLLUSION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, nor any of its officers, directors, members or partners, nor any of its employees, have in any way:

(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 take any action in restraint of free competitive bidding in connection with the contract for which the accompanying bid or offer is submitted;

(3) Colluded with anyone to obtain information concerning the bid that would give the Business an unfair advantage over others.

9. POLITICAL CONTRIBUTION DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

The Business affirms that it is aware of, and will comply with, the provisions of Sections 14- 101 through 14-108 of the Election Law Article of the Annotated Code of Maryland, which require that every person who makes, during any 12-month period, one or more contracts, with one or more Maryland governmental entities involving cumulative consideration, or at least \$200,000.00, shall file with the State Board of Elections certain specified information to include disclosure of attributable political contributions in excess of \$500 during defined reporting periods.

10. CERTIFICATION OF CORPORATION REGISTRATION AND TAX PAYMENT

I FURTHER AFFIRM THAT:

(1) The Business is a _____(State) (Corporation), (LLC), (Partnership), (Sole Proprietor/Individual), (Other:_____), that it **is** registered in accordance with the Corporations and Associations Article of the Annotated Code of Maryland, that it **is** in good standing in the State of Maryland, and that it **has** filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation, and that the name and address of its resident agent filed with the State Department of Assessments and Taxation is:

Name: _____

Address: _____

(If none, so state)

(2) Except as validly contested, the Business has paid, or has arranged for payment of, all taxes due the State of Maryland and Baltimore County, and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, and the Employment Security Administration, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final settlement.

11. 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 or agent 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 or agent, any fee or other consideration contingent on the making of the Contract.

12. NONDISCRIMINATION IN EMPLOYMENT STATEMENT

I FURTHER AFFIRM THAT:

During the performance of any contract awarded of which this affidavit is a part:

(1) The Business will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, national origin, marital status, sexual orientation, genetic information, or disability unrelated in nature and extent so as to reasonably preclude the performance of the employment, or because of the individual's refusal to submit to a genetic test or make available the results of a genetic test. The Business will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, age, national origin, marital status, sexual orientation, genetic information, or disability unrelated in nature and extent so as to reasonably preclude the performance of the employment, or because of the individual's refusal to submit to a genetic test or make available the results of a genetic test. Such action shall include, but not be limited to the following: employment, promotion, upgrading, demotion or transfer, rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Business agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the owner setting forth provisions of this nondiscrimination clause.

(2) The Business will, in all solicitations or advertisements for employees placed by or on behalf of the Business, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, national origin, marital status, sexual orientation, genetic information, or disability unrelated in nature and extent so as to reasonably preclude the performance of the employment, or because of the individual's refusal to submit to a genetic test or make available the results of a genetic test.

(3) The Business shall send to each labor union or representative of workers with which the Business has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the owner, advising the said labor union or workers' representative of these commitments, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Business shall furnish, if requested by the County, a compliance report concerning our employment practices and policies in order for the County to ascertain compliance with the special provisions of this affidavit concerning nondiscrimination in employment.

(5) In the event of the Business's noncompliance with the nondiscrimination clause of this affidavit, the contract may be canceled, terminated, or suspended in whole or in part, and the Business may be declared ineligible for further County work.

(6) The Business shall include the special provisions outlined herein pertaining to nondiscrimination in employment in every subcontract, so that such nondiscrimination in employment provisions shall be binding on each subcontractor or vendor.

13. FOREIGN CONTRACTS

I FURTHER AFFIRM THAT:

The Business affirms that it is aware of, and will comply with, the provisions of Sections 10-2-110 Article 10. Finance, Title 2 – Purchasing, Baltimore County Code 2003, which requires that prior to the award of a contract for services under the provisions of this title, and during the entire term of a contract award, the bidder or vendor shall disclose to the County whether any services covered by the bid or contract, including any subcontracted services, will be performed outside the United States. The disclosure shall be made to the Office of Budget and Finance, Purchasing Bureau.

14. MINORITY BUSINESS ENTERPRISE AND FEMALE CONTRACTORS

THIS BUSINESS INTENDS to affirmatively seek out and consider minority business enterprises to participate in this contract as subcontractors and/or suppliers of materials and services.

THE UNDERSIGNED UNDERSTANDS AND AGREES: that any and all subcontracting of supplies and services in connection with this contract, whether undertaken before or after award of contract, will be in accordance with the Minority Business Enterprise and Female Contractor requirement included in the Bid Proposal package and incorporated herein as if fully set forth; and

THE UNDERSIGNED ALSO UNDERSTANDS AND AGREES that no subcontracting will be approved until Baltimore County has reviewed and approved the affirmative actions taken by this firm.

15. REQUIREMENTS FOR EXECUTING AFFIDAVIT & PROPOSAL

The Affidavit must be signed in ink in order for the bid to be accepted and that the Proposal must be typewritten or filled out in ink.

THE UNDERSIGNED ALSO UNDERSTANDS that:

Proposals submitted by an INDIVIDUAL must be signed by an individual.

Proposals submitted by a PARTNERSHIP must be signed by the partner who is legally authorized authority to bind the partnership. Attach a copy of the Partnership Agreement and a duly certified resolution evidencing the authority of the partner so signing on behalf of the partnership.

Proposals submitted by a CORPORATION must be signed by a legally authorized officer of the corporation and attested to by the Corporate Secretary. Attach a copy of the Articles of Incorporation, By-Laws and a duly certified Board Resolution evidencing the authority of the officer so signing on behalf of the corporation.

Proposals submitted by a LIMITED LIABILITY COMPANY must be signed by a legally authorized member of the company and attested to. Attach a copy of the Operating Agreement, Articles of Organization and a duly certified resolution evidencing the authority of the member so signing on behalf of the limited liability company.

NOTE: The contractor may file with the County a list of the names of those officers, partners or members, as applicable, having legal authority to execute documents on behalf of and legally bind the contractor, duly certified, as applicable and legally required, together with the aforesaid corporate documents, which shall remain in full force and effect until such time as the County Department of Public Works and Transportation, Construction Contract Administration is advised in writing to the contrary.

16. ACKNOWLEDGMENT

I ACKNOWLEDGE THAT this Affidavit is to be furnished to the County and may be distributed to units of (1) Baltimore County; (2) the State of Maryland; (3) other counties or political subdivisions of the State of Maryland; (4) other states; and (5) 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 Baltimore County, or 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 Business with respect to (a) this Affidavit, (b) 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.

WITNESS/ATTEST:

_____	By: _____
Date: _____	Name: _____
	Title: _____
	(Authorized Representative and Affiant)

BID BOND

Principal _____

Business Address of Principal _____

Surety _____

Obligee: **BALTIMORE COUNTY, MARYLAND**
A body corporate and politic

A Corporation of the State of _____ and authorized to do business in Maryland

Five Percent of Bid Amount _____ \$ _____ 5% of Bid

Penal Sum of Bond [shall be determined pursuant to latest revised Specification / G.P. 2.07 (2000 Ed.)]

York Road – MD Route 45 24" Water Main Replacement – Phase 5
Contract Name

24125 WX0
Contract Number/Proposal Item Number

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal, above named, and Surety, above named, and authorized to do business in the State of Maryland, are held and firmly bound unto the Obligee, above named, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that if the aforesaid Principal is the apparent low bidder and complies with all specified matters required before award or if the aforesaid Principal is awarded the contract, the said Principal will, within the time required, execute and deliver to the Obligee a formal contract and good and sufficient payment and performance bonds in the form provided by the Obligee, then, this obligation to be void; otherwise the Principal and Surety will, upon demand, pay unto the Obligee the entire Penal Sum of this Bid Bond as liquidated damages.

THE SURETY FURTHER GUARANTEES No Proposal will be considered unless accompanied by a guaranty of the amount specified in the Proposal in the form of either a certified check, bank cashier's check or a Bid Bond on the form provided therein or an exact facsimile thereof. The Bid Bond must be executed by a Surety that is, as of the date of the Bid: (a) licensed in the State of Maryland, (b) rated "B" or better by the A.M. Best Company, (c) on federal funded projects, authorized by the underwriting limitation contained in the U.S. Department of the Treasury Circular 570, as amended, to guaranty the amount of the Bid, and (d) in good standing as determined by the County's Engineer. The Bid Bond must guaranty payment to the County of liquidated damages as follows: (a) if only one Bid is received, the guaranteed payment shall be five (5%) percent of the Bidder's Bid amount, (b) if two or more Bids are received, the guaranteed payment shall be the difference between the Bidder's Bid amount and the next lowest Bid amount, subject to the limitation that the guaranteed payment not be greater than five (5%) percent of the Bidder's Bid amount. This Bid Bond is required in case the successful Bidder, after issuance of notice of Award, fails to comply, timely and completely, with each of the requirements set forth under Section GP-3.04.

Signed and sealed _____
Date

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In Presence of:

Individual Principal

Witness: _____

as to: _____ (SEAL)

Print Name: _____

Print Name: _____

Corporate Principal

In Presence of:

(Name of Corporation)

Witness: _____

By: _____

Print Name: _____

Print Name: _____ (SEAL)

Title: _____

Surety

(Name of Surety)

Business Address: _____

Witness: _____

By: _____ Affix

Print Name: _____

Print Name: _____ Corporate

Title: _____ Seal

**BALTIMORE COUNTY
PREVAILING WAGE AND LOCAL HIRING**

AFFIDAVIT

(Project Name) _____

Proposal No.: _____

Project No.: _____

On behalf of _____, I do solemnly declare and affirm,
(Contractor)
under penalty of perjury, that to the best of my knowledge, information, and belief:

1. I have submitted all documentation in accordance with Baltimore County Code § 10-2- 506 and § 10-2-507 regarding the prevailing wage and local hiring laws and requirements of the prevailing wage guidelines located at ([Prevailing Wage and Local Hire Laws](#)), and acknowledge that I have read and agree to all provisions of said law, as amended, and have a continuing obligation to be compliant with the law and any changes to the law.

2. I shall not knowingly provide any false information relating to payroll documentation and/or hiring of local employees for capital improvement contracts that are subject to the prevailing wage and/or local hiring laws of Baltimore County. I further attest and certify that all documentation relating to the same will be accurate and complete and will remain accurate and complete on an ongoing basis, and will reflect the payroll and/or local hiring status of contractors, subcontractors, apprentices, and independent contractors performing work for the Contract (contract number _____). I acknowledge that I have been informed and am aware of the foregoing requirements and that I am authorized to make this certification on behalf of myself and all subcontractors and parties performing work pursuant to this Contract.

3. I certify and attest that I am an officer or agent of the Contractor or subcontractor who supervises the payment of employees. I understand and agree that all documentation related to prevailing wages and/or local hiring required by law shall be submitted to Baltimore County's Prevailing Wage Administrator or designee before any surety is released or final payment due under the terms of the Contract is made.

4. I further certify and attest that I will have personal knowledge of the wages paid to all employees of _____ for work performed on the Contract and of all of the hours worked, and that I am an authorized agent of the Contractor and assume responsibility for my actions.

5. I further certify and attest that _____ will comply with prevailing wage rates set by the State of Maryland as the same apply to the Contract and are a part of the bid documents and Contract, and that _____ will comply with applicable local hiring requirements.

6. I attest and certify that, if the Contract is subject to the local hiring requirement under §10-2-507 of the Baltimore County Code, _____ will make best efforts to ensure that residents of Baltimore County constitute at least 51% of the new hires made for the Contract, subject to all exceptions allowable by law.

7. I certify and attest that, if the Contract is subject to prevailing wage requirements, no rebates or deductions will be made, directly or indirectly, from any wages paid in connection with the Contract, other than those provided for by law.

8. I certify and attest that, if awarded the Contract and if the Contract is subject to prevailing wage law, I will submit certified payroll to the County through its electronic compliance system or as instructed by the Prevailing Wage and Local Hire Unit.

9. I certify that if awarded the Contract, I will provide a list of subcontractors who will participate as a beneficiary of this project to the agency and the Prevailing Wage and Local Hire Unit at PrevailingWage@baltimorecountymd.gov.

10. I understand that no funds will be dispersed by the County until an Employment Analysis has been issued to the Prevailing Wage and Local Hire Unit in compliance with the local hire law. The Employment Analysis will include how many jobs will be required to complete the project; how many current employees are available to complete the project, and how many of those jobs will require new hires.

Contractor/Bidder/Offeror

By

Printed Name

Printed Title

Date

Phone

License Number

Business Email

BALTIMORE COUNTY, MARYLAND

Prevailing Wage and Local Hiring Contract Requirements and Policies

The Contractor and all Subcontractors must comply with the Prevailing Wage and Local Hiring Laws, contained in Baltimore County Code § 10-2-506 and § 10-2-507, respectively, as amended. Prevailing wage means the wage rate paid by employers that is determined by a governmental authority, based upon a particular geographic area, for a given class of labor and type of project. The County will use the prevailing wage established by the State of Maryland (the "State") Department of Labor for state funded construction contracts in the County at the time of award. These rates include the basic hourly rate and fringe benefits. Apprentices must be paid at least the rate that the State's Apprenticeship and Training Council sets for an apprentice in the trade involved, based on a percentage of the prevailing wage rate in that trade. Any Contractor that is subject to the prevailing wage or local hiring law will be required to agree to the below provisions:

For the purposes of these requirements, an employee means an apprentice, laborer or mechanic employed by a contractor or subcontractor on a capital improvement project with a value of over \$300,000 or a County-subsidized capital project with a value over \$5,000,000.

Capital Improvement Project does not include blanket order or open-end agreements, capital improvement projects subject to a federal or state prevailing wage law, awarded without competition; with another governmental entity; to the extent the contractor is precluded from compliance by the terms of any federal or state law, contract or grant; entered into pursuant to Baltimore County Code § 10-2-310(e); entered into as a joint or cooperative purchase; or entered into as an emergency purchase.

The purpose of a prevailing wage is to ensure that contractors institute local hiring practices for Capital Improvement contracts and Capital Projects under certain circumstances as required by law, and that the Contractor's employees who work on capital improvement contracts are paid the going rate for their services. The prevailing wage rates are established by the State of Maryland Department of Labor and apply to all of the Contractor's employees and any and all Subcontractors. The Contractor and all Subcontractors must comply with all of the requirements of the Prevailing Wage Law including, but not limited to, the following:

1. Pay employees the prescribed rate as annually established by the State's Department of Labor; the prevailing wage rates in effect on the date a solicitation is issued and will apply throughout the term of a contract resulting from that solicitation. Contractor or subcontractors may NOT split or subdivide a capital improvement contract, pay an employee through a third party, treat an employee as a subcontractor or independent contractor to avoid any requirement of the County's prevailing wage law; or employ an individual classified as a helper or trainee to perform direct and measurable work on a capital improvement contract.

2. Pay employees at a rate equal to or more than the prevailing wage rate currently in effect for the type of work performed.

3. Pay employees overtime for work (I) more than eight hours in any single calendar day; (II) more than 40 hours in a work week; or (III) on a Sunday or a legal holiday.

4. Classify employees in their proper work classification in conformance with the schedule established by the State's Department of Labor.

5. May only make fair and reasonable deductions that are (a) required by law; (b) authorized in a written agreement between an employee and contractor or subcontractor signed at the beginning of employment (any deductions taken from employee paychecks including healthcare, pension, 401K, IRA, etc., child/spouse support, or tax levies); and submitted by the contractor or subcontractor to the Director of the County's Prevailing Wage Program; or required or allowed by a collective bargaining agreement between a bona fide labor organization and a contractor or subcontractor.

Electronically submit a certified copy of payroll records through the County's designated certified payroll and compliance system within 14 days after the end of payroll week ending date, to verify that Prevailing Wage rates have been paid to employees.

6. Backup documentation may be required upon demand from the County to be submitted for all 3rd party benefits being claimed, to include, but not limited to: *one month's healthcare transmittal showing employee name and amount company pays on their behalf, company vacation/sick policy, etc. or if Union, a Union transmittal for one month in which work has been performed.*

7. Retain records for a period of five (5) years after the work is completed and permit the Director of the County Prevailing Wage Program, or his/her designee, to inspect the payroll records at a reasonable time and as often as necessary.

8. Payroll records shall contain a statement signed by the contractor or subcontractor (including tiered subcontractors) certifying that the payroll records are complete and correct; the wage rates are not less than required by the Prevailing Wage Law; and the rate of pay and classification for each employee accurately reflects the work the employee performed.

9. All payroll records shall include the name, address, telephone number and email address of the contractor or subcontractor; the name and location of the job; and each employee's name, current address, unless previously reported; specific work classification; daily basic time and overtime hours; total basic time and overtime hours for the payroll period; rate of pay; fringe benefits by type and amount; and gross wages, and any deductions taken from employees' paychecks including, but not limited to, healthcare, pension/401K/IRA. Late submission of copies of any payroll records may be deemed deficient by the County until the required records are provided, and the County may postpone processing payments due under the Contract or under an agreement to finance the Contract.

10. Submit to random or regular audits and investigation of any complaint of a violation of the County's Prevailing Wage and Local Hiring Laws and requirements.
11. Make best efforts to fill at least 51% of new jobs required to complete the capital improvement contract or capital project with Baltimore County residents.
12. Submit monthly reports to the Director of the County's Prevailing Wage Unit relating to local hiring with respect to capital improvement contracts over \$300,00 or County-subsidized capital construction projects receiving assistance over \$5,000,000, that includes (a) the number of new hires needed for the contract or project, (b) the number of County residents hired during the reporting period, (c) the total number of all employees hired during the contract period, (d) best efforts made to fill open positions with County residents, and (e) 5) for new hires: name, last four (4) digits of the social security number, job title, hire date, address and referral source.
13. Agree that any and all disputes will be handled as set forth in the County's Prevailing Wage and Local Hire as a condition of award.
14. In the event the County determines that a provision of the Prevailing Wage and/or Local Hire Law has been violated, the County shall issue a written decision, including appropriate sanctions, and may withhold payment due the Contractor in an amount sufficient to pay each employee of the Contractor or any subcontractors the full amount of wages due under the Prevailing Wage Law, and an amount sufficient to satisfy a liability of the Contractor for liquidated damages as provided under the Prevailing Wage Law, pending a final decision on the violation by the County. The Contractor may appeal a written decision of the Director of the County's Prevailing Wage Unit that the Contractor violated a provision of the Prevailing Wage and/or Local Hire Law, to the Office of Administrative Hearings ("OAH"), within ten (10) working days after receiving a copy of the decision. OAH will conduct a hearing upon the receipt of a timely appeal. If no appeal, the decision of the Director of the County's Prevailing Wage Unit or his/her designee becomes final. A Contractor who is found to have violated the provisions of the Prevailing Wage or Local Hiring Laws intentionally, may not be awarded a County contract or work on any County project for a period of one year from the date of the OAH determination.
15. May not discharge, or otherwise retaliate against, an employee for asserting any right under the Prevailing Wage Law or for filing a complaint of a violation;
16. An aggrieved employee is a third-party beneficiary of the Contract and may by civil action recover the difference between the prevailing wage for the type of work performed and the amount actually received, with interest and a reasonable attorney's fee.
17. Each Contract subject to the Prevailing Wage and Local Hire Laws may specify the payment of liquidated damages to the County by the Contractor for any noncompliance with the Prevailing Wage and Local Law. Liquidated damages are:
 - a. \$10 for each calendar day that the payroll records are late (payrolls are to be submitted no later than 14 days after the week ending date shown on Certified Payroll Record CPR);
 - \$20 for each day that an employee is misclassified and/or paid less than the prevailing

wage rate; and a civil penalty of \$50 per violation of the requirement to post the prevailing wage rates at the work site.

- b. \$50 per month for each month the Local Hire report is not submitted by the last day of the existing month due.

These liquidated damages are solely related to prevailing wage and local hiring compliance and do not negate any other remedies available or set forth in the Contract, including delay damages or actual damages. These remedies are separate from, in addition to, and not in lieu of, any remedies available and set forth in the Contract, or at law, for other breaches or defaults under the Contract.

- 18. Where the initial Contract Sum is \$300,000 or below, but it is subsequently increased and exceeds \$300,000 due to an approved Contract Modification, the amount of any such Contract Modification that causes the Contract Sum to exceed \$300,000 is subject to the Prevailing Wage and Local Hiring Laws.
- 19. The Contractor and all subcontractors must post a clearly legible statement of each prevailing wage rate in a prominent and easily accessible place at the Work Site during the entire time Work is being performed, in English and any other language that is primarily spoken by the employees, at the Work Site.
- 20. A contract may include the actual cost of health and dental insurance, pension or retirement plan, paid time off such as vacation or sick days and life insurance. In calculating the cost per hour, divide the annual cost of benefits by 2,080 hours for each employee. Other benefits such as the use of a company vehicle, cell phones, lodging reimbursement, company owned tools **may not be credited towards the fringe benefit amount.**
- 21. All apprentices must be registered with the Maryland Apprenticeship and Training Council, V.A., or US DOL as well as be currently enrolled in, and attending appropriate classes, to which is considered “actively enrolled”. Only actively enrolled apprentices may be employed on the project at the apprentice prevailing wage rate.

Classification	Modification Reason	Basic Hourly Rate	Borrowed From	Fringe Benefit Payment
BRICKLAYER	CR	\$37.50	510	\$14.78
CARPENTER	CR	\$34.41		\$14.49
CARPENTER - SHORING SCAFFOLD BUILDER	CR	\$34.41		\$14.49
ELECTRICIAN	CR	\$47.00		\$20.17
IRONWORKER - REINFORCING	CR	\$30.70		\$23.91
IRONWORKER - STRUCTURAL	CR	\$36.50		\$21.86
LABORER - AIR TOOL OPERATOR	AD	\$26.12		\$7.40
LABORER - ASPHALT PAVER	AD	\$26.12		\$7.40
LABORER - ASPHALT RAKER	CR	\$18.80		\$3.23
LABORER - BLASTER - DYNAMITE	AD	\$26.12		\$7.40
LABORER - BURNER	AD	\$26.12		\$7.40
LABORER - COMMON	CR	\$18.80		\$3.23
LABORER - CONCRETE PUDDLER	CR	\$18.80		\$3.23
LABORER - CONCRETE SURFACER	AD	\$26.12		\$7.40
LABORER - CONCRETE TENDER	CR	\$18.80		\$3.23
LABORER - CONCRETE VIBRATOR	CR	\$18.80		\$3.23
LABORER - DENSITY GAUGE	CR	\$18.80		\$3.23
LABORER - FIREPROOFER - MIXER	CR	\$18.80		\$3.23
LABORER - FLAGGER	CR	\$18.80		\$3.23
LABORER - GRADE CHECKER	CR	\$18.80		\$3.23
LABORER - HAND ROLLER	CR	\$18.80		\$3.23
LABORER - HAZARDOUS MATERIAL HANDLER	AD	\$26.12		\$7.40
LABORER - JACKHAMMER	CR	\$18.80		\$3.23
LABORER - LANDSCAPING	CR	\$18.80		\$3.23
LABORER - LAYOUT	CR	\$18.80		\$3.23
LABORER - LUTEMAN	CR	\$18.80		\$3.23
LABORER - MASON TENDER	AD	\$26.12		\$7.40
LABORER - MORTAR MIXER	CR	\$18.80		\$3.23
LABORER - PIPELAYER	AD	\$26.12		\$7.40
LABORER - PLASTERER - HANDLER	CR	\$18.80		\$3.23
LABORER - SCAFFOLD BUILDER	AD	\$26.12		\$7.40
LABORER - TAMPER	CR	\$18.80		\$3.23
MILLWRIGHT	CR	\$38.61	025	\$17.21
PAINTER - BRIDGE	CR	\$44.18		\$16.08
POWER EQUIPMENT OPERATOR - BACKHOE	CR	\$33.00		\$13.55
POWER EQUIPMENT OPERATOR - BOOM TRUCK	CR	\$30.04	510	\$13.55
POWER EQUIPMENT OPERATOR - BROOM / SWEEPER	CR	\$30.04		\$13.55
POWER EQUIPMENT OPERATOR - BULLDOZER	CR	\$33.00		\$13.55
POWER EQUIPMENT OPERATOR - CONCRETE PUMP	CR	\$33.00		\$13.55
POWER EQUIPMENT OPERATOR - CRANE	CR	\$41.00		\$18.10
POWER EQUIPMENT OPERATOR - DRILL - RIG	CR	\$33.00		\$13.55
POWER EQUIPMENT OPERATOR - EXCAVATOR	CR	\$33.00		\$13.55
POWER EQUIPMENT OPERATOR - FORKLIFT	CR	\$30.04		\$13.55

CONTRACT NUMBER:
24125 WX0

BALTIMORE COUNTY PREVAILING WAGE RATES
HIGHWAY CONSTRUCTION

10/10/2025

POWER EQUIPMENT OPERATOR - GRADALL	CR	\$34.00		\$13.55
POWER EQUIPMENT OPERATOR - GRADER	CR	\$34.00		\$13.55
POWER EQUIPMENT OPERATOR - LOADER	CR	\$33.00		\$13.55
POWER EQUIPMENT OPERATOR - MECHANIC	CR	\$34.00		\$13.55
POWER EQUIPMENT OPERATOR - MILLING MACHINE	CR	\$32.10		\$13.55
POWER EQUIPMENT OPERATOR - PAVER	CR	\$33.15		\$13.55
POWER EQUIPMENT OPERATOR - ROLLER - ASPHALT	CR	\$32.10		\$13.55
POWER EQUIPMENT OPERATOR - ROLLER - EARTH	CR	\$30.04		\$13.55
POWER EQUIPMENT OPERATOR - SKID STEER (BOBCAT)	CR	\$30.04		\$13.55
POWER EQUIPMENT OPERATOR-VACUUM TRUCK	CR	\$37.50		\$14.85
STONE MASON	CR	\$44.30	510	\$21.22
TILE & TERRAZZO FINISHER	CR	\$28.09	510	\$12.59
TRUCK DRIVER - DUMP	CR	\$23.83		\$9.22
TRUCK DRIVER - LOWBOY	CR	\$29.68		\$10.51
TRUCK DRIVER - TACK/TAR TRUCK	CR	\$29.39		\$10.51
TRUCK DRIVER - WATER	CR	\$29.39	027	\$10.51

BALTIMORE COUNTY, MARYLAND
USE OF MINORITY BUSINESS ENTERPRISES AND WOMEN'S BUSINESS ENTERPRISES
IN
COUNTY CONTRACTS
MWBE Plan Package



Division of Diversity, Equity and Inclusion
The Jefferson Building
105 West Chesapeake Avenue
Towson, Maryland 21204
410-887-3407

www.baltimorecountymd.gov/go/mwbe



PROSPECTIVE BIDDERS/OFFERORS

Baltimore County Executive Order 2022-005 Use of Minority Business Enterprises and Women's Business Enterprises states:

SECTION 6. BID REQUIREMENTS.

- (A)(1) All bidders shall submit a list of all subcontractors contacted in preparation of their bid package or proposal.*
- (2) The list shall include the service to be performed, bid amount, and the race/ethnicity/gender of the business owner(s).*
- (B)(1) All bidders shall submit a list of all subcontractors to be used on a county contract in the bid package.*
- (2) This list shall include all subcontractors (both MWBE and non-MWBE) used, the service to be performed, the total amount to be paid, and the race/ethnicity/gender of the owner.*

If the solicitation includes a MWBE **subcontracting** goal, you **MUST** demonstrate “**Good Faith**” **effort** either by:

1. Complete and sign FORM A, FORM B (to include FORM B-Prime if MWBE Prime wishes to count towards the goal) and FORM C **listing all subcontractors** with the initial bid submission.
 - a. *All Forms must be completed and signed. However, FORM C **MUST** be completed and signed by both the prime and the MWBE subcontractor.*
- OR**
2. If you are unable to meet any portion of the goal, you **MUST** do one of the following:
 - a. If you are requesting a **partial waiver**, complete and sign FORM A with initial bid submission. FORM B (to include FORM B-Prime if MWBE Prime wishes to count towards the goal) and FORM C (**listing all subcontractors**). In addition, complete, sign and submit FORM D and FORM E **accompanied with all supporting documentation** for the portion of the goal that will not be achieved as specified on FORM A.
 - b. If you are requesting a **full waiver**, complete and sign FORM A indicating your intent to request a full waiver **accompanied with a completed and signed FORM C listing all subcontractors**, FORM D and FORM E **accompanied with all supporting documentation. This MUST be submitted with the initial bid as specified on FORM A.**
 - c. *All Forms must be completed and signed. FORM C and FORM D **MUST** be completed and properly signed by both the Prime AND the MWBE subcontractor(s).*

NOTE: The MWBE **subcontracting** goal applies to **ALL** prime/general contractors including certified and non-certified minority and women owned firms. **However, a Minority-owned or a Women-owned prime may self-perform up to 50% of MWBE subcontracting goal set in the solicitation. The MWBE primes that wish to count towards the goal must list themselves on all appropriate forms.**

12/2023

BALTIMORE COUNTY, MARYLAND

MWBE PARTICIPATION SUMMARY

Executive Order: Minority Business Enterprises and Women Business Enterprises (MWBE) shall have the maximum opportunity to participate in the performance of contracts financed in whole, or in certain circumstances, in part with County funds. Accordingly, on December 6, 2022, the County Executive adopted the EXECUTIVE ORDER No. 2022-005 addressing MWBE participation in County contracts. The December 6, 2022 Executive Order may be found on the Baltimore County website at www.baltimorecountymd.gov/go/mwbe.

Each Contract: The County shall establish a minimum MWBE participation amount for each contract, as applicable.

Bidder/Offeror Responsibility: The bidder/offeror shall ensure that MWBE participation occurs in accordance with the contract requirements and the County Executive's Executive Order. All bidder/offerors shall ensure that MWBE have the maximum opportunity to compete for and perform County contracts, as applicable. Baltimore County, Maryland, and/or its bidder/offerors and contractors shall not discriminate on the basis of race, color, national origin, disability or sex in the award and performance of any County contract.

Mobilization Payments: For subcontractors, project start-up costs can also be significant. A subcontractor that has limited resources and access to credit may find that start-up expenses inhibit its ability to bid County contracts. Under circumstances where mobilization payments are approved for the prime contractor, the subcontractor should be paid an amount equal to their participation percentage no later than five (5) business days before they are required to mobilize to perform the contracted work.

Mobilization costs represent pre-contract costs incurred by a contractor to prepare a job site before the actual commencement of the contract. These costs can include movement of personnel and equipment to the project site and for the establishment of the Contractor's offices, buildings, and other facilities necessary to begin work.

APPROVED MWBE LISTINGS

Published compilations of approved and certified MWBE, contractors, subcontractors, material suppliers, etc. include:

DIRECTORY OF MINORITY BUSINESS ENTERPRISE (MDOT):

<https://marylandmdbe.mdbecert.com>

MINORITY BUSINESS DIRECTORY OF THE CITY OF BALTIMORE:

<https://baltimorecity.diversitycompliance.com>

BIDDER/OFFEROR'S ACTIONS

Seeking Firms:

The bidder/offeror will seek commitments by subcontract or otherwise from MWBE firms for supplies and/or services, any combined value of which equals or exceeds the required percentage of MWBE participation goal for the County contract. However a MWBE Prime that affirms its MWBE status on the Minority and/or Women Prime Participation Affidavit may count up to 50% of the goal.

Expenditures for Materials and Supplies:

A bidder/offeror may count toward its MWBE contract requirements all expenditures for materials and supplies obtained from MWBE suppliers and manufacturers, provided that the MWBE firm is furnishing and installing the materials and is certified to perform these services. If the MWBE 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 MWBE 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 the Percent of Total Contract field of Form B Subcontractor Participation Schedule.

BALTIMORE COUNTY, MARYLAND **MWBE PARTICIPATION SUMMARY**

Information to be supplied: All bidder/offers shall submit the following information to the County at the time of bid submission:

1. The name of an employee designated as the bidder/offers's liaison to the County's Minority Business Enterprise Office.
2. The following forms shall be completed and submitted:
 - Certified MWBE Utilization and Fair Solicitation Affidavit (**Form A**): from among those names appearing in the Approved MWBE Listings (excepting Federal Highway Administration projects, which exclusively require DBE approved and certified by the Maryland Department of Transportation MBE Advisory Committee);
 - A Subcontractor Participation Schedule (**Form B**) completed by the prime contractor for each MWBE listed on the Form.
 - A MWBE Prime Participation Schedule (Form B-Prime) completed by a MWBE prime contractor if the firm wishes to self-perform up to 50% of the MBE/WBE goal.
 - A MWBE Disclosure and Participation Statement (**Form C**) completed and signed by the prime contractor and MWBE firm for each MWBE listed on the Form. Form C **must match** what is stated on Form B.
 - If applicable, MWBE Subcontractor Unavailable Certificate (**Form D**) completed and signed by the prime contractor and MWBE for each MWBE listed on the Form.
3. If applicable, MWBE Outreach Efforts - Compliance Statement (**Form E**) completed and signed by the Bidder/Offers. The prime shall submit a list of all subcontractors.
4. For DPW contracts, if the bidder/offers intends to fulfill the MWBE requirements by use of a joint venture, he/she must submit a Joint Venture Disclosure Affidavit (**Form D-EEO-006-A** and **B**) showing the extent of MWBE participation. If a bidder/offers intends to use a MWBE joint venture as a subcontractor to meet its MWBE requirements, the affidavit must be submitted through the bidder/offers by the proposed subcontractors and signed by all parties.
5. If the bidder/offers's proposed MWBE participation does not meet the MWBE contract requirements, information sufficient to demonstrate that the bidder/offers has made every effort to meet the requirements must be submitted. (See DETERMINATION OF BID RESPONSIVENESS hereafter)

RECORDS AND REPORTS

Returning Records: The bidder/offers must keep such records as are necessary to determine compliance with its MWBE utilization requirements:

1. The MWBE and non-minority contractors, type of work being performed, actual values of work and services.
2. Documentation of all correspondence, contacts, telephone calls, etc., to obtain MWBE services for the contract.
3. All prime contractors and MWBE sub-contractors are required to report monthly, by the 10th of each month, to the County through an online system called PRISM. If the contractor cannot submit his/her report on time, he/she will notify the County MWBE office and request additional time to submit the report. Failure of the contractor to report in a timely manner may result in a finding of noncompliance. The County in its sole discretion and/or upon written request may require additional reports regarding MWBE. In the event you are not able to enter your payments in PRISM, a spreadsheet is attached for your use. Please be sure to list the PO for each invoice/ payment reported and include in your submission any corresponding documentation (e.g. copies of invoices or cancelled checks).

Retaining Records: All MWBE records must be retained for 3 years following the expiration or any earlier termination of the contract and shall be available for inspection and photocopying by the County.

Investigation and Notification: Whenever the County believes the bidder/offers, contractor, or any subcontractor may not be operating in compliance with the MWBE requirements, the County may, in its sole discretion, conduct an investigation. If the County finds the bidder/offers, contractor, or any subcontractor is not in compliance with the MWBE requirements, the County may exercise any and all rights and remedies available to the County, under the contract, at law or equity, as deemed applicable and appropriate by the County in its sole discretion.

BALTIMORE COUNTY, MARYLAND **MWBE PARTICIPATION SUMMARY**

DETERMINATION OF BID RESPONSIVENESS

Request for Deviation: If the bidder/offeror is unable to procure from MWBE firms (by subcontract or otherwise), supplies and services, any combined value of which equals the required percentage of the total value of the contract, the bidder/ offeror may request, in writing, a deviation or waiver of the contract requirements. To obtain such a waiver, the bidder/ offeror must submit the following information at the time bids are due:

1. The request for waiver request shall include (1) a signed unavailability statement (Form D) executed by all MBEs and WBEs that the bidder/offeror solicited for participation and (2) Outreach Efforts/Compliance Statement (Form E) that demonstrates the bidder/offeror's good faith efforts to comply with the contract requirements, including copies of solicitation documentation to all potential subcontractors:
2. Emails, letters, facsimile transmittals and confirmations containing plans, specifications, and anticipated time schedule for portions of the work to be performed and meeting notes and agendas clearly identifying the certified MBE or WBE classification and dates that the bidder/offeror contacted each MWBE; and
3. Telephone logs containing names, addresses, dates, telephone numbers, work to be performed, anticipated time schedule and classification of certified MBEs and WBEs contacted.

Bid Rejection: The failure of any bidder/offeror (including the apparent low bidder/offeror) to provide a responsive MWBE Plan as required by the solicitation may result in the bidder/offeror being deemed non-responsive and the County's rejection of the bid.

Liquidated Damages If the County issues a notice of intent to awards contract to the apparent low bidder/offeror who provided a responsive MWBE Plan, but, if after said notice and before execution of Contract Documents, it is determined by the County that the apparent low bidder/offeror has failed to comply with the MWBE Plan, such failure may result in the recommendation by the appropriate Procurement Official to annul the award and forfeit the bidder/offeror's Proposal Guaranty to the County, not as a penalty, but as liquidated damages, it being acknowledged that actual damages will be difficult if not impossible to accurately measure. In addition, the County may proceed as it determines to be in its best interest, including but not limited to, the Notice of Award may be made to the next lowest responsive and responsible bidder/offeror or the work may be re-advertised.

Contract Breach: If, after execution of a County contract, the contractor becomes aware it may or will fail to fulfill the applicable MWBE requirements and/or may or will deviate from the contractor's bid response/contract terms, the contractor shall promptly advise the County of this in writing. Thereafter, the County will determine what action or remedy is appropriate on a case-by-case basis, in the County's sole discretion.

Approval Required for Changes: Any and all changes to the MWBE subcontractors or the type or amount of work to be performed by such subcontractors during the contract term must be mutually agreeable to the County and the contractor and shall be documented via a contract amendment, executed by legally authorized representatives of the County and the contractor.

Cooperation in Reviews: The bidder/offeror will cooperate with the County in any reviews of the contractor's procedures and practices with respect to MBE or WBE firms, which the County may from time to time conduct in its sole discretion.

Other: If the documents used to determine the contractor's efforts, achievement of, and/or the status of an MWBE requirement or fulfillment thereof contain false, misleading or misrepresented information, the contractor may be declared in breach of the contract and the County may take any and all actions and/or remedies available to the County under the contract, at law, or in equity. If an MWBE is disqualified by any public entity, including but not limited to, Baltimore City, the State or MDOT, at any time after award or during the term of the contract, the County may, in its sole discretion, require the prime contractor to promptly submit for County approval, the contractor's plans for fulfilling the required MWBE participation under the contract, and/or request such detail and additional information as the County, in its discretion deems appropriate.



PRIME CONTRACTOR MINORITY AND WOMEN PARTICIPATION AFFIDAVIT

A. AUTHORIZED REPRESENTATIVE

I HEREBY AFFIRM THAT:

I am the [title]_____ and the duly authorized representative of
[business]_____
_____ (the "Business") and that I possess the legal authority to make this
Affidavit on behalf of myself and the Business for which I am acting.

B. AFFIRMATION REGARDING MINORITY AND WOMEN PARTICIPATION

I FURTHER AFFIRM THAT:

I am aware that, pursuant to the December 6, 2022 Executive Order of Baltimore County, Maryland, the following words have the meanings indicated.

(A) "Minority Business Enterprise" or "MBE" means a business enterprise that is owned, operated and controlled by one or more minority group members (African American, Hispanic American, Asian American, or Native American) who have at least 51% ownership and in which the minority group members have operational and managerial control, interest in capital and earnings commensurate with their percentage of ownership.

(B) "Women's Business Enterprise" or "WBE" means a business enterprise that is owned, operated and controlled by one or more women who have at least 51% ownership and in which the women have operational and managerial control, interest in capital and earnings commensurate with their percentage of ownership.

____ The Prime is a MBE ☐ or WBE ☐

☐ Maryland State Department of Transportation (MDOT) # _____

☐ City of Baltimore # _____

☐ Name Other Jurisdiction: _____ # _____

☐ The ownership of the Noncertified MWBE business consists of _____ % minorities and _____ % women (for a total of _____ %), each of which has operational and managerial control, interest in capital and earnings commensurate with their percent ownership.

_____ % African American _____ % Hispanic American _____ % Women
_____ % Asian American _____ % Native American _____ % Disadvantaged (DBE)

____ The MWBE prime anticipates meeting up to 50% of the stated participation goal with its own workforce.

MWBE primes percentage must be stated on the MWBE PRIME PARTICIPATION SCHEDULE (FORM B-PRIME) to count towards the goal.

____ The prime anticipates ☐ does not anticipate ☐ utilizing subcontractors for _____ % of the work of the contract requirements, of which it anticipates _____ % will be MBEs and _____ % will be WBEs.

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: _____

(Authorized Representative and Affiant's Name and Title)

BALTIMORE COUNTY, MARYLAND
Certified MWBE Utilization and Fair Solicitation Affidavit
(FORM A)

**This document must be completed and submitted with Bid/Proposal to Baltimore County.*

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

* * * * *

I acknowledge the goal for solicitation #24125 WX0 is a minimum of 25%. This goal must be met by any combination of the MWBE subcontractors. However, for instances where the Prime is counting up to 50% of the goal, the remaining goal balance must be met by any combination of the MWBE subcontractors.

- The goal breakdown is as follows:
 - % Minority/Women Prime
 - % for certified MBE-owned businesses and/or
 - % for certified WBE-owned businesses.

I have made a good-faith effort to achieve this MWBE solicitation requirement. If awarded the contract, I will comply with this MWBE contract requirement and will continue to use my best efforts to increase MWBE participation during the contract term.

PLEASE CHECK ONE BOX (EITHER 1, 2, OR 3)

- 1 ☐ Prime has met the MWBE contract requirements for this solicitation and contract. I submit the Subcontractor Participation Form B and Form C, along with this Affidavit, which details how the Prime will achieve the contract requirements. Submit a complete list of all additional subcontractors

Or

- 2 ☐ After having made a good-faith effort to achieve the MWBE requirements, the Prime can only achieve partial success. I submit the Subcontractor Participation Form B, Form C, Form D and Form E along with this Affidavit, which details how the Prime will partially achieve the contract requirements. Submit a complete list of all additional subcontractors

I request a partial waiver and will meet the following MWBE participation goals:

- Partial waiver of MWBE subcontract participation:
 - % Minority/Women Prime
 - % for certified MBE-owned businesses and/or
 - % for certified WBE-owned businesses.

Or

- 3 ☐ After having made a good faith effort to achieve the MWBE requirements for this contract, the Prime is unable to achieve the requirements and/or sub requirements for this contract. I submit the MWBE Participation Form D and Form E, along with this Affidavit, which details the steps the Prime has taken in an attempt to achieve the contract requirements. Therefore, I request a full waiver.

IF YOU HAVE CHECKED BOX 2 OR 3, THE FOLLOWING IS APPLICABLE:

- 1) If a bidder is unable to comply with the goals established in a bid for a project, the bidder may submit a request for a waiver at the time of bid submission. However, occasions for granting waivers will be limited.

BALTIMORE COUNTY, MARYLAND
Certified MWBE Utilization and Fair Solicitation Affidavit
(FORM A)

- 2) The request for waiver shall include documentation that demonstrates the bidder's good faith efforts to comply with the goals, including:
- a. Signed unavailability statements from all MBEs and WBEs that the bidder solicited for participation; and
 - b. Copies of solicitation documentation to include the scope of services to be performed by the subcontractors accompanied with the following:
 - i. Emails, letters, facsimile transmittals and confirmations containing plans, specifications, and anticipated time schedule for portions of the work to be performed and meeting notes and agendas clearly identifying the certified MBE or WBE classification and dates that the bidder contacted each; and
 - ii. Telephone logs containing names, addresses, dates, telephone numbers, work to be performed, anticipated time schedule and classification of certified MBEs and WBEs contacted.
 - iii. Responses from MWBE firms contacted to fulfill the goal.

As I have checked Box 2 or 3 of this Affidavit, I understand I must submit the following supporting documentation with the bid:

- *Subcontractor Participation Schedule* (Form B)
- *MWBE Subcontractor Disclosure and Participation Statement* (Form C)
- *MWBE Subcontractors Unavailable Certificate* (Form D) (if applicable)
- *MWBE Outreach Efforts – Compliance Statement* (Form E) (if applicable)

I acknowledge that the MWBE subcontractors/suppliers listed on the *Subcontractor Participation Schedule* (Form B) will be used to accomplish the percentage of MWBE participation that the Prime shall achieve. A fully executed Form C must match Form B.

In the solicitation of subcontract quotations or offers, MWBE subcontractors were provided the same information and amount of time to respond, as were non-MWBE subcontractors.

The solicitation process was conducted in such a manner so as to not place MWBE subcontractors at a competitive disadvantage to non-MWBE subcontractors.

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

Bidder/Offeror Name

Phone Number

Address

Affiant Signature

Address (continued)

Printed Name & Title

E-mail address

Date

BALTIMORE COUNTY, MARYLAND
SUBCONTRACTOR PARTICIPATION
SCHEDULE (FORM B)

**This document must be completed and submitted with Bid/Proposal to
 Baltimore County.*

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

Prime Name Bid/Proposal Name and Number 1. Subcontractor Name and Tax ID Telephone Number _____ Email Address _____ Select One: ☐ MBE ☐ WBE ☐ SBE ☐ N/A Provide if Applicable: ☐ MDOT ☐ Baltimore City # _____	Prime Address, Telephone Number and Email Project Location Base Bid \$ _____ Subcontractor Address Minority Status (If applicable): ☐ African American ☐ Asian American Pacific ☐ Asian American Sub-continent ☐ Supplier, Wholesaler and/or Regular Dealer - 60% Rule ☐ Female ☐ Native American ☐ Hispanic American
NAICS Code(s), Work to be Performed and Subcontract Dollar Amount 2. Subcontractor Name and Tax ID Telephone Number _____ Email Address _____ Select One: MBE ☐ WBE ☐ SBE ☐ N/A ☐ Provide if Applicable: ☐ MDOT ☐ Baltimore City # _____	Percent of Total Contract (See instructions on Page 1 of the MWBE PARTICIPATION SUMMARY for 60% rule) _____ % Subcontractor Address Minority Status (If applicable): ☐ African American ☐ Asian American Pacific ☐ Asian American Sub-continent ☐ Supplier, Wholesaler and/or Regular Dealer - 60% Rule ☐ Female ☐ Native American ☐ Hispanic American
NAICS Code(s), Work to be Performed and Subcontract Dollar Amount 3. Subcontractor Name and Tax ID Telephone Number _____ Email Address _____ Select One: MBE ☐ WBE ☐ SBE ☐ N/A ☐ Provide if Applicable: ☐ MDOT ☐ Baltimore City # _____	Percent of Total Contract (See instructions on Page 1 of the MWBE PARTICIPATION SUMMARY for 60% rule) _____ % Subcontractor Address Minority Status (If applicable): ☐ African American ☐ Asian American Pacific ☐ Asian American Sub-continent ☐ Supplier, Wholesaler and/or Regular Dealer - 60% Rule ☐ Female ☐ Native American ☐ Hispanic American
NAICS Code(s), Work to be Performed and Subcontract Dollar Amount Subcontractor Total Dollar Amount \$ _____	Percent of Total Contract (See instructions on Page 1 of the MWBE PARTICIPATION SUMMARY for 60% rule) _____ % Total Subcontractor Percent of Entire Contract _____ %
Form Prepared by: Name/Date: _____ Title: _____ Email: _____	Reviewed and Accepted by Baltimore County Minority Business Enterprise Office Name _____ Title _____ Date _____

MBE or WBE Prime Participation Total	_____ %	\$ _____	
MBE Subcontracting Participation Total	_____ %	\$ _____	
WBE Subcontracting Participation	_____ %	\$ _____	
Total MWBE Participation	_____ %	\$ _____	
Total SBE Participation	_____ %	\$ _____	

BALTIMORE COUNTY, MARYLAND

**MWBE PRIME PARTICIPATION SCHEDULE
(Form B-Prime)**

PLEASE COMPLETE AND SUBMIT THIS FORM TO ATTEST EACH SPECIFIC ITEM OF WORK THAT YOU AS THE MWBE PRIME FIRM WILL PERFORM USING ITS OWN WORKFORCE PERTAINING TO THE PERCENTAGE STATED ON THE SUBCONTRACTOR PARTICIPATION SCHEDULE (FORM B) FOR PURPOSES OF MEETING THE MWBE PARTICIPATION GOALS.

**This document must be completed and submitted with Bid/Proposal to Baltimore County.*

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

Provided that _____ (Prime Contractor's Name) with Certification Number _____ is awarded the County contract in conjunction with Solicitation No. _____, such MWBE Prime Contractor intends to count the distinct, clearly defined portion of the work of the contract that the MBE/WBE Prime Contractor performs with its own forces toward fulfilling **up to fifty-percent (50%) of the MWBE participation goal**, at least \$ _____ which equals to _____% of the Total Contract Amount for performing the following products/services for the Contract:

NAICS CODE	WORK ITEM, SPECIFICATION NUMBER, LINE ITEMS OR WORK CATEGORIES (IF APPLICABLE). FOR CONSTRUCTION PROJECTS, GENERAL CONDITIONS MUST BE LISTED SEPARATELY.	DESCRIPTION OF SPECIFIC PRODUCTS AND/OR SERVICES	VALUE OF THE WORK

MWBE PRIME CONTRACTOR

Signature of Representative: _____

Printed Name and Title: _____

Firm's Name: _____

Federal Identification Number: _____

Address: _____

Telephone: _____

Email Address: _____

Certified Yes ☐ No ☐

Certifying Jurisdiction _____

Date: _____

MWBE PRIME CONTRACTOR

Minority Status:

☐ African American

☐ Hispanic American

☐ Women

☐ Asian American

☐ Native American

Reviewed and Accepted by Baltimore County Minority Business Enterprise Office

Name _____

Title _____

Date _____

BALTIMORE COUNTY, MARYLAND
MWBE SUBCONTRACTOR DISCLOSURE AND PARTICIPATION STATEMENT
(FORM C)

**This document must be completed and submitted with Bid/Proposal to Baltimore County.*

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

**NOTE: ANY INCONSISTENCY BETWEEN THIS FORM AND FORM B MWBE PARTICIPATION MAY
RENDER A BID/PROPOSAL NON-RESPONSIVE AND THE COUNTY WILL NOT CONSIDER YOU FOR
CONTRACT AWARD.**

Contract Name, Bid/Proposal Number: _____

Prime Contractor Name: _____

Name of MWBE Subcontractor: _____

Subcontractor Contact Name, Title _____

Subcontractor Email Address _____

☐ MDOT ☐ Baltimore City

_____ Certification Number

☐ MBE ☐ WBE ☐ SBE ☐ N/A

1. NAICS Code(s), Work/Services to be performed by MWBE Subcontractor: _____

**Percent of Total Contract (See instructions on Page 1 of the MWBE
PARTICIPATION SUMMARY for 60% rule)**

2. Subcontract Amount: \$ _____ or _____ % of the County contract cost.

3. Bonds - Amount and type required of Subcontractor if any: _____

4. MWBE Anticipated Commencement Date: _____ Completion Date: _____
Mobilization Cost Amount \$ _____

5. This is a MBE-Owned Business Firm: Yes _____ No _____

6. This is a WBE-Owned Business Firm: Yes _____ No _____

NOTE: If the Prime is notified that it will be awarded the above referenced contract, the undersigned MWBE subcontractor and Prime must enter into a subcontract for the work/service indicated above upon the Prime's execution of a contract for the above referenced project with Baltimore County, and provide a copy of the fully executed MWBE SUBCONTRACTOR PARTICIPATION NOTICE OF INTENT TO AWARD (FORM C-Subcontractor) accompanied with the anticipated Work Breakdown Schedule (providing the subcontractor's mobilization timeframe) to mwbe@baltimorecountymd.gov within 10 calendar days of receipt by the Prime of FORM C- Subcontractor from the County. The undersigned subcontractor is an MDOT or Baltimore City certified MWBE firm. The terms and conditions stated above are consistent with our agreements.

Signature of MWBE Subcontractor: _____ Date: _____

Prime's Printed Name and Title: _____ Email: _____

The terms and conditions stated above are consistent with our agreements.

Signature of Prime: _____ Date: _____

Revised 12/2024

BALTIMORE COUNTY, MARYLAND
MWBE –UNAVAILABILITY CERTIFICATE
(FORM D)

If applicable, this document must be completed and submitted with Bid/Proposal to Baltimore County.

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

1. It is hereby certified that the firm of _____
(Name of Minority firm)

located at _____
(Number) (Street)

(City) (State) (Zip)

was offered an opportunity to bid on the _____ contract.

2. The _____ (MWBE Firm), is either unavailable for the work/service or unable to prepare a bid for this project for the following reason(s):

Signature of Subcontractor MWBE Representative

Title

Date

MDOT/Baltimore City Certification #

Email Address #

Telephone #

3. PRIME'S SIGNATURE AND CERTIFICATION

I certify under oath that I contacted the Certified MWBE and they advised me that they are unavailable, unable to perform the work/services for the above-contract or failed to respond to repeated requests for a price proposal for the above-contract.

Signature of Prime

Title

Date

Rev 12/2024

BALTIMORE COUNTY, MARYLAND
MWBE - OUTREACH EFFORTS - COMPLIANCE STATEMENT
(FORM E)

****This document must be completed and submitted with Bid/Proposal to Baltimore County.***

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

In conjunction with the bid or offer submitted in response to Solicitation Number _____, I state the following:

1. Bidder/Offeror identified opportunities to subcontract in these specific work categories:

2. Attached to this form are copies of the solicitation documentation in accordance with Section 6 (E) Bid Requirements of the Executive Order, used to solicit certified MWBEs for the subcontract opportunities accompanied with the signed MWBE Subcontractor Unavailability Certificate (Form D).

3. Bidder/Offeror made the following attempts to solicit MWBEs:

Signature – Bidder Offeror

Print or Type Name of Firm

Street Address

City State Zip Code

Date



JOHN A. OLSZEWSKI, JR.
County Executive

SEVETRA PEOPLES-BROWN
Executive Director
Chief of Diversity, Equity and Inclusion

To: Contractors/Consultants

From: Minority and Women Business Enterprise Office

Date: December 13, 2024

Subject: Compliance Reporting and Penalties

Baltimore County, Maryland (the "County") requires all Prime Contractors and all Subcontractors to submit payment reports by the 10th of each month through an online MWBE Compliance Portal (PRISM). The Portal can be found under Compliance Reporting for Primes and Subcontractors at www.baltimorecountymd.gov/go/mwbe. In the event you are not able to enter your payments in PRISM, a spreadsheet is attached for your use. Please be sure to list the PO for each invoice/ payment reported and include in your submission any corresponding documentation (e.g. copies of invoices or canceled checks).

The County has found that a number of companies are failing to file reports in a timely manner, which makes it difficult for the County to verify compliance. As a result, the County has determined to assess penalties for non-compliance, effective September 1, 2018, as follows:

- (a) For failure to file timely monthly reports:
 - a. Assessment of a late fee of \$10 per day per task, up to a maximum of \$1,500 per task; and/or
 - b. For multiple violations, termination of the contract for convenience or for default, with the contractor suspended from participating in County contracts for five (5) years.
- (b) For failure to meet MWBE requirements:
 - a. Assessment of a penalty of up to 10% of the contract value; and/or
 - b. Termination of the contract for convenience, with the contractor suspended from participating in County contracts for five (5) years together with assessment of a penalty of up to 10% of the contract value; and/or
 - c. Termination of the contract for default together with assessment of a penalty of 10% of the contract value.

Each action and/or remedy described above is at the sole discretion of the County, and is in addition to any damages which the County may be entitled to under the contract. This short video can be used as guidance on submitting the Prime to Subcontractor Payment Reporting:

http://stage.prismcompliance.com/etc/movies/vendor_contractpayment_tutorial.htm

If after contract expiration, it has been determined the MWBE firms named were not used or were under used, by the contractor and supporting documentation was not provided and approved by the County the contractor may be assessed a penalty of up to 10% of the contract value and/or suspended from participating in County contracts for 5 years.

Questions regarding this correspondence and/or the use of this system can be directed to the MWBE Office at mwbe@baltimorecountymd.gov or call (410) 887-3407.

Attachment: MWBE Payment Report Form
 MWBE Payment Acknowledgement Form

Cc: File

S E C T I O N V

POST AWARD DOCUMENTS

**This Section to be Completed
by Successful Bidder after Award**

CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (“Contract”), IS MADE THIS _____ day of _____ 20____, by and between Baltimore County, Maryland, a body corporate and politic (“County”), and _____, (“Contractor”).

WITNESSETH, that the Contractor, for and in consideration of the payment or payments herein specified and agreed to by the County, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work, services, and labor in fulfillment of the requirements of Contract Number **24125 WX0** “Project”) in strict conformity with the solicitation, plans, specifications, special provisions, any and all addenda, and the proposal, at the prices named therein, and all of which are collectively the Proposal, and said Proposal is attached hereto and made a part thereof.

The Project shall be done in strict compliance with (i) the Proposal, (ii) the Baltimore County Department of Public Works and Transportation September 2023 “Standard Specifications for Construction and Materials” and “Standard Details for Construction” (iii) and any and all revisions thereto as of the date of advertisement, including but not limited to the General Conditions Building Projects, as applicable, and all of which (i-iii) are made a part hereof and incorporated herein (collectively, the “Specifications”). Contractor understands and agrees it is Contractor’s responsibility and obligation to obtain a copy of the “Specifications” and agrees the Specifications are incorporated herein. Copies are available on the County’s website at www.baltimorecountymd.gov/departments/public-works/standards.

The Project shall be subject to the inspection and approval of the Director of Public Works and Transportation for Baltimore County, or his authorized representative, and in the event any portion thereof shall be rejected by said Director or his representative as defective or unsuitable, then the said portion shall be removed and replaced and be performed anew to the satisfaction and approval of the said Director or his representative at the cost and expense of the Contractor.

THE CONTRACTOR AFFIRMS that it is aware of, and will comply with, the provisions of Sections 14-101 through 14-108 of the Election Law Article of the Annotated Code of Maryland, as the same may be amended from time to time, which require that every person who makes, during any 12-month period, one or more contracts, with one or more Maryland governmental entities involving cumulative consideration, of at least \$200,000.00, to file with the State Board of Elections certain specified information to include disclosure of attributable political contributions in excess of \$500 during defined reporting periods.

THE CONTRACTOR FURTHER COVENANTS AND AGREES that all the Project shall be furnished, performed and delivered, in every respect, to the satisfaction and approval of the Director of Public Works and Transportation, aforesaid, on or before the expiration of **TWO HUNDRED AND SIXTY (260) WORKING DAYS** (the “Contract Period”) after written notice has been given by the Director or their authorized representative to begin the work.

IT IS AGREED THAT TIME IS OF THE ESSENCE. In the event the Contractor fails to achieve Final Completion and Final Acceptance of the Contract work within the Contract Period specified herein, plus any extensions thereto agreed to in writing by a legally authorized representative of the County pursuant to the terms of this Contract, then Contractor shall pay the County the sum of **FIVE HUNDRED DOLLARS (\$500.00)** as Liquidated Damages for each **WORKING DAY** after the expiration of the Contract Period, as may be extended by the County, until the Contractor achieves Final Completion and Final Acceptance of the Project.

Contractor’s Initials

Date

Rev. 09/2024

IT IS FURTHER AGREED that:

- (a) These Liquidated Damages are a reasonable estimate of the County's damages solely due to the public's loss of use of the Project during the delay period and is not a penalty.
- (b) It is very difficult, if not impossible, to accurately measure the damages to the County due to the public's loss of use of the Project during the delay period.
- (c) Notwithstanding GP 8.09 of the Baltimore County Standard Specification for Construction, in addition to the damages due to the public's loss of use of the Project during the delay period, the County is likely to incur additional direct costs during the delay period, including but not limited to, costs for construction management, consultants, architectural services, office trailer and supplies, utilities, County employees' time, County vehicles, and such other costs that the County will incur to continue administration of the construction and the Contract during the delay period, all of which will be monitored by the County, and if so required by the County, the Contractor shall pay such actual damages incurred during the delay period. THE PARTIES HERETO UNDERSTAND AND AGREE THAT CONTRACTOR'S OBLIGATION TO PAY THE COUNTY FOR ACTUAL DAMAGES DURING THE DELAY PERIOD SHALL BE IN ADDITION TO THE CONTRACTOR'S OBLIGATION TO PAY THE LIQUIDATED DAMAGES DUE TO THE PUBLIC'S LOSS OF USE OF THE PROJECT.
- (d) The County shall have the right, but not the obligation, to deduct the Liquidated Damages due to the public's loss of use of the Project, and the County's actual costs and costs to continue administration of the construction and the Contract, from any monies due or any monies that may become due to the Contractor.

IT IS DISTINCTLY UNDERSTOOD AND AGREED that no claim for extra work, material or overhead not specifically provided for in the Contract will be allowed by the County, nor shall the Contractor do any work or furnish any materials not covered by this Contract and the Specifications, unless the same is ordered in writing by a legally authorized representative of the Department of Public Works and Transportation in accordance with the terms of the Contract. Any such work or materials which may be done or furnished by the Contractor without any such written order first being given shall be at said Contractor's sole risk, cost and expense and Contractor hereby covenants and agrees that without such written order, Contractor shall make no claim for compensation for work, materials, or overhead so done or furnished.

NOTWITHSTANDING GP 4.06 OF THE BALTIMORE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION, IT IS SPECIFICALLY AGREED that the Contractor shall have no entitlement to damages arising out of delay, disruption, interference or hindrance from any cause whatsoever. However, this provision shall not preclude recovery or damages by the Contractor for hindrances or delays due solely to fraud or gross negligence on the part of the County or its agents.

IT IS FURTHER DISTINCTLY AGREED that the said Contractor shall not assign this Contract, nor any part thereof, nor any right to any of the monies to be paid hereunder, nor shall any part of the work to be done or material furnished under said Contract be sublet without the prior written consent of a legally authorized representative of the Department of Public Works and Transportation in accordance with the terms of this Contract. Further, the acceptance of the final payment by the Contractor shall effectuate a release in full of all claims against County and its officials, employees, representatives, and agents arising out of, or by reason of the Project and this Contract.

The Contractor shall review government issued identification and badge all employees of the Contractor and its subcontractors. The Contractor shall also review all federal forms, including but not limited to I-9's, for compliance as well as copies of all employment eligibility and identity documentation maintained to the extent required by law.

The Bonds, given by the Contractor in a sum equal to the total contract price of the Project in compliance with the terms and provisions of this Contract, are hereby attached and incorporated herein.

IT IS AGREED that in the event that the County is delayed or prevented from timely execution of this Contract, the Contractor releases County and agrees Contractor shall have no action, claim or demand against County therefore.

Contractor's Initials

Date

Rev. 09/2024

THE CONTRACTOR HEREBY FURTHER AGREES to receive the prices set forth in the Proposal incorporated herein as full compensation for the completion of the Project and, in all respects, to complete said Contract to the satisfaction of the County.

THE CONTRACTOR REPRESENTS AND WARRANTS:

- (i) it is duly formed and validly existing under the laws of the State of _____;
- (ii) it is in good standing in the State of Maryland;
- (iii) it has the power and authority to consummate the obligations and responsibilities contemplated hereby, and has taken all necessary action to authorize the execution, delivery and performance required under this Contract;
- (iv) the Contractor and the person executing this Contract for the Contractor each warrant that he/she is duly authorized by the Contractor to execute and seal this Contract on the Contractor's behalf;
- (v) the warranties of merchantability and fitness for a particular purpose and use and warranties of title and against infringement, and all express warranties contained in this Contract, including but not limited to the Proposal (and any sample or model presented by Contractor and expressly accepted by the County) shall apply to the portion of this Contract pertaining to or for goods;
- (vi) all representations and warranties made in the Proposal and herein remain true and correct in all respects when made, as of the date of this Contract, and throughout the term of this Contract; and
- (vii) there exists no actual or potential conflict of interest between its performance under this Contract and its engagement or involvement in any other personal or professional activities and in the event such conflict or potential conflict arises during the term of this Contract, the Contractor shall immediately advise the County in writing thereof.

THE CONTRACTOR shall not disclose any documentation and information of any kind or nature disclosed to the Contractor in the course of its performance of duties hereunder without the express prior written consent of the County.

Those sections in this Contract which by their nature are intended to survive, including but not limited to, Contractor's representations and warranties, confidential information, and indemnification shall survive the termination of this Contract.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand and seal the day and year first above written.

CONTRACTOR NAME: _____

WITNESS FEDERAL TAX ID or SS #: _____

By: _____ (Seal)

Name: _____

Type (Print) Name

Title: _____ Date: _____

WITNESS: **BALTIMORE COUNTY, MARYLAND**

Executive Secretary By: _____ Date: _____
D'Andrea L. Walker, County Administrative Officer

Type (Print) Name

APPROVED FOR FORM AND LEGAL
AND SUFFICIENCY* (Subject to
execution by the duly authorized
Administrative official and Chairperson
of the County Council, as indicated).

APPROVED:

Lauren T. Buckler, Director
Department of Public Works & Transportation Date: _____

Office of the County Attorney

*Approval of Form and Legal Sufficiency does not convey approval or disapproval of the substantive nature of this transaction. Approval is based upon typeset documents. All modifications require re-approval.

Rev. 09/2024

PERFORMANCE BOND

Bond No. _____

Principal _____

Business Address of Principal _____

Surety _____

Obligee: **BALTIMORE COUNTY, MARYLAND**
A body corporate and politic

A Corporation of the State of _____ and authorized to do business in Maryland

Penal Sum of Bond (express in words and figures)

DOLLARS

\$

York Road – MD Route 45 24" Water Main Replacement – Phase 5

Contract Name

Date of Contract

24125 WX0

Contract Number

Date Bond Executed

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL, above-named, and SURETY, above-named, and authorized to do business in the State of Maryland, are held and firmly bound unto the OBLIGEE, above-named, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, THE PRINCIPAL entered into a certain contract with the OBLIGEE described and dated as shown above and is required to provide this bond pursuant to Maryland State law and/or County law and the contract.

NOW, THEREFORE, if the aforesaid PRINCIPAL shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the OBLIGEE with or without notice to the SURETY, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then, this obligation to be void; otherwise to remain in full force and effect.

THE SURETY FURTHER GUARANTEES That it is (a) licensed in the State of Maryland, (b) rated "B" or better by the A.M. Best Company, (c) on federal funded projects, authorized by the underwriting limitation contained in the U.S. Department of the Treasury Circular 570, as amended, to guaranty the amount of the Bid, and (d) in good standing as determined by the County's Engineer. A Performance Bond is required for each and every Contract in excess of twenty-five thousand (\$25,000). A Performance Bond shall be in the amount equal to at least one hundred (100%) percent of the Contract price. The fully executed Performance Bond shall be delivered by the Bidder to the Department's Division of Construction Contracts Administration no later than the time the Contract is to be executed by the Contractor.

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals on the date indicated above, the name and seal of each party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In Presence of:**Individual Principal**

Witness: _____

as to: _____ (SEAL)

Print Name: _____

Print Name: _____

Attest:**Corporate Principal**

(Name of Corporation)

Witness: _____

By: _____ Affix

Print Name: _____

Print Name: _____ Corporate

Title: _____ Seal

Attest:**Surety**

(Name of Surety)

Business Address: _____

Witness: _____

By: _____ Affix

Print Name: _____

Print Name: _____ Corporate

Title: _____ Seal

Reviewed for Baltimore County Requirements

Office of the County Attorney

PAYMENT BOND

Bond Number _____

Principal _____

Business Address of Principal _____

Surety _____

Obligee: **BALTIMORE COUNTY, MARYLAND**
A body corporate and politic

A Corporation of the State of _____ and authorized to do business in Maryland

DOLLARS \$ _____

Penal Sum of Bond (express in words and figures) _____

York Road – MD Route 45 24" Water Main Replacement – Phase 5
Contract Name_____ 20 _____
Date of Contract24125 WX0
Contract Number_____ 20 _____
Date Bond Executed

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL, above-named, and SURETY, above-named, and authorized to do business in the State of Maryland, are held and firmly bound unto the OBLIGEE, above-named, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, THE PRINCIPAL entered into a certain contract with the OBLIGEE described and dated as shown above and is required to provide this bond pursuant to Maryland State law and/or County Law and the contract.

NOW, THEREFORE, the condition of this obligation is such that if the aforesaid PRINCIPAL shall promptly make payments to all persons supplying labor and/or material to the PRINCIPAL and to any subcontractor of the PRINCIPAL in the prosecution of the work provided for in said contract and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then, this obligation to be void; otherwise to remain in full force and effect.

THE SURETY FURTHER GUARANTEES That it is (a) licensed in the State of Maryland, (b) rated "B" or better by the A.M. Best Company, (c) on federal funded projects, authorized by the underwriting limitation contained in the U.S. Department of the Treasury Circular 570, as amended, to guaranty the amount of the Bid, and (d) in good standing as determined by the County's Engineer. A Payment Bond is required for each and every Contract in excess of twenty-five thousand (\$25,000). A Payment Bond shall be in the amount equal to at least one hundred (100%) percent of the Contract price. The fully executed Payment Bond shall be delivered by the Bidder to the Department's Division of Construction Contracts Administration no later than the time the Contract is to be executed by the Contractor.

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals on the date indicated above, the name and seal of each party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

In Presence of:

Individual Principal

Witness: _____

as to: _____ (SEAL)

Print Name: _____

Print Name: _____

Attest:

Corporate Principal

(Name of Corporation)

Witness: _____

By: _____ Affix

Print Name: _____

Print Name: _____ Corporate

Title: _____ Seal

Attest:

Surety

(Name of Surety)

Business Address: _____

Witness: _____

By: _____ Affix

Print Name: _____

Print Name: _____ Corporate

Title: _____ Seal

Reviewed for Baltimore County Requirements

Office of the County Attorney



BALTIMORE COUNTY, MARYLAND

INSURANCE PROVISIONS

1. GENERAL REQUIREMENTS

- 1.1 Coverages Required:
Unless otherwise required by the specifications or the contract, the Contractor/Vendor shall purchase and maintain the insurance coverage's listed herein.
- 1.2 Certificate of Insurance:
Before starting work on the contract, or prior to the execution of the Contract on those bid, the Contractor/Vendor shall provide Baltimore County, Maryland with verification of insurance coverage evidencing the required coverages.
- 1.3 Baltimore County as Insured:
The coverage required, excluding Workers' Compensation and Employers' Liability and Medical Malpractice Liability/Professional Liability/Errors and Omissions Liability, must include Baltimore County, Maryland and its agents, employees, officers, directors, and appointed and elected officials as an additional insured.
- 1.4 Contractor's/Vendor's Responsibility:
The providing of any insurance herein does not relieve the Contractor/Vendor of any of the responsibilities or obligations the Contractor/Vendor has assumed in the contract or for which the Contractor/Vendor may be liable by law or otherwise.
- 1.5 Failure to Provide Insurance:
Failure to provide and continue in force the required insurance shall be deemed a material breach of the contract. The Contractor/Vendor must maintain the insurance coverages required under the terms and conditions on this Contract while this Contract is in effect including renewal and extension terms.

2. INSURANCE COVERAGES

- 2.1 General Liability Insurance
- 2.1.1 Minimum Limits of Coverage:
Personal Injury Liability and Property Damage Liability Combined Single Limit - \$500,000 each occurrence.
- 2.1.2 Such insurance shall protect the Contractor/Vendor from claims which may arise out of, or result from, the Contractor's/Vendor's operations under the contract, whether such operations be by the Contractor/Vendor, any subcontractor, anyone directly or indirectly employed by the Contractor/Vendor or Subcontractor, or anyone for whose acts any of the above may be liable.
- 2.1.3 Minimum Coverages to be Included:
(a) Independent Contractor's coverage;
(b) Completed Operations and Products Liability coverage;
(c) Contractual Liability coverage.

- 2.1.4 Damages not to be Excluded:
Such insurance shall contain no exclusions applying to operations by the Contractor/Vendor or any Subcontractor in the performance of the Contract including but not limited to:
(a) Collapse of, or structural injury to, any building or structure;
(b) Damage to underground property; or
(c) Damage arising out of blasting or explosion.

2.2 Automobile Liability Insurance

- 2.2.1 Minimum Limits of Coverage:
Bodily Injury Liability and Property Damage Liability
Combined Single Limit - \$500,000 any one accident.
- 2.2.2 Minimum Coverages to be Included:
Such insurance shall provide coverage for all owned, non-owned and hired automobiles.

2.3 Workers' Compensation and Employers' Liability Insurance

Such insurance must contain statutory coverage, including
Employers' Liability insurance with limits of at least:
Bodily Injury by Accident - \$250,000 each accident
Bodily Injury by Disease - \$500,000 policy limit
Bodily Injury by Disease - \$250,000 each employee

2.4 Valuable Papers and Records Coverage and Electronic Data Processing (Data and Media) Coverage

Minimum Limits of Coverage:
\$100,000 Per Claim and Each Occurrence
\$100,000 in the Aggregate

2.5 Other

Such other insurance in form and amount as may be customary for the type of business being under taken by the Contractor/Vendor.