

WORCESTER COUNTY DEPARTMENT OF PUBLIC WORKS
ROADS DIVISION
SNOW HILL, MARYLAND

INFORMATION TO BIDDERS
GENERAL CONTRACT CONDITIONS
SPECIFICATIONS AND SPECIAL PROVISIONS

FOR

CONTRACT NO. 0085B057.A01

HOTEL ROAD BRIDGE REPLACEMENT

Worcester County Department of Public Works

Roads Division

Snow Hill, Maryland

Bids: Received until
1:00 P.M., local time,
December 15, 2026

One West Market Street, Rm 1103
Snow Hill, Maryland 21863

Date of Award _____

Awarded To _____

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NOTICE TO BIDDERS

Hotel Road Bridge Replacement Project No. 0085B057.A01 Worcester County, Maryland

The County Commissioners of Worcester County, Maryland are currently accepting sealed bids for the construction of Hotel Road Bridge over Carey Branch in Bishopville, Maryland for the Roads Division of the Department of Public Works. Copies of the Contract Documents, Construction Specifications and Plans are available from Davis, Bowen & Friedel, 601 E. Main Street Salisbury, Maryland 21804 (410-543-9091) upon payment of \$50.00 for each non-refundable set.

Interested bidders are encouraged to attend a **pre-bid meeting to be held on, December 1, 2026 at 2 pm**, at the Worcester County Department of Public Works, 6113 Timmons Road, Snow Hill, Maryland 21863, at which time the project scope and Bid Documents will be discussed in depth and Bidders' questions will be answered. The last day for questions prior to bid shall be December 8, 2026. **Sealed bids will be accepted until 1:00 pm, December 15, 2026** in the Office of the County Commissioners, Room 1103 - Worcester County Government Center, One West Market Street, Snow Hill, Maryland 21863, at which time they will be opened and publicly read aloud. Envelopes shall be marked "**Bid for Hotel Road Bridge Replacement Project**" in the lower left-hand corner. No bidder may withdraw his bid within ninety (90) days after the actual date of opening thereof. After opening, bids will be forwarded to the Public Works Department for tabulation, review and recommendation to the County Commissioners for their consideration at a future meeting. In awarding the bid, the Commissioners reserve the right to reject any and all bids, waive formalities, informalities and technicalities therein, and to take whatever bid they determine to be in the best interest of the County considering lowest or best bid, quality of goods and work, time of delivery or completion, responsibility of bidders being considered, previous experience of bidders with County contracts, or any other factors they deem appropriate.

All inquiries shall be directed to Andrew E. Welch, P.E., Project Engineer, at 410-543-9091, or by FAX at 410-543-4172. Email correspondence is encouraged to aew@dbfinc.com and will be binding.

PROPOSAL FORM
HOTEL ROAD BRIDGE REPLACEMENT
PROJECT NO. 0085B057.A01

Proposal of _____
(NAME)

(ADDRESS)

(TEL.NO.)

Proposals to be received until, December 15, 2026, at 1:00 P.M. local time.

For: Hotel Road Bridge Replacement

Worcester County Department of Public Works, Roads Division
Snow Hill, Maryland

Ladies and Gentlemen:

In accordance with the advertisement of Worcester County, inviting proposals for the improvements hereinbefore named, and in conformity with the plans and specifications now on file in the office of the Worcester County Roads Division. I hereby certify that an examination has been made of the Specifications and Contract Form contained herein, also of the plans, and the site of the work, and proposed to furnish all necessary machinery, equipment, tools, labor and other means of construction and furnish all materials specified, in the manner and the time prescribed, and understand that the quantities of work as shown herein are approximate only and are subject to increase or decrease, and further understand that all quantities of work, whether increased or decreased are to be performed at the following schedule of prices.

*See The Attached Bid Form

Respectfully submitted,

Signature

Title

BID FORM
HOTEL ROAD BRIDGE REPLACEMENT
PROJECT NO. 0085B057.A01

Proposal of _____ (hereafter called "BIDDER"),
organized and existing under the laws of the State of _____
doing business as _____* to The Worcester County Department of Public
Works (hereinafter called "OWNER").

In compliance with the Invitation to Bidders, BIDDER hereby proposes to perform all
WORK for the **Hotel Road Bridge Replacement, Contract No. 0085B057.A01**, in strict
accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices
stated below.

BIDDER hereby agrees to commence WORK under this Contract on or before a date to be
specified in the NOTICE TO PROCEED and to fully complete the PROJECT within **180**
consecutive calendar days. BIDDER further agrees to pay as liquidated damages, an amount of
\$500.00 per calendar day as defined in the General Conditions.

This BID includes sales tax and all other applicable taxes and fees.

LUMP SUM BID ITEM

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS BID
ITEM for the lump sum of _____
(\$ _____).

Amount shall be as shown in both words figures. In case of discrepancy, the amount shown in
words will govern.

The following unit prices are to be used for determining addition to or deduction from the lump sum
bid, for quantities actually installed.

<u>ITEM</u>	<u>UNIT</u>	<u>AMOUNT</u>	<u>UNIT PRICE</u>
1. 12" Dia Concrete Filled Pipe Pile	L.F.	660	\$ _____
2. Silt Fence	L.F.	300	\$ _____
3. MD SHA Traffic Barrier 605.41	EA.	4	\$ _____
4. MD SHA 605.03 Type C	EA.	2	\$ _____
End Treatment			
5. Backfill and Compaction of Select	C.Y.	120	\$ _____
6. MD SHA Class I Riprap	C.Y.	25	\$ _____
7. Stream Diversion Structure	L.S.	L.S.	\$ _____

NOTICE

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract attached within 10 days and deliver a Surety Bond or Bonds as required by the Information to Bidders. The bid security attached in the sum of 5% of the total Hotel Road Bridge Replacement bid, \$ _____ is to become the property of the Owner in the event the contract and bonds are not executed within the time above set forth, as liquidated damages for the delay and additional time expense to the Owner caused thereby.

I/WE are licensed, or have initiated the license application as required by Section 2502, Chapter 25, Title 30, of the Maryland Code.

I/WE have not either directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted to The Worcester County Department of Public Works.

Respectfully submitted:

Signature

Company Address

Title

Date

Federal E.I. Number

MD Business License Number

SEAL - (If bid is by a corporation)

NON-COLLUSION AFFIDAVIT

DATE:

Worcester County Department of Public Works
5764 Worcester Highway
Snow Hill, Maryland 21863

Ladies and Gentlemen:

This is to certify that the undersigned bidder _____ has not, either directly or indirectly, entered into an agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted to the Worcester County Roads Division for Worcester County Contract No. _____.

Name of Bidder

Signature & Title of Authorized Representative

Sworn to and subscribed before me this _____ day of _____, 20____.

My commission expires _____, 20

Notary Public

Notary Seal

AFFIDAVIT OF QUALIFICATION TO BID

I hereby affirm that

1. I am the _____ and the duly
(Title)
authorized representative of the firm of _____
whose address is _____ and that I possess the legal authority to make this
affidavit on behalf of myself and the firm for which I am acting.

2. Except as described in paragraph 3 below, neither I nor the above firm, nor to the
best of my knowledge, any of its officers, directors, or partners, or any of its employees directly
involved in obtaining contracts with the State, or any county, bi-county or multi-county agency,
or subdivision of the State have been convicted of, or have pleaded nolo contendere to a charge
of, or have during the course of an official investigation or other proceeding admitted in writing
or under oath acts or omissions which constitute bribery, attempted bribery, or conspiracy to
bribe under the provisions of Article 27 of the Annotated Code of Maryland or under the laws of
any state or the federal government (conduct prior to July 1, 1977 is not required to be reported).

3. (State "none" or, as appropriate, list any conviction, plea, or admission described
in paragraph 2 above, with the date; court, official, or administrative body; the individuals
involved and their position with the firm, and the sentence of disposition, if any).

I acknowledge that this affidavit is to be furnished to Worcester County and relevant
agencies or entities and, where appropriate, to the Board of Public Works and to the Attorney
General under Section 16D of Article 78A of the Annotated Code of Maryland. I acknowledge

that, if the representations set forth in this affidavit are not true and correct, Worcester County, Maryland, may terminate any contract awarded and take any other appropriate action. I further acknowledge that I am executing this affidavit in compliance with Section 16D of Article 78A of the Annotated Code of Maryland, which provides that certain persons who have been convicted of or have admitted to bribery, attempted bribery, or conspiracy to bribe may be disqualified, either by operation of law or after a hearing, from entering into contracts with the State or any of its agencies or subdivisions.

I do solemnly declare and affirm under the penalties of perjury that the contents of this affidavit are true and correct.

(Signature)

(Date)

INFORMATION FOR BIDDERS AND GENERAL CONTRACT CONDITIONS

PROPOSAL REQUIREMENTS AND CONDITIONS

1. **PREPARATION OF PROPOSAL** - In filling out proposal forms, bidders shall be governed by the following provisions: Proposals must be submitted on the attached form. The blank spaces on the proposal form must be filled in with ink and no changes shall be made either in the phraseology of or in the items mentioned in the proposal form. The amounts bid on each item shall be expressed both by words and by figures.

Proposals must be signed in ink by the bidder with the signature in full. When a partnership is a bidder, the agent who signs the firm's name shall in addition state the names and addresses of the individuals composing the partnership. Post Office address must be given after the signature.

Proposals which show any omission, addition, or item not called for in the estimate or show any irregularity of any kind may be rejected. Conditional bids will not be accepted.

Proposals and all papers bound and attached thereto shall be placed in an envelope addressed to Worcester County, Maryland, hereinafter called The County and so marked as to clearly indicate its content without requiring opening. Proposals may be delivered either in person or by mail.

2. **PROPOSAL GUARANTY** - No proposal will be considered unless accompanied by a "Proposal Guaranty", which shall be a certified check, irrevocable letter of credit or corporate bid bond made payable to the County in an amount not less than 5% of the total amount of the proposal using that alternate which gives the lesser total bid. Bid bond in form of AIA310 or equal.

3. **WITHDRAWALS OF PROPOSALS** - Bidders will be permitted to withdraw any proposal prior to the scheduled time of opening, providing such request is made in writing to The County. At the time of opening of proposals, when such proposal is reached, it will be returned to the bidder unopened and unread.

4. **QUALIFICATIONS OF BIDDERS** - The County may require the bidder to present satisfactory evidence that he has sufficient experience and that he is prepared with the necessary capital, materials, machinery, and skilled workmen to carry out the contract, prior to the award of the contract.

The County reserves the right to reject any bid if the evidence submitted by or investigation of such bidder fails to satisfy The County that the bidder is properly qualified to carry out the provisions of the contract.

5. **MATERIAL GUARANTY** - Before any contract is awarded, bidders may be required to furnish a complete statement of the original composition and manufacture of any or all materials to be used in the construction of the work together with samples, which samples may be subjected to any tests deemed advisable to determine their quality and fitness for the work.

6. **FAMILIARITY WITH PROPOSED WORK** - Each bidder is required prior to submitting his proposal to examine the site of the proposed work as well as the proposal, plans, specifications and contract form. It will be assumed that he has satisfied himself as to the conditions to be encountered, the character, quantity, and quality of work to be performed and materials to be furnished, and all requirements of these specifications and contract.

He shall have no claim for damage or extension of time or any other concession because of any misunderstandings, misinterpretation, or lack of information relative to this contract or the work proposed herewith.

The County does not propose to fully describe the character or location of underground materials or objects which may be encountered in the construction of this project. Each bidder shall conduct such sub-surface investigation as he deems necessary to determine for himself the character of work which he may encounter. The description and

quantities of items indicated in the proposal form shall be used as a basis of comparison of bids and computation of quantities only and shall not be construed to be representative of materials which may be actually uncovered or found during the construction of the project.

7. ESTIMATE OF QUANTITIES - The bidder's attention is directed to the fact that the estimate of quantities of work to be done and materials to be furnished under this project is approximate and given only as a basis of comparison of bids upon which the award of the contract is to be made.

The County reserves the right to increase or diminish any or all of the above mentioned quantities, or to omit any of them as it may deem necessary. Such increase, decrease, or omission shall not be considered as sufficient grounds for granting an increase in the unit prices bid as long as increases, decreases, or omissions do not increase or decrease the total value of work performed to an extent greater than 25% of the bid price.

The basis of payment will be actual quantity of work performed and accepted.

8. SUBLETTING OR ASSIGNING THE CONTRACT - The Contractor shall perform with his own organization work amounting to not less than 50% of the total work proposed. No portion of the contract shall be sublet or assigned or otherwise disposed of except with the written consent of The County. Request for permission to sublet, assign, or otherwise dispose of any portion of the contract shall be in writing and the County may require the subcontractor proposed to present satisfactory evidence of his ability to perform the work to their satisfaction before such approval shall be granted.

AWARD AND EXECUTION OF CONTRACT

1. CONSIDERATION OF BIDS - After the proposals have been publicly opened and read, the prices will be compared on the basis of the lowest bid for all items composing the base contract. In cases where alternate bids are asked The County reserves the right to select that alternate bid which in its opinion is most desirable even though it may not be the lowest alternate bid, providing that all bids shall be compared on the same basis.

The right is reserved to waive any informalities and to reject any or all bids, to advertise for new proposals, to proceed to do the work otherwise or to abandon the work if in the judgment of The County the best interest of The County will be served thereby.

2. AWARD OF CONTRACT - The contract will be awarded or bids rejected within sixty days from date of opening of bids.

3. RETURN OF PROPOSAL GUARANTY - As soon as the bid prices have been checked and compared, The County will return the proposal guaranty accompanying the proposal of all except the three lowest bidders. The proposal guaranty of the three lowest bidders will be held until the contract is awarded. When the contract is awarded, the proposal guaranty of the two remaining unsuccessful bidders will be returned. The proposal guaranty of the successful bidder will be returned after the contract and contract bond have been executed.

4. CONTRACT BOND - The bidder to whom the contract is awarded will be required to furnish a contract bond in a form acceptable to The County in a sum equal to the full amount of the contract award. AIA312 document, certified check, cashier's check or approved equal.

5. EXECUTION OF CONTRACT - The contract shall be executed by the successful bidder and satisfactory contract bond furnished within ten (10) days after he has received notice of award. In case of failure on part of the bidder to fulfill this requirement, the guaranty accompanying his proposal shall become forfeited to The County. Award may then be made to the next lowest responsible bidder or the work re-advertised, or The County may proceed on any lawful manner deemed advisable to accomplish the work.

SCOPE AND CONTROL OF WORK

1. INTENT OF PLANS AND SPECIFICATIONS - The intent is to describe a complete project or improvement which the Contractor undertakes to do in full compliance with these specifications, proposal, and contract together with any authorized alterations or supplemental agreements. The Contractor shall furnish, unless otherwise provided in the specifications, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work. The work shall be done in accordance with lines, grades, cross sections, and dimensions shown on the plans or directed by The County.

2. INCREASED OR DECREASED QUANTITIES - The County reserves the right to make such alterations in the plans or in the quantities of work as it may consider necessary. Such alterations shall not be considered as a waiver of any conditions of the contract nor to invalidate any provisions thereof; provided that a supplemental agreement with the Contractor will be made when such alterations involve an extension or shortening of the project by more than 25% as determined by proposal quantities. Before work shall be started on any alteration requiring such supplemental agreement or any work involving a change of the bid price, the agreement setting forth the adjusted price, shall be approved by The County. The Contractor shall perform the work as increased or decreased.

NO CLAIM INVOLVING ADDITIONAL COMPENSATION WILL BE ALLOWED ON ANY ITEM COVERED BY THIS CONTRACT UNLESS SUCH CLAIM SHALL BE MADE AND PROPER SETTLEMENT AGREED UPON IN WRITING BY THE COUNTY PRIOR TO THE PERFORMANCE OF THE WORK IN QUESTION.

3. EXTRA AND FORCE ACCOUNT WORK - Where a satisfactory agreement cannot be reached relative to compensation for major alterations described above or for work for which no quantity or price is included in the proposal, it shall be done on force account basis upon written instructions from The County to be paid for in the following manner: The Contractor shall perform the work as directed by The County and shall receive the current local rate of wage for all labor, foremen, and superintendents in direct charge of the specific operation to which shall be added 15% of the sum thereof to cover the cost of administration and the use of small tools.

For all materials furnished and used by the Contractor, he shall receive the actual cost of such materials including transportation charges as shown by original receipted bills to which he shall add 15% of the sum thereof to cover administrative expense. For special equipment payment will be made on a rental basis at the rates agreed upon previously by the Contractor and The County.

The Contractor shall be allowed an additional amount equal to the premium for workmen's compensation insurance, social security, bond, or other similar State or Federal requirements specified by Law on the appropriate amount of the force account work. Should the Contractor fail to prosecute the work as directed, within what The County considers to be a reasonable time, The County may withhold payment of all current estimates until such refusal is eliminated or The County may proceed to have the work done in any manner deemed advisable without in any way violating the terms of this contract.

4. FINAL CLEANUP - Upon completion of the work and before final acceptance and payment shall be made, the Contractor shall remove from the improvement, approaches, and all adjacent property, all surplus and discarded materials, temporary structures or anything which may be considered to be objectionable to the property owners adjacent to this improvement. He shall leave the improvement and its surrounding area in a neat and presentable condition.

5. AUTHORITY OF THE COUNTY ENGINEER - To prevent misunderstanding and litigation, The Engineer, as representative of The County, shall decide any and all questions which may arise as to the quality and acceptability of material furnished and work performed and as to the manner of performance and rate of progress of said interpretation of the proposal, contract, and specifications. The Engineer shall determine the amount and quantity of the work performed under this contract and such decision shall be final and conclusive, and he shall have authority to enforce and make effective such decisions and other as the Contractor fails to carry out promptly.

The Contractor shall furnish the Engineer with every reasonable facility for determining whether or not the work performed and materials used are in accordance with the requirements and intent of the specifications and contract.

Upon request of the Engineer, the Contractor shall at anytime prior to the acceptance of the work, remove or uncover such portions of the finished work as may be directed. Upon exposure, if the work should prove acceptable, the cost of uncovering or replacing shall be paid for as "extra work". But, should the work so exposed prove unacceptable, the entire cost of uncovering or removing and replacing in a satisfactory manner shall be at the Contractor's expense.

CONTROL OF MATERIALS

1. SOURCE OF SUPPLY AND QUALITY OF MATERIALS - The source of supply of each of the materials to be used shall be approved in writing by the Engineer before delivery is started. The Engineer may require samples of all materials to be submitted for examination and tests. Only materials conforming to requirements of these specifications and approved by the Engineer shall be used in the work. The quality of materials shall be such as to be considered satisfactory when tested by the latest approved standard methods of sampling and testing. Upon instructions of the Engineer, the Contractor will be required to submit suitable evidence that the materials furnished by him are in accordance with the above provision.
2. DEFECTIVE MATERIALS - All rejected materials shall be removed immediately from the vicinity of the project.

LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

1. RESPONSIBILITY FOR DAMAGE CLAIMS - The Contractor shall indemnify and save harmless The County and all its representatives from all suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work or any act or omission of the said Contractor, or for any other reason occurring as a result of any act, omission, neglect or misconduct in the manner or method of executing said work during the period of construction and until such time as the improvement shall be formally accepted.

The Contractor shall observe and comply with all Federal and State Laws, By-Laws, Ordinances and Regulations in any manner affecting the conduct of the work, and shall indemnify and save harmless The County and its representatives against any claim arising from the violation of any such Law, By-Laws, Ordinance, or Regulation, whether by the Contractor, Subcontractors, or their employees.

2. PUBLIC CONVENIENCE AND SAFETY - The Contractor shall at all times conduct the work in such a manner as to insure the least obstruction to traffic practicable. The convenience of the general public and the residents along the improvement shall be provided for in an adequate and satisfactory manner. Fire hydrants shall be kept accessible to fire apparatus at all times.
3. BARRICADES, DANGER, WARNING, AND DETOUR SIGNS - The owner shall provide, erect, and maintain all necessary barricades, sufficient red lights, flares, danger signals and signs, provide a sufficient number of watchmen and take all necessary precaution for the protection of the work and safety to the public.
4. PRESERVATION OF MONUMENTS AND TREES - The Contractor shall be responsible for the preservation of all public and private property, trees, monuments, highway signs, markers, fences and curbs or other appurtenances, and shall use every precaution to prevent damage or injury thereto. Any expense necessary to provide adequate protection, whether such designated item be on or off the right of way, shall be assumed by the Contractor. Any curb or sidewalk or underground structure damaged by the Contractor during the operation shall be repaired in a satisfactory condition at his expense.

PROSECUTION AND PROGRESS

1. PROSECUTION OF WORK - The Contractor shall begin work promptly within ten (10) days following the notice to proceed and shall so prosecute the work that the entire improvement may be accomplished within the time limit specified. The Contractor shall notify the Engineer at least 48 hours before beginning work and shall consult with the Engineer concerning the method or prosecution, the point or points at which work shall begin and the type and condition of equipment to be used for each operation.

It shall be incumbent upon the Contractor to so schedule his work as to tie in with adjacent contracts or with subcontracts within the scope of this improvement. The Engineer shall determine the sufficiency of labor, materials, and equipment to effect satisfactory schedules of operation, and upon his instructions, the Contractor shall be required to secure additional equipment, labor, or materials as directed.

2. COMPETENT PERSONNEL - The Contractor shall employ only competent personnel and whenever, in the opinion of the Engineer, any workman is unfit to perform his task or does his work contrary to instructions, or conducts himself improperly, the Contractor shall discharge him immediately upon the Engineer's written request and not employ him again on the project without permission.

3. DETERMINATION OF "WORKING DAY" OR "CALENDAR DAY" - Whenever, in the opinion of the Engineer, weather or soil conditions are suitable for the prosecution of the work on a major item for five or more hours in any one calendar day, such day shall be considered a "WORKING DAY". Normally, Saturdays, Sundays and Legal Holidays shall not be charged against the contract working time, but only when used as a working day. Calendar days shall be every day shown on the calendar, Saturdays, Sundays, and Holidays included.

4. EXTENSIONS OF TIME - If the Contractor shall be delayed in the completion of the work by reasons and conditions beyond his control, he shall be granted an extension of time by The County to an extent compatible with the extent of delay.

5. LIQUIDATED DAMAGES - For each day that the work shall remain uncompleted after the time specified for completion, the sum per day, given in the following schedule shall be deducted by The County from monies due the Contractor, not as a penalty, but as liquidated damages.

<u>Amount of Contract</u>	<u>Amount of Liquidated Damages Per Day</u>
Less than \$10,000	\$ 80.00
\$10,000 and less than \$50,000	\$160.00
\$50,000 and less than \$100,000	\$240.00
Greater than \$100,000	\$400.00

6. CONTRACTOR'S INSURANCE - The Contractor shall take out and maintain during the life of this contract, Workmen's Compensation Insurance for all of his or any subcontractor's employees employed at the site of the work; and such Public Liability and Property Damage Insurance as shall protect him from claims which may arise from operations under this contract for personal injury (including accidental death) as well as for the property damage - whether such operations are by himself or by any subcontractor, or by anyone directly employed by them.

Public Liability Insurance shall be in an amount not less than \$500,000 for injuries, including wrongful death to any one person; and, subject to the same limit for each person, in an amount not less than \$1,000,000 on account of one accident.

Property Damage Insurance shall be in an amount not less than \$500,000 for damages on account of any one accident, and in amount not less than \$1,000,000 for damages on account of all accidents.

MEASUREMENT AND PAYMENT

1. MEASUREMENT OF QUANTITIES - The Engineer shall make final measurement to determine the quantities of various items of work performed as the basis of final settlement.

Pay weight for all items to be paid for by weight shall be determined by actual certified scale weight, certified shipping weight, or by computed weight as specified herein.

Materials specified for measurement by tallying of vehicles shall be hauled only in approved units, the carrying capacity of which has been pre-determined. Each hauling unit shall be marked to designate its approved capacity.

2. PARTIAL PAYMENTS - Partial payments shall be made monthly in an amount not greater than 90% of the money earned during the pay month. This monthly estimate will be prepared by the Engineer and shall be based on his estimate of work satisfactorily performed and complete in place.

3. ACCEPTANCE AND FINAL PAYMENT - When in the opinion of the Engineer, the Contractor has completed the work in a satisfactory manner in accordance with the terms of the contract, the Engineer shall make final inspection of the entire project and shall certify in writing to The County as to the completion of the work submitting with this report the final estimate showing the amount of each item of work performed and the value thereof.

The Contractor shall deliver (in a form satisfactory to the owner) a written report to the effect that all bills for labor, materials, and supplies have been paid or satisfactorily secured.

After The County has approved the final estimate and accepted the work, they shall notify the Contractor and his Surety of the acceptance and shall pay or cause to be paid to the Contractor the amount of money due under the contract.

SPECIAL CONDITIONS

1. For the purpose of bidding the Contractor shall assume 40 feet of pay length times the number of piles required for the bridge with the exception of 2 piles for test piles at 50 feet of pay length. If the total linear footage exceeds or comes under this amount, the contract amount shall be adjusted accordingly using the unit price submitted in the bid form. The Contractor shall be responsible for correct order number and length of piles to be used for the project. All piles must be a minimum length (tip to cut-off) of 40 feet.
2. Field treatment for abrasions, cuts and field drilled holes shall be per AWWA M4-84, Standard for The Care of Preservative Wood Products. Abrasions and cuts shall be thoroughly saturated with the field-treating solution. Drilled holes shall be completely filled with field-treating solution.
3. Bridge installation requires construction of cofferdam, dewatering and filter bag or sediment tank, such that work at the abutments are performed in dry conditions.
4. The bridge superstructure and pile caps shall be dowel laminated timber with glued laminated pile caps. The piles shall be concrete filled steel pipe piles.
5. Refer to bituminous paving specifications.
6. All new work shall be accomplished within the 30 ft. right-of-way. Special approval to be obtained by the contractor for work outside the right of way.
7. The Contractor shall install new metal vehicular approach railing as indicated, in accordance with Maryland SHA Standards and tie into existing. The County reserves all salvage rights to existing metal guard rail, posts, and hardware. Contractor to completely dismantle and set aside for pick up by County.
8. Select fill material for roadway embankment, stone and top soil shall be supplied by the Contractor.
9. The County will supply roll-off box for demolished materials.
10. The County will provide road closure and detour.
11. No work will be allowed in the stream from March 1 to June 15 of any year. The contractor shall maintain a low flow channel that will pass anadromous fish during the spring migratory season from February 15 to June 15 of any year.
12. A Notice to Proceed will be issued by February 8, 2027.

13. In awarding the Bid, the Commissioners reserve the right to reject any and all bids, waive formalities, informalities and technicalities therein, and take whatever bid they determine to be in the best interest of the County considering lowest or best bid, quality of goods and work, time of delivery or completion, responsibility of bidders being considered, previous experience of bidders with County contracts, or any other factors they deem appropriate.
14. No proposal will be considered unless accompanied by a "Proposal Guaranty", which shall be a certified check, irrevocable letter of credit or corporate bid bond made payable to the County in an amount not less than 5% of the total amount of the proposal using that alternate which gives the lesser total bid. Bid bond in form of AIA310 or equal.
15. The bidder to whom the contract is awarded will be required to furnish a contract bond in a form acceptable to The County in a sum equal to the full amount of the contract award. AIA312 document, certified check, cashier's check or approved equal.

SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing and grading subgrades for pavements.
 - 2. Excavating and backfilling for structures.
 - 3. Subbase course for pavements.
 - 4. Furnishing of borrow soil materials by owner.
 - 5. Removal and legal disposal of excavated materials by owner.

1.3 DEFINITIONS

- A. Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed as required.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- D. Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade and surface of a pavement or walk.
- E. Base Course: The layer placed between the subbase and surface pavement in a paving system.
- F. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at the Contractor's expense.
- G. Structures: Buildings, footings, foundations, retaining walls, slabs, manholes, catch basins, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.
- H. Utilities include on-site overhead utilities, underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

1.4 SUBMITTALS

- A. Submit for approval certified gradations, plasticity index and soil classification of each type of material proposed for use.
- B. Submit copies of all laboratory and field soil test results directly to the Engineer within 24 hours of completion of test.

1.5 QUALITY ASSURANCE

- A. Compaction:
 - 1. Top 12" of subgrade and each layer of backfill under structures, building slabs, steps, stone pavements, athletic courts and sidewalks, 95 percent maximum density, ASTM D 1557.
 - 2. Top 6" of subgrade and each layer of backfill under lawns or unpaved areas, 90 percent maximum density, ASTM D 1557.
- B. Testing Agency Qualifications: Comply with Division 1 Section AQuality Control.®

1.6 PROJECT CONDITIONS

- A. Contact Miss Utility at 1-800-441-8355 at least 48 hours prior to beginning installations.
- B. Existing Utilities: Do not interrupt existing utilities serving facilities occupied by the Owner or others except when permitted in writing by the Engineer and then only after acceptable temporary utility services have been provided. Provide a minimum 48 hours notice to the Owner and receive written notice to proceed before interrupting any utility.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide approved satisfactory borrow soil materials from off-site when sufficient approved soil materials are not available from excavations. Materials shall comply with the following specifications and Maryland State Highway Administration Standard Specification.
- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW, SC, SM and SP; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter. Satisfactory soil materials shall conform to Maryland State Highway Administration Standard Specification Section 916.01.01, Select Borrow.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, MH, ML, CH, CL, OL, OH, and PT.
- D. Backfill and Fill Materials: Satisfactory soil materials.
- E. Base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, conforming to Maryland State Highway Administration

Standard Specification Section 901 for Graded Aggregate Base.

- F. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate grading size 57 conforming to Maryland State Highway Administration Standard Specification Section 901.
- G. Pipe Bedding Material: Drainage fill.

2.2 ACCESSORIES

- A. Filter Fabric: Manufacturer's standard nonwoven pervious geotextile fabric of polypropylene, nylon or polyester fibers, or a combination. Supply Mirafi 140N or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- D. Tree protection is specified in the Division 2 Section "Site Clearing."

3.2 DEWATERING

- A. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
- C. All excavations must be kept free of water below the subgrade of the work while work is in progress. This may be accomplished by ordinary pumping methods or by well points, whichever will produce the required results. Upon removal of dewatering equipment, the Contractor shall backfill all holes and restore disturbed areas to their original condition.
- D. Dewatering for the structures and pipelines shall commence when groundwater is first encountered and shall be continued until such time as backfill has been completed. No concrete or pipe shall be laid in water nor shall water be allowed to rise over them until the concrete or mortar has set at least eight (8) hours. Groundwater shall not be allowed to rise around the pipe or structure until the trench is backfilled.
- E. The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction

without prior consent of the Engineer. Water shall be disposed of in such a manner as not to be a menace to the Public Health.

- F. In the event the Contractor's dewatering operations affect any water supplies within the project area, the Contractor shall take whatever steps that are required to provide uninterrupted water service.
- G. The Contractor shall remove any siltation deposits in storm sewer systems, resulting from his dewatering or construction operations.
- H. Contractor shall be responsible for conveyance of dewatering flows and for erosion and sediment control in conformance with local and state requirements.
- I. The cost associated with dewatering operations shall be included in the appropriate price bid. No extra compensation will be allowed.
- J. Contractor shall be responsible for obtaining well permits for dewatering and shall meet all applicable requirements. Contractor shall also obtain all necessary discharge permits as required for dewatering and for erosion and sediment control and shall comply with the requirements of all agencies having jurisdiction thereof.

3.3 EXCAVATION

- A. Explosives: The use of explosives shall not be permitted on this project.
- B. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.
- C. Excavated materials shall be segregated as they are excavated, with the suitable and unsuitable materials and topsoil being piled separately. All suitable materials shall be used for backfill. Suitable wet materials shall be dried to optimum moisture content at the Contractor's expense and be used for backfill. All unsuitable materials shall be removed, at the Contractor's expense, and disposed of at a location approved by the Engineer. No excavated material shall be deposited at any time so as to endanger partly finished structures either by direct pressure, or indirectly by overloading banks contiguous to the operation.
- D. The Contractor shall be responsible for the condition of all excavations made by him. All slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.

3.4 STABILITY OF EXCAVATIONS

- A. The Contractor shall furnish and install all sheeting, shoring, and bracing necessary to insure safe working conditions, to prevent subsiding of earth and caving embankments, and to prevent damage to public and private property and structures. The Contractor is responsible for obtaining proper design of such protective systems. The Contractor shall employ an on-site "Competent Person" as defined by OSHA 1926.650 (b), who is responsible for, but not limited to: the locations and protections of underground installations; recognize and control hazards due to water accumulation; daily inspections of excavations, adjacent areas and protective systems; determine the impact of distress and/or surcharge loads and adjust the

protective systems accordingly.

- B. Sheeting, shoring, and bracing and other protective systems shall be removed as backfilling progresses, except at such locations as the Engineer may direct or approve it to be left in place.
- C. The conditions of all excavations made by the Contractor shall be the responsibility of the Contractor. No extra compensation will be allowed for property damage, injury or loss of time, due to excavation slides or cave-ins at any time under any circumstances.
- D. The Contractor shall cut off any sheeting left in place, at least eighteen (18) inches below finished grade, and shall remove the material cut off without compensation.
- E. Where necessary, in quicksand, soft ground, or for the protection of any structure or property, sheeting shall be driven to such depth below the bottom of the trench as may be required to protect all existing and/or proposed work.
- F. The cost for furnishing, placing and removal of sheeting, shoring, or bracing shall be included in the prices bid.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1.2 inches. Extend excavations a sufficient distance and as shown on the drawings from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.
- B. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.6 EXCAVATION FOR PAVEMENTS

Excavate surfaces under pavements to indicated cross sections, elevations, and grades.

3.7 APPROVAL OF SUBGRADE

- A. Notify testing agency when excavations have reached required subgrade.
- B. When the testing agency determines that unforeseen unsatisfactory soil is present, the Contractor shall continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade with fully loaded tandem axle dump truck or equal load approved by testing agency. The Contractor shall remove all subgrade soils where pumping occurs. The extent of excavation is to be determined by the testing agency at the time of proof-rolling.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Engineer.

3.8 UNAUTHORIZED EXCAVATION

Fill unauthorized excavation under foundations by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to the Engineer.

3.9 STORAGE OF SOIL MATERIALS

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water.
- B. Stockpile soil materials away from edge of excavations. Do not store within dripline of remaining trees.

3.10 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
 - 1. Surveying locations of underground utilities for record documents.
 - 2. Testing, inspecting, and approval of underground utilities.
 - 3. Concrete formwork removal.
 - 4. Removal of trash and debris from excavation.
 - 5. Removal of temporary shoring and bracing, and sheeting.

3.11 FILL

- A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.
 - 1. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.
- B. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and recompact to required density.
- C. Place fill material in layers to required elevations for each location listed below.
 - 1. Under grass, use satisfactory excavated or borrow soil material.
 - 2. Under walks and pavements, use subbase or base material, or satisfactory excavated or borrow soil material as shown.

3.12 MOISTURE CONTROL

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

- a. Spread and dry removed wet satisfactory soil material.

3.13 COMPACTION

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557:
 - 1. Under structures, and pavements, compact the top 12 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.
 - 2. Under walkways, compact the top 6 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.
 - 3. Under lawn or unpaved areas, compact the top 6 inches below subgrade and each layer of backfill or fill material at 90 percent maximum dry density.

3.14 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between existing adjacent grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and other structures and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 0.10 foot.
 - 2. Walks: Plus or minus 0.10 foot.
 - 3. Pavements: Plus or minus 2 inch.

3.15 SUBBASE AND BASE COURSES

- A. Under pavements, place subbase course material on prepared subgrades. Place base course material over subbases to pavements.
 - 1. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections and thickness to not less than 95 percent of ASTM D 1557.
 - 2. Shape subbase and base to required crown elevations and cross-slope grades.
 - 3. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
 - 4. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches

thick when compacted.

3.16 FIELD QUALITY CONTROL

- A. Perform field in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2937 (drive cylinder method), as applicable.
 - 1. Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D 3017.
- B. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Engineer.
- C. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.
- D. Engage testing agency to perform field quality control testing.

3.17 PROTECTION

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

END OF SECTION

SECTION 02411

STEEL SHEETPILE BULKHEAD

PART 1 - GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all plant, equipment, labor and materials and performing all operations in connection with the installation of Contractor furnished steel sheet piling in accordance with these specifications and applicable drawings.

1.2 RELATED WORK SPECIFIED ELSEWHERE

Division 3 - "Composite Piles"
Division 3 - "Cast-in-Place Concrete"

1.3 REFERENCES

The following standards of the issues listed below and referred to thereafter by basic designation only form a part of this specification to the extent indicated by the references thereto:

AMERICAN SOCIETY FOR TESTING AND MATERIAL (ASTM)
STANDARDS

A6/A6M	(2001) Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
A36/36M	(2000a) Standard Specification for Carbon Structural Steel
A588/588M	High Strength Low Alloy Structural Steel with 50ksi Minimum Yield Point
A690/690M	(2000) Standard Specification for High-Strength Low-Alloy Steel H-Piles and Sheet for Use in Marine Environments
A325	Structural Bolts Steel Heat Treated 120/105 ksi Minimum Tensile Strength

1.4 QUALITY ASSURANCE

Requirements for material test, workmanship and other measures for quality assurance shall be as specified herein.

A. Material Tests

Sheet piling and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical and section property requirements prior to delivery to the site.

B. Submittals

The Contractor shall submit descriptions of sheet piling driving equipment, shop drawings, test procedures, test reports and certificates, sheet piling driving records and other submittals to the Engineer for approval as required. Submittals and associated work not satisfactory to the Engineer will be rejected.

C. Equipment Descriptions

Complete descriptions of sheet piling driving equipment including hammers, extractors protection caps and other installation appurtenances shall be submitted for approval prior to commencement of work. The vibratory driver/extractor shall have a minimum driving force of 65 tons and extraction of 30 tons.

D. Shop Drawings

Shop Drawings for sheet piling, including fabricated sections, shall be submitted for approval and shall show complete piling dimensions and details, driving sequence and location of installed piling. Shop drawings shall include details and dimensions of templates and other temporary guide structures for installing piling, and shall provide details of the method of handling piling to prevent permanent deflection, distortion or damage to piling interlocks.

E. Materials Test Certificates

Materials test certificates shall be submitted for each shipment and identified with specific lots prior to installing piling. Identification data should include piling type, dimensions, section properties, heat analysis number, chemical composition, mechanical properties and mill identification mark. Test reports should comply with ASTM A6, paragraph 18.13.

F. Driving Records

Records of the sheet piling driving operations shall be submitted after driving is complete. These records shall provide a system of identification which shows the disposition of approved piling in the work, driving equipment performance data, piling penetration rate data, piling dimensions and top and bottom elevation of installed piling.

1.5 QUALITY CONTROL

A. General

The Contractor shall establish and maintain quality control for pile driving operations to assure compliance with contract specifications and maintain records of his quality control for all construction operations including, but not limited to, the following:

- (1) Accurate location, alignment and plumbness of piling.
- (2) Full and proper engagement of interlocks.

- (3) Driving (pile hammer and rate of operation).
- (4) Final position; depth of penetration; tip and cut-off elevations.
- (5) Up lift and vertical tolerances after driving.
- (6) Location and elevation of any obstruction encountered and action directed by the Engineer.
- (7) Pulled piles and redriving.
- (8) Length of cover plate and weld size.
- (9) Manufacture and driving of fabricated sections.
- (10) Cutting
- (11) Stockpiling and storage.
- (12) Removal and disposal of damaged piles.

B. Reporting

The original and two copies of these records and tests, as well as the records of corrective action taken, shall be furnished to the Engineer daily.

C. Delivery, Storage and Handling

Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. The manufacturer's logo and mill identification mark shall be provided on the sheet piling as required by the referenced specifications. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage to the interlocks. Storage of sheet piling should also facilitate required inspection activities.

PART 2 - MATERIALS

2.1 STEEL SHEET PILING

Steel for sheet piling shall conform to the requirements of ASTM A 690. Sheet piling, including special fabricated sections, shall be of the type and dimensions indicated on the drawings, and be of a design such that when in place they will be continuously interlocked throughout their entire length. Cold-rolled sheet piling shall not be allowed. All sheet piling shall be provided with standard pulling holes located approximately 4-inches below the top of the pile, unless otherwise shown or directed. Piling as specified shall have the properties equivalent to those listed in the following table.

PROPERTIES OF SECTIONS

Type of section	Nominal web thickness (inches)	Section modulus (in ³ /ft of wall)	Moment of inertia (in ⁴)	Nominal section depth (inches)	Minimum interlock strength (lbs/lin in)	Theoretical driving width (inches)
PZ-22	0.375	18.1	154.7	9 (+/-)	N/A	22
PZ-27	0.375	30.2	276.3	12 (+/-)	N/A	18

A. Sheet Piling Lengths

All new sheet piling shall be provided in full lengths.

B. Rolled Corners

Rolled corners, formed with new sheet piling, shall be of the types and dimensions show on the drawings. Any proposed variations from the details shown on the drawings shall be submitted for approval of the Engineer. The sheet pile types shall be as required for the corners being manufactured and shall conform to the requirements of ASTM A 690 and all other requirements stated above for new piling.

2.2 STEEL WALES

A. Steel for wales, channels and plates, shall be ASTM A 588, hot dipped galvanized in accord with ASTM A 123, 2.0 OZ/SF of coating.

B. Bolts and hardware shall be ASTM A 307, hot dipped galvanized in accord with ASTM A 153, 2.0 OZ/SF of coating.

2.3 PAINT

A. Paint: Denso Protal 650 CTR or approved equal.

B. General: Shop paint steel sheet pile surfaces, except for surfaces to be encased in concrete, as follows:

1. Extend painting to a depth of 60 inches (1524 mm) below channel bottom from top of pile and a minimum of 10 feet.

C. Surface Preparation: Clean surfaces to be painted. Remove loose rust and loose mill scale, spatter, slag, and flux deposits. Prepare surfaces according to SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning". Achieve a 2 to 4 mil anchor profile.

D. Painting: Immediately after surface preparation, apply coat of paint according to manufacturer's written instructions to provide a dry film thickness of not less than 8 mils (0.2 mm) per coat.

1. Apply second and third coats with each coat having a dry film thickness of not less than 8 mils, resulting in a three-coat paint system thickness of not less than 26 mils.
2. Mark pile lengths after shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Placing and Driving

1. Placing

Any excavation required within the areas where sheet pilings are to be installed shall be completed prior to placing sheet pilings. Pilings shall be carefully located as shown on the drawings or directed by the Engineer. Pilings shall be placed as true to line as possible. Suitable temporary wales, templates, or guide structures shall be provided to insure that the piles are placed and driven to the correct alignment. Piles shall be placed in a plumb positions with each pile interlocked with adjoining piles for its entire length, so as to form a continuous diaphragm throughout the length of each run of piling wall. Interlocks shall be properly engaged. Utilize protective caps to protect ends of sheets from damage during driving operations.

2. Driving

All piles shall be driven to the depths shown on the drawings and shall extend to the cut-off elevation indicated. A tolerance of 1 ½-inches above the indicated cut-off elevation will be permitted. Pilings shall be driven by approved methods so as not to subject the pilings to damage and to insure proper interlocking throughout their lengths. Pile hammers shall be maintained in proper alignment during driving operation by use of leads or guides attached to the hammer. A protecting cap shall be employed in driving, when required, to prevent damage to the tops of pilings. Pilings damaged during driving or driven out of interlock shall be removed and replaced. All piles shall be driven without the aid of water jet, unless otherwise authorized. Adequate precautions shall be taken to insure that piles are driven plumb. Sheet piling shall not be driven more than 1/2-inch per 10 foot out of plumb in the plane of the wall nor more than 1-inch per 100 foot out of horizontal alignment. Unless specifically indicated otherwise each run of piling wall shall be to grade progressively from start to finish and piling in each run shall be driven alternately in increments of depth to the required depth or elevation. On each day of sheet pile driving, the Contractor shall stab only the number of piles that can be driven to grade by the end of each working day except that the last two piles may remain tapered up to receive the next days piles. No pile shall be driven to a lower elevation than those behind it in the same run except when the piles behind it cannot be driven deeper or in areas where there will be wall penetrations or obstructions are encountered. In this case, piling will be allowed to remain above final grade until the obstruction is removed or the penetration is completed. Alternately, if it is determined that an obstruction cannot

be removed, the Contractor shall make such changes in design alignment of the pile structure as may be deemed necessary by the Engineer to insure the adequacy and stability of the structure. If the piling next to the one being driven tends to follow below final grade, it may be pinned to the next adjacent piling. The Contractor is advised that debris may be encountered periodically on the sheet pile wall alignment and appropriate consideration should be given to hard driving conditions should they occur. Piles shall not be driven within 100-feet of concrete less than 7 days old nor within 30-feet of concrete less than 28 days old.

B. Emergency Locking System on Pile driving Head

All pile driving equipment shall be equipped so as to prevent piles from falling when a single or multiple power failure occurs after pile driving head is attached to the pile. The jaws of vibratory hammers shall be equipped with devices such that upon loss of hydraulic pressure, the jaws will not release the pile.

C. Cutting Off

Piles extending above grade in excess of the specified tolerance, and which cannot be driven deeper, shall be cut off to the required grade. The Contractor shall also trim the tops of piles excessively battered during driving, when directed to do so, at no cost to the Owner. Cut-offs shall become the property of the Contractor and shall be removed from the worksite. The Contractor may cut holes in the piles for bolts, rods, drains or utilities at locations and of sizes shown on the drawings or as directed. All cutting shall be done in a neat and workmanlike manner. Bolt holes in steel piling shall be drilled or may be burned and reamed by approved methods, which will not damage the remaining metal. Holes, other than bolt holes, shall be reasonably smooth and of the proper size for rods and other items to be inserted.

D. Holes for Rods and Bolts.

Holes for rods and bolts shall be reamed to not more than 1/8" greater than the normal bolt diameter. Holes 3/4" or smaller shall be accomplished by drilling or punching. All reaming and drilling shall be done in a neat and workmanship manner which will not injure the remaining metal. All welding slag and melted material protruding above the surface of the sheet shall be removed. Holes produced by reaming are subject to the approval of the Engineer. Any sheets damaged or with irregular or oversized holes shall be replaced at the Contractor's expense. Upon completion of reaming, the area shall be coated with Scotch Clad 244 in accordance with the manufacturer's directions and as directed by the Engineer.

E. Inspection of Driven Piling

The Contractor shall inspect the interlocked joints of driven pilings extending above ground. Pilings found to be damaged or driven out of interlock shall be removed and replaced.

F. Pulling and Redriving

The Contractor may be required to pull selected piles after driving, for test and inspection to determine the condition of the piles. Any pile so pulled and found to be damaged to the extent that its usefulness in the structure is impaired shall be removed from the work and the Contractor shall furnish and drive a new pile to replace the damaged pile. Piles pulled and found to be in satisfactory condition shall be redriven.

G. Void Backfill

Where voids adjacent to the steel sheet piling are induced by pile driving or pulling operations, the Contractor shall pump out all seepage and rainwater and backfill with a tremie-pumped slurry. The slurry shall consist of one part cement, two parts bentonite and six parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids but have at least 12 pounds of solids per gallon.

H. TOUCHUP PAINTING

1. Clean field welds, splices, and abraded painted areas and field-apply paint according to SSPC-PA 1. Use same paint and apply same number of coats as specified for shop painting.
2. Apply touchup paint before driving piles to surfaces that are immersed or inaccessible after driving.

END OF SECTION

TIMBER PANEL-LAM VEHICULAR BRIDGE

PART 1 – GENERAL

1.01 SCOPE

- A. The Contractor shall be responsible for designing, detailing, fabrication, delivery, construction and erection of the Timber Panel-Lam Vehicular Bridge superstructure.
- B. Substructures are not part of this item.

1.02 UNIT PRICES

- A. Payment for “Design/Build Timber Panel-Lam Vehicular Bridge” shall be compensation in full for all costs of design, supply, fabricating, and installation for Timber Panel-Lam Vehicular Bridge superstructure.

1.03 REFERENCES

- A. AASHTO LRFD Bridge Design Specifications, current edition and interims
- B. American Wood Protection Association (AWPA) Standards, current edition
- C. American Wood Council (AWC) National Design Specifications (NDS) for Wood Construction
- D. American Institute for Timber Construction (AITC), Timber Construction Manual
- E. Structural Glue-Laminated Timber American National Standards Institute A 190.1, latest edition, (Supplier shall provide A.I.T.C. or A.P.A. Certification).

PART 2 - DESIGN

2.01 TIMBER PANEL-LAM VEHICULAR BRIDGE

- A. Panel-Lam Vehicular Bridge shall be a longitudinal timber deck panel system as designed and furnished by Wheeler, or approved equal.
 Wheeler
 9531 W 78th Street
 Suite 100
 Minneapolis MN 55344
 (952) 929-7854
 email: info@wheeler1892.com
- B. Longitudinal deck panels shall be dowel-laminated and span between supports. Deck width shall be comprised of multiple panels.
- C. Ship-lapped joint connections between adjacent panels must be provided. Ship-lapped joints must be secured with drive spikes. Number and spacing of drive spikes shall be shown on design plans. Transverse spreader beams connecting multiple panels shall be provided and secured through the deck panels with bolts and locking hardware.

- D. Design shall be in accordance with current AASHTO specification, all current interims and the following criteria:
1. Bridge dimensions:
Multiple spans shall be as indicated on the drawings.
Clear Roadway Width shall be 22 feet as measured between inside face of railing/curb.
 2. All dead loads, applied dead loads, live loads, and wind loads as specified in the AASHTO specification, including bituminous paving.
 3. Live Load:
 - HL-93 Vehicle
 - H15 Vehicle
 - T3 (Dump Truck) Vehicle
 - T4 Reduced Lift Axle Vehicle
 - HS Vehicle
 - 3S2 Vehicle
 - 150K Vehicle
 - 90K Permit Combination Vehicle
 - 90K Mobile Crane Vehicle
 - 90K Cargo Vehicle
 - 120K Vehicle
 - 108K Mobile Crane Vehicle
 - 120K Mobile Crane Vehicle
 2. Deck deflection: Shall not exceed 1/500 of span under live loads:
 3. Individual panel dimensions shall be determined by manufacturer.
 4. Panel thickness, species and grade of timber shall be determined by manufacturer. Minimum sizes are specified on the drawings.
- E. Design and supply of materials for proper longitudinal deck panel connection to bridge substructure shall be the responsibility of the manufacturer.
- F. A crowned asphalt wear surface installed over the top of deck panels shall be included and incidental to the deck system. The asphalt shall be a minimum 1 ½ inches thick with a minimum 2% cross slope to provide drainage.

2.02 TIMBER RAILING

- A. Timber rail system shall be included as part of longitudinal deck panel system.
- B. Rail system shall be crash-tested to Performance Level 1 (PL-1) in accordance with NCHRP Report 230 at minimum.
- C. Connection of rail components must be to the longitudinal deck panels only. No connection of rail components to substructures will be permitted.

PART 3 – MATERIALS

3.01 STRUCTURAL TIMBER

- A. This section shall include only such lumber and timber, as is part of the completed work. It shall not include falsework, forms, bracing, sheeting or other lumber and timber used for erection purposes.
- B. Lumber and timber shall meet the requirements of AASHTO M168. All glue-laminated members shall be bonded with exterior “wet-use” conforming to ASTM D 2559
- C. Knotholes and holes from causes other than knots shall be measured and limited as provided for knots. All visible pieces of lumber and timber having knots that are unsightly in appearance shall be rejected. Cluster knots and knots in groups are not permitted.
- D. Only pieces consisting of sound wood free from any form of decay shall be accepted. No piece of exceptionally light weight shall be accepted.
- E. Lumber and timber shall conform to the dimensions specified for either rough or surfaced stock.
- F. Lumber and timber to be graded as per WWP Western Lumber Grading Rules or SPIB Standard Grading Rules as applicable.

3.02 PRESERVATIVE TREATMENT

- A. This section covers the wood preservatives and the preservative treatment of lumber and timber conforming to the Specifications as referenced or otherwise specified in the plans or special provisions. Temporary bracing shall not require preservative treatment.
- B. Preservative treatment of lumber and timber shall be by the pressure process, and unless otherwise provided in the contract special provisions, be in accordance AWWA Standards and AASHTO Designation M 133.
- C. Lumber and timber shall be treated with Copper Naphthenate in Type A Hydrocarbon Solvent in accordance with AWWA P-36 and HSA-14 with retentions to meet AWWA UC4C.
- D. Unless otherwise directed by the Engineer the material shall be graded prior to treatment. Material shall be accepted after treatment on the basis of its condition prior to treatment, on the basis of inspection of the treatment procedure substantiated by plant records, on the condition of the material after treatment and on absorption, penetration and visual inspection.
- E. So far as practicable all adzing, boring, chamfering, framing, gaining, mortising, surfacing and general framing, etc., shall be done prior to treatment. If cut after treatment, coat cut surfaces according to AWWA M4.
- F. All Douglas Fir and other species that are difficult to penetrate shall be incised prior to treatment.

3.03 HARDWARE

- A. All hardware (machine bolts, carriage bolts, drift pins, lag screws, dowels, rods, nails, spikes, washers, connectors, etc.) shall conform to ASTM 307-97.
- B. Unless a Dome Head Bolt or approved equal is used, all bolt heads or tightening nuts in contact with Structural Timber and lumber shall have a washer of sufficient thickness and bearing area to ensure a minimum deformation of the contacted surface when tightened to develop not more than the maximum allowable tensile stress of that bolt
- C. Bolt heads or tightening nuts in contact with metal surfaces shall have a cut washer or approved equal placed between the bolt head or nut and the metal surface.
- D. All hardware shall be hot-dipped galvanized in accordance with AASHTO M111-91.

PART 4 – SUBMITTALS

4.01 PLANS AND CALCULATIONS

- A. Detailed plans and design calculations of the longitudinal timber deck panel system sealed by a professional engineer registered in the State of Maryland and experienced in timber bridge design, shall be submitted to the Owner within 2 weeks after award of contract. Calculations shall verify species, size and grade of materials to be used in the manufacture of longitudinal dowel-laminated deck panels.
- B. Bridge supplier to submit a letter and load rating calculations stating that the bridge components, as supplied, meet or exceed Maryland State Highway Load requirements, these specifications and shall be certified by a professional engineer registered in the State of Maryland.

4.02 TIMBER CERTIFICATION

- A. Solid sawn timber members shall conform to the requirements of the grading rules agency for the species, type, and grade specified in the plans or special provisions. Glued-Laminated members shall conform to the American Institute of Timber Construction 117-201 for the combination, species, use, and appearance as specified in the plans or special provisions. A Grading Agency Certification is required on all timber material.
- B. The manufacture shall be regularly engaged in the production of the specified product or item and be able to furnish independent records or references of competence and satisfaction of this fact upon the request of the Owner.

PART 5 – QUALITY ASSURANCE

5.02 MANUFACTURE

- A. All material shall be well manufactured. All lumber and timber shall be straight, well sawed, sawed squared at ends and have opposite surfaces parallel unless otherwise required by the plans and specifications.
- B. Deck panels shall be assembled with 3/8" diameter ring shank dowels. All dowels are to be simultaneously driven with equal force using a mechanical press the full length of the deck, ensuring all heads are flush with the surface of the timber plank. Multiple impact tools are not to be used to set dowels because of potential for wood fiber rupture.
- C. Deck panels to be delivered to jobsite after being fully assembled at fabrication plant.
- D. All plank for deck panels shall be precision end trimmed to length with 1/4" underlength and no overlength tolerance permitted.

5.03 WORKMANSHIP

- A. Workmanship shall be first class throughout. Nails and spikes shall be driven with sufficient force to set the heads flush with the surface of the wood, thus ensuring the surface shall be free from deep or frequent hammer marks.
- B. Proper pre-drilling of holes for screws, nails, spikes, lags or bolts where necessary to avoid splitting of timber will be required.
- C. Liberally treat all cut surfaces and field drilled holes with a Copper Napthenate solution in accordance with Item 2.4, "Preservative Treatment".
- D. All deck panels shall be fabricated and erected such that any gap between adjacent panels is 3/8" maximum in width. Any gap greater than 3/8" is reason for rejection of panels. Panels shall be adjusted or replaced to meet this specification at no cost to the Owner.

5.04 HANDLING

- A. Lumber and timber shall be handled with sufficient care to avoid breaking through portions penetrated by treatment, and thereby exposing untreated wood. Chains, peavies, cant hooks, pickaroons, timber dogs, pike poles and other pointed tools that would burr, blemish, penetrate or permanently deform the contacted member shall not be used. Rope, rubber or fabric slings only shall be used.

END OF SECTION

SECTION 03162 - COMPOSITE PILES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes concrete-filled steel pipe piles.

1.2 UNIT PRICES

- A. Contract Sum: Base Contract Sum on number and dimensions of piles indicated from tip to cutoff, plus not less than 12 inches (305 mm) of overlength for cutting piles at cutoff elevations.
- B. Work of this Section is affected as follows:
 - 1. Additional payment for pile lengths in excess of that indicated, and credit for pile lengths less than that indicated, is calculated at unit prices stated in the Contract, based on net addition or deduction to total pile length as determined by Engineer and measured to nearest 12 inches (305 mm).
 - a. Splices required to extend pile lengths shall be included in the unit prices stated in the Contract.
 - 2. Additional payment for number of piles in excess of that indicated, and credit for number of piles less than that indicated, is calculated at unit prices stated in the Contract.
 - 3. Unit prices include labor, materials, tools, equipment, and incidentals for furnishing, driving, cutting off, capping, and disposing of cutoffs.
 - 4. Test piles that become part of permanent foundation system are considered as an integral part of the Work.
 - 5. No payment is made for rejected piles, including piles driven out of tolerance, defective piles, or piles damaged during handling or driving.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For composite piles. Show fabrication and installation details for piles, including splices and tip details.

1.5 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Concrete design mixes.
- C. Material certificates.
- D. Material test reports.
- E. Pile-Driving Equipment Data: Include type, make, and rated energy range; weight of striking part of hammer; weight of drive cap; and, type, size, and properties of hammer cushion.
- F. Pile-driving records.
- G. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Comply with requirements in ACI 301, "Specifications for Structural Concrete."
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel"
 - 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."
 - 3. AWS D1.4/D1.4M, "Structural Welding Code - Reinforcing Steel."

PART 2 - PRODUCTS

2.1 STEEL PIPE PILES

- A. Steel Pipe: ASTM A 252, Grade 2; seamless or welded. Outside diameter of 12 inch with wall thickness of 0.375 inch.
- B. Pipe Coating: Denso "Environmentally Friendly" Protal 650 CTR or approved equal. Coating thickness shall be 20 mils, measured using wet-film thickness gage. Prepare steel for coating by grit blasting to a clean near white finish SSPC-SP10 or NACE No. 2. For coating adhesion surface profile shall be 2.0 to 4.0 mil after blasting.
- C. Splash Zone Protection: Denso Marine Tape and bolted HDPE outer cover Seashield Series 2000 HD or approved equal.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or II.
 - 1. Fly Ash: ASTM C 618, Class C or F.
 - 2. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33/C 33M, uniformly graded, 3/4-inch (19-mm) maximum aggregate size. Provide aggregates from a single source.
- C. Water: Potable, complying with ASTM C 94/C 94M requirements.
- D. Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent chloride ions by mass of cementitious material.
 - 1. Air-Entraining Admixture: ASTM C 260/C 260M.
 - 2. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 3. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 4. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 5. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

2.4 PILE ACCESSORIES

- A. Driving Points: Manufacturer's standard flat driving point, with integral reinforcing ribs, to provide full bearing of pipe pile tip. Fabricate from steel castings as follows:
- B. Splice Coupling: Manufacturer's standard splice coupling, rolled from ASTM A 36/A 36M, carbon-steel bar or cast from heat-treated carbon steel, ASTM A 27/A 27M, Grade 65-35 (Grade 450-240), with interior stop and internally tapered for friction fit driving.

2.5 CONCRETE MIXES

- A. Prepare concrete design mixes according to ACI 301, determined by either laboratory trial batch or field test data basis.
 - 1. Use a qualified testing agency for preparing and reporting proposed mix designs determined by laboratory trial batch.
- B. Proportion mixes according to ACI 301 to provide normal-weight concrete suitable for piles with the following properties:
 - 1. Compressive Strength (28 Days): 5000 psi (34.5 MPa).
 - 2. Maximum Water-Cementitious Material Ratio at Point of Placement: 0.45.
 - 3. Slump Limit: 5 inches (127 mm), plus or minus 1 inch (25 mm).
 - 4. Air Content: 3.5 to 5.5 percent.

2.6 FABRICATION

- A. Fabricate full-length piles to eliminate splicing during driving.
- B. Fabricate full-length piles by splicing pile lengths together. Maintain axial alignment of pile lengths. Maintain structural properties of pile across splice.
- C. Fit and weld driving points to tip of pile according to manufacturer's written instructions and AWS D1.1/D1.1M for procedures, appearance and quality of welds, and methods used in correcting welding work.
- D. Pile-Length Markings: Mark each pile with horizontal lines at 12-inch (305-mm) intervals; label the distance from pile tip at 60-inch (1524-mm) intervals. Maintain markings on piles until driven.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with ASTM C 94/C 94M.
 - 1. Do not add water to concrete mix after mixing.
 - 2. Maintain concrete temperature to not exceed 90 deg F (32 deg C).

PART 3 - EXECUTION

3.1 STEEL REINFORCEMENT

- A. Comply with recommendations in CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Fabricate and install reinforcement cages symmetrically about axis of pile pipe in a single unit.

3.2 CONCRETE PLACEMENT

- A. Place concrete in a continuous operation and without segregation immediately after cleaning out pile pipe.
- B. Place concrete by means of bottom discharge bucket, flexible drop chute, or steep-sided funnel hopper or tremie or pump concrete into place.
- C. Place concrete in a dry pile pipe unless placement underwater is approved by the Engineer.
- D. Consolidate final 10 feet (3 m) of concrete during placement to ensure that concrete is thoroughly worked around steel reinforcement and into corners.

3.3 DRIVING PILES

- A. General: Continuously drive piles to elevations or penetration resistance indicated. Establish and maintain axial alignment of leads and piles before and during driving.
- B. Heaved Piles: Redrive heaved piles to tip elevation at least as deep as original tip elevation with a driving resistance at least as great as original driving resistance.
- C. Pile Splices: Splice piles during installation and align pile segments concentrically.
- D. Driving Tolerances: Drive piles without exceeding the following tolerances, measured at pile heads:
 - 1. Location: 2 inches from location indicated after initial driving, and 4 inches after pile driving is completed.
 - 2. Plumb: Maintain 1/2 inch in 48 inches from vertical, or a maximum of 2 inches, measured when pile is aboveground in leads.
 - 3. Batter Angle: Maximum 1/2 inch in 48 inches from required angle, measured when pile is aboveground in leads.
- E. Excavation: Clean out steel pipe pile by removing soil and debris from inside pile before placing steel reinforcement or concrete.
- F. Cut off tops of driven piles square with pile axis and at elevations indicated.
- G. Pile-Driving Records: Maintain accurate driving records for each pile.
- H. Protection: Piles shall receive splash zone protection, Denso Marine Piling Tape and Seashield 2000 HD or equal. Apply splash zone protection in strict accord with manufacturer's written specifications.

3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
 - 1. Pile foundations.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. Tests and Inspections:
 - 1. Dynamic Pile Testing: High-strain dynamic monitoring shall be performed and reported according to ASTM D 4945 during initial driving and during restriking on (4) single piles, (1) per abutment and (2) in the channel.
 - 2. Low-strain integrity measurement shall be performed and reported for each pile.
 - 3. Weld Testing: In addition to visual inspection, welds shall be tested and inspected according to AWS D1.1/D1.1M.
 - 4. Concrete: Sampling and testing of concrete for quality control shall include the following:

- a. Sampling Fresh Concrete: ASTM C 172/C 172M, except modified for slump to comply with ASTM C 94/C 94M.
 - 1) Slump: ASTM C 143/C 143M; one test at point of placement for each compressive-strength test, but no fewer than one test for each concrete load.
 - 2) Compressive-Strength Tests: ASTM C 39/C 39M; one set for each truck load. One specimen shall be tested at seven days, two specimens shall be tested at 28 days, and one specimen shall be retained in reserve for later testing if required.

END OF SECTION 03162

SECTION 03212
BITUMINOUS PAVING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Bituminous Paving Section:
- B. Related Sections:
 - 1. Section 02300 "Earthwork"
 - 2. Materials and methods of construction shall be in accord with Section 504 of the Maryland State Highway Administration Standards and Specifications section 504.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Gradation for stone and bituminous concrete.
 - 2. Product descriptions.
 - 3. Design mix for bituminous concrete.
 - 4. Materials certification.

1.04 SITE CONDITIONS

- A. Paving operations can be performed with the following conditions:
 - 1. 32 degrees and rising for any hot mix base course.
 - 2. 40 degrees and rising for any hot mix surface course.
 - 3. Neither base nor surface shall be applied on a frozen subgrade, despite allowable ambient temperatures noted above.
 - 4. Construct hot-mixed asphalt paving when base is dry and free of standing water.
- B. Grade Control: Establish and maintain required lines and elevations as shown on the drawings.

1.05 QUALITY ASSURANCE

- A. General: Test finish surface of each bituminous concrete course for smoothness using 10'

straight edge applied parallel to and at right angles to the centerline of the paved area. Surfaces will not be acceptable if exceeding the required surface smoothness listed below. In addition, paving will not be acceptable if exceeding the variations from required thickness listed below.

B. Construction Tolerances for Paving:

1. Graded Aggregate Sub-base Course:
 - a. Thickness: Within 1/2" inch.
2. Bituminous Concrete Base and Surface Courses:
 - a. Grades: Within 1/2 inch.
 - b. Thickness: Within 1/4 inch.
 - c. Positive drainage shall not be compromised

C. Contractor shall engage a testing agency to perform field quality control testing.

1. The Owner or authorized representative or an approved independent testing agency must witness a proof-roll test on a prepared subgrade to determine suitability for installation of bituminous base course. Test shall be performed using a loaded tandem axle dump truck driven slowly and where directed by the Inspector. Forty-eight hours advance notice must be given for the Owner to consider their attendance or defer to observations of the testing agency.
2. Two (2) samples shall be taken as specified in Maryland Department of Transportation Office of Materials Technology, Maryland Standard Method of Test (MSMT) number 451 and tested as specified in MSMT 452.
3. Testing Agency shall witness all surface paving.
 - a. Testing agency shall provide a written report of observations including date, location, time of witnessed installation, ambient temperature, material temperature, specific weight of asphalt being installed, and compaction achieved based on a percent of maximum dry density.
 - b. Contractor shall ensure the Owner is supplied with a copy of all written field reports.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations. Materials and methods of construction shall be in accordance with the following specification. Where reference is made to Maryland State Highway Administration (MSHA) specification, it shall mean the "Standard Specification for Construction & Materials ", latest edition.

- B. Coarse Aggregate: Sound, angular crushed stone, crushed gravel, or properly cured crushed blast furnace slag, complying with the following:
 - 1. Graded Aggregate Subbase: MSHA Section 901.01.
 - 2. CR-6 Stone: MSHA Section 901.
- C. Bituminous Concrete:
 - 1. Surface Course: MSHA Section 904, 9.5mm HMA Super Pave, PG 64-22
 - 2. Base Course: MSHA Section 904, 19mm HMA Super Pave, PG 64-22

PART 3 EXECUTION

3.01 MILLING OF EXISTING PAVEMENT

- A. The contractor shall furnish a pavement milling machine and mill or plane the existing bituminous pavement at locations and to depth shown on the plans. Milling shall be performed using a roto-milling machine with a proven record for use in milling hot-mix pavement. The contractor shall protect and adjust all valve boxes, manhole covers, catch basins grates, concrete curbs and gutters, etc. which are in the area of the proposed milling to match to the new pavement elevations. The contractor shall reuse or dispose of the milled material at an approved off-site area. The milling machine shall be capable of accurately establishing profile grade and shall have a positive means for controlling slope elevation. A tolerance of $\pm 1/8$ inch when using a 10 foot straight edge shall be maintained. The machine shall be capable of preventing dust from escaping into the atmosphere. After the milling operation is complete, all depressions, potholes, and other irregularities shall be filled, and all large and or loose particles removed.

3.02 SURFACE PREPARATION

- A. General: Remove loose material from compacted sub-base surface.
- B. Proof-roll prepared sub-base surface to check for unstable areas and areas requiring additional compaction. Install and compact sub-grade materials in accordance with Section 02300 "Earthwork"
- C. Do not begin paving work until deficient sub-base areas have been corrected and are ready to receive paving. Paving shall not begin until the compacted sub-grade has been accepted by the testing agency.

3.03 PLACING MIX

- A. General: Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. Spread mixture at minimum temperature of 225 deg F. Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section, and compacted thickness.
- B. Immediately correct surface irregularities in finish course behind paver. Remove excess

material forming high spots with shovel or lute.

- C. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of hot-mixed asphalt course. Clean contact surfaces and apply tack coat.

3.04 ROLLING

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement.
- B. Compact the mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.
- D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.
- E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained 95 percent laboratory density.
- F. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot-mixed asphalt. Compact asphalt by rolling to specified surface density and smoothness.
- G. Protection: After final rolling, do not permit access to pavement until it has cooled and hardened.

3.05 BRIDGE DECK-TO-ROADWAY TRANSITION

- A. The membrane should extend a minimum of 1 m (3 ft) beyond the edge of the back face of the abutment wall to prevent surface water from draining through the asphalt at the abutment front face wall and wetting the wood components of the bridge. Fill the joint instead of paving over a soft joint. The wearing surface system is not designed to bridge gaps without cracking and possibly tearing the membrane.

3.06 BRIDGE DECK PREPARATION

- A. Apply blotters such as sand or absorbent cloth remove excess chemicals that may be present on the surface of the deck.

3.07 BRIDGE ASPHALT BASE COURSE

- A. For a maximum aggregate size of 19 mm (0.75 in.), the minimum thickness shall be 38 mm (1.5 in.) at the curb. Cross slope to the centerline of bridge shall be 2%.

3.08 BRIDGE ASPHALT SURFACE COURSE

- A. Within 2 days of the application of the membrane, the asphalt surface course must be placed. The surface course thickness, remains the same across the width of the bridge and shall be 25 to 29 mm (1.0 to 1.125 in.).

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.3 DEFINITIONS

Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, pozzolans, and ground granulated blast-furnace slag. Materials shall be in accordance with ACI 232.2 R-96 and ACI 233 R-95.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.
- D. Drawings-Fabrication/Erection/Installation: Drawings for reinforcement and accessories, without reference to the contract drawings.
- E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
- F. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Cementitious materials and aggregates.
 - 2. Form materials and form-release agents.
 - 3. Steel reinforcement and reinforcement accessories.
 - 4. Admixtures.
 - 5. Curing materials.
 - 6. Bonding agents.

7. Adhesives.
8. Vapor retarders.
9. Joint-filler strips.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
 1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.
 2. Material manufacturers shall be ISO 9001/9002 registered proof of documented quality assurance system. Quality system must be independent auditing registrar. ISO 9001/9002 certification shall be included with material submittals.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
 1. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
 2. ACI 211, "Recommended Practice for Selecting Proportions for Normal and Heavyweight Concrete."
 3. ACI 212, "Chemical Admixtures for Concrete."
 4. ACI 232.2R-96, "Use of Fly Ash in Concrete."
 5. ACI 233R-95, "Ground Granulated Blast Furnace Slag as a Cementitious Constituent in Concrete."
 6. ACI 301, "Specification for Structural Concrete."
 7. ACI 302.1R, "Guide for Concrete Floor Slab Construction."
 8. ACI 305R, "Hot Weather Concreting."
 9. ACI 306R, "Cold Weather Concreting."
 10. ACI 308, "Standard Practice for Curing Concrete."
 11. ACI 309R, "Guide for Consolidation of Concrete."
 12. ACI 315, "Details and Detailing of Concrete Reinforcement," latest edition.
 13. ACI 318, "Building Code Requirements for Reinforced Concrete," latest edition.
 14. ACI 347, "Recommended Practice for Concrete Form Work."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage.
 - 1. Avoid damaging coatings on steel reinforcement.
 - 2. Repair damaged epoxy coatings on steel reinforcement according to ASTM D3963/D3963M

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Plywood, metal, or other approved panel materials.
 - 1. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - 2. Structural 1, B-B, or better, mill oiled and edge sealed, not less than 5/8" (16 mm) thick.
- C. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- D. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- E. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch minimum.
- F. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- G. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
- H. Furnish units that will leave no corrodible metal closer than 1½ inch (38 mm) to the plane of the exposed concrete surface.
- I. Furnish ties that, when removed, will leave holes not larger than 1 inch (25 mm) in diameter in concrete surface.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Epoxy-Coated Reinforcing Bars: ASTM A775/A775M, both abutments.
- C. Steel Bar Mats: ASTM A 184/A 184M, assembled with clips.
 - 1. Steel Reinforcement: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed bars.

2.3 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.
- B. Epoxy-Coated Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A615M, Grade 60, (where indicated).
- C. Epoxy Repair Coating: Liquid, two part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A775M.

2.4 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I/II.
- B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
 - 1. Nominal Maximum Aggregate Size: 1-1/2 inches (38 mm).

 Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on No. 50 (0.3 mm) sieve, and less than 8 percent may be retained on sieves finer than No. 50 (0.3 mm).
- C. Water: Potable and complying with ASTM C 94.

2.5 ADMIXTURES

- A. Air Entraining Admixture: ASTM C260, certified by manufacturer to be compatible with other required admixtures. Provide one of the following or an approved equal:

"AEA-92" or "Air Mix 200"	The Euclid Chemical Co.
"Pozzolith Normal"	Master Builders

"WRDA"	W.R. Grace Co.
"Plastocrete 160"	Sika Chemical Corp.

- B. Water Reducing Admixture: ASTM C494, Type A, and containing not more than 0.05 percent chloride ions. Provide one of the following or an approved equal:

"Eucon WR" Series	The Euclid Chemical Co.
"Pozzolith Normal"	Master Builders
"WRDA"	W.R. Grace Co.
"Plastocrete 160"	Sika Chemical Corp.

- C. High Range, Water Reducing Admixture (Superplasticizer): ASTM C494, Type F or Type G and containing not more than 0.05 percent chloride ions. Provide one of the following or an approved equal:

"Eucon 37" or "Eucon 537"	The Euclid Chemical Co.
"Rheobuild 1000"	Master Builders
"Daracem 100"	W.R. Grace Co.
"Sikament 3000"	Sika Chemical Corp.

- D. Non-Chloride, Non-Corrosive Accelerating Admixture: The admixture shall conform to ASTM C494, Type C or E, and not contain more chloride ions than are present in municipal drinking water. The admixture manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least a year's duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures. Provide one of the following or an approved equal:

"Accelguard 80"	The Euclid Chemical Co.
"Pozzutec 20"	Master Builders
"Daraset"	W.R. Grace Co.

- E. Water-Reducing and Retarding Admixture: ASTM C494, Type D, and contain not more than 0.05 percent chloride ions. Provide one of the following or an approved equal:

"Eucon Retarder 75"	The Euclid Chemical Co.
"Pozzolith Retarder"	Master Builders
"Daratard 17"	W.R. Grace Co.
"Plastiment"	Sika Chemical Co.

- F. Mid-Range Water-Reducing Admixture: ASTM C494, Type A and containing no more than 0.05 percent chloride ions. Provide one of the following or an approved equal:

"Eucon MR"	The Euclid Chemical Co.
"Polyheed"	Master Builders, Inc.

- G. Corrosion - Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

- a. DCI or DCI-S; W.R. Grace and Co., Construction Products Division
- b. Rheocrete 222 and; Master Builders, Inc.
- c. FerroGard-901; Sika Corporation.
- d. Eucon CTA; Euclid Chemical Company.

2.6 CURING MATERIALS

- A. All concrete work shall be properly cured in accordance with ACI recommendations.
- B. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- C. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- D. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- E. Water: Potable.
- F. Clear, Waterborne, Membrane-Forming Curing Compound (VOC Compliant): ASTM C 309, Type 1, Class B. The compound shall have a minimum of 18 percent solids and a maximum moisture loss of 0.039 grams per square cm. when applied at a coverage rate of 250 sq. ft. per gallon. Actual application rate shall be 150 to 200 sq. ft. per gallon depending on atmospheric conditions.
- G. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound (VOC Compliant): ASTM C 1315, Type 1, Class A. The compound shall have a minimum of 18 percent solids and a maximum moisture loss of 0.039 grams per square cm. when applied at a coverage rate of 250 sq. ft. per gallon. Actual application rate shall be 150 to 200 sq. ft. per gallon depending on atmospheric conditions.
- H. Products: Subject to compliance with requirements, provide one of the following products or an approved equal:
 - 1. Evaporation Retarder:
 - a. Eucobar; Euclid Chemical Co.
 - b. Confilm; Master Builders, Inc.
 - c. SikaFilm; Sika Corporation.
 - 2. Clear, Waterborne, Membrane-Forming Curing Compound:
 - a. Kurez VOX; Euclid Chemical Co.
 - b. Vocomp-20; W. R. Meadows, Inc.
 - 3. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound:
 - a. Vocomp-30; W. R. Meadows, Inc.
 - b. Super Diamond Clear VOX; Euclid Chemical Co.
 - c. Super Aqua-Cure VOX; Euclid Chemical Co.

2.7 RELATED MATERIALS

- A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
 - 1. Type: Class I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.8 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
 - 1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.
- C. Deadman: Proportion normal-weight concrete mix as follows:
 - 1. Compressive Strength (28 Days): 3000 psi.
 - 2. Maximum Slump: 4 inches (100 mm).
 - 3. Maximum Slump for Concrete Containing High-Range Water-Reducing Admixture: 8 inches after admixture is added to concrete with 2- to 4-inch slump.
- D. Pile Cap: Proportion normal-weight concrete mix as follows:
 - 1. Compressive Strength (28 Days): 4000 psi.
 - 2. Minimum Cementitious Materials Content: 517 lb/cu. yd. for concretes with a maximum aggregate size of 1½."
 - 3. Minimum Cementitious Materials Content: 536 lb/cu. yd. for concretes with a maximum aggregate size 1".
 - 4. Maximum Slump: 4 inches (100 mm).
 - 5. Maximum Slump for Concrete Containing High-Range Water-Reducing Admixture: 8 inches after admixture is added to concrete with 2-inch slump, showing no signs of segregation.
- E. Cementitious Materials: Limit percentage, by weight, of cementitious materials (in accordance with ACI 232.2R-96, and ACI 233R-95) other than portland cement in concrete as follows:
 - 1. Combined Fly Ash and Pozzolan: 25 percent.
 - 2. Ground Granulated Blast-Furnace Slag: 25 percent.

- F. Maximum Water-Cementitious Materials Ratio:
1. All concrete unless otherwise noted 0.45
 2. Deadman and Sidewalks 0.50
- G. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus or minus 1 percent, unless otherwise indicated.
1. Air Content: 5.5 percent for 1-1/2-inch- nominal maximum aggregate size.
 2. Air Content: 6 percent for 1-inch- nominal maximum aggregate size.
 3. Air Content: 6 percent for 3/4-inch- nominal maximum aggregate size.
- H. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- I. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.45.
 4. Use corrosion-inhibiting admixture in concrete mixes where indicated.

2.9 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. Mixers: Concrete shall be ready-mixed. Shrink mixing will not be permitted. Transit mixed concrete shall be mixed and have water added only at the site. All mixing equipment must, in the opinion of the inspector, be suitable for the job. A standard type of batch mixer shall be used and no hand mixing will be permitted. Ready-mixed concrete shall conform to ASTM C94. Contractor is to maintain a readily available file of delivery tickets stating design strength, batch time, delivery time, placement time, mix slumps, aggregate and admix (if applicable) and yards delivered for all concrete.
- C. Charging Procedure: Mix shall be kept at a consistency which can be placed readily without segregation. Aggregates shall be measured in grated hoppers by weight, in a manner which can easily be checked. Cement shall be measured by volume or by weight. Air slacked

cement or cement which is lumpy, whatever the cause, shall not be used. Worming of cement directly into truck mixers shall not be permitted.

- D. Mixing Procedure: In stationary mixers, mixing time shall be a minimum of ten minutes after addition of water. If an extra charge of water is required because of too low slump, the drum shall be turned a minimum of 30 revolutions after adding such charge. Once initial set has taken place, no attempt shall be made to temper the concrete by the addition of water. Any concrete so tempered will be rejected and shall be removed from the site. Mixers shall not be charged in excess of the rated speed. Mixer shall be completely discharged before recharging.
- E. Time Limit: When either Type I or Type II Portland cements are in use, the elapse time between the initial contact of the cement with water and the discharge of the batch on the job shall not be more than 1 ½ hours or 300 revolutions.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
 - 1. Class B, 1/4 inch (6 mm).
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
 - 1. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.

- I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor bolts, accurately located, to elevations required.
 - 2. Aluminum items in contact with concrete shall receive twocoats of bitumastic coal tar epoxy.

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete or any live loads may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Leave formwork, for beam soffits, walls, slabs, and other structural elements, that supports weight of concrete or any live loads in place until concrete has achieved the following:
 - 1. At least 70 percent of 28-day design compressive strength.
 - 2. Determine compressive strength of in-place concrete by testing representative field- or laboratory-cured test specimens according to ACI 301.
- C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength, watertightness and appearance of concrete are not impaired, at locations indicated or as approved by Engineer. Maximum distance between construction joints shall be forty (40) feet.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated.
 - 2. Locate joints for beams, slabs, and walls in the middle third of spans.
 - 3. Space vertical joints in walls as indicated.
 - 4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 5. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated.
 - 1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint, unless noted otherwise.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. The subgrade of all slabs shall be thoroughly wetted with water prior to placement of concrete, especially during hot, dry or windy conditions.
- B. Do not add water to concrete during delivery, at Project site, or during placement, unless approved by Engineer.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
- D. Dropping of concrete over 4 feet or through a cage of reinforcing steel will not be permitted.

- E. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
 - 1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
 - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.
 - 3. Provide a minimum of 2 vibrators in good working condition on the job at all times.
- F. Concrete shall not be deposited during rain. Concrete shall not be deposited into areas of standing or running water.
- G. Maximum Pours: Maximum length of all pours shall be 40 feet (12.1 m), unless otherwise noted or approved by Engineer. All joints shall be as approved by the Engineer or as detailed on the drawings. All reinforcement, forms and ground with which concrete is to come in contact, shall be free of frost.
- H. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
 - 4. Protection After Placement: Suitable means as defined in ACI 306 shall be provided for maintaining a temperature in the concrete of at least 50 degrees F for not less than three days after the concrete is placed. For a period of seven days, the concrete shall not be exposed to a temperature below 40 degrees F.
 - 5. Concrete placement shall be made when air temperature is at least 32 degrees F and rising, unless special precautions acceptable to the Engineer,
- J. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FINISHING FORMED SURFACES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm) in height.
 1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.
 2. Do not apply rubbed finish to smooth-formed finish.
- A. Rubbed Finish: Apply the following to smooth-formed finished concrete:
 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process and mortar used for concrete repair.
- B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.8 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.9 CONCRETE PROTECTION AND CURING

- A. General: Take curing measures immediately after casting and extend period according to the Engineer's/Architect's recommendation based upon prevailing temperature, wind, and relative humidity.
 1. Keep concrete continuously moist for minimum 14 days after casting.

2. Maintain concrete temperature at minimum 50 degrees Fahrenheit for seven days after casting.
 3. Avoid alternate wetting and drying and fluctuations of concrete temperature.
 4. Protect fresh concrete from direct rays of sun, rain, drying winds, soiling, and damage.
 5. Do not permit curing method to affect adversely finished or treatments applied to finished concrete.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions will cause excessive moisture loss before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Curing/Sealing Methods for Sidewalks: Cure all concrete surfaces with one or a combination of the following methods. Where a specific curing procedure is not specified, at the Contractor's selection, one or more of the following methods shall be used.
1. Water curing: Keep concrete surfaces continuously wet with clean water during the curing period by immersion, maintaining a continuous flow of water over the surface, continuous spraying, continuous sprinkling or a combination of these. For all curing methods, the difference in temperature between the water used for curing and the concrete shall not exceed 20 degrees Fahrenheit.
 2. Wet Coverings: Cover the concrete surfaces with burlap, cotton mats, sand, earth, or other suitable moisture retaining materials and keep these materials saturated during the curing period. Lap all fabrics at least 8 inches at all joints. On exposed concrete, do not use any type covering which will discolor the concrete surface.
 3. Waterproof coverings: As soon as possible after finishing, thoroughly wet the concrete surfaces and cover the concrete surfaces with waterproof paper or plastic film immediately after wetting. For a period or at least 8 hours after the concrete has taken its initial set, maintain a continuous flow of clean water over the concrete surface under the covering. Lap all joints in the covering at least 8 inches and provide weights and other means and methods to keep the waterproof covering in direct contact with the concrete during the curing period.
 4. Membrane forming curing compounds: All exposed interior slabs, not receiving a liquid densifier, and troweled slabs receiving mastic applied adhesives or "shake-on" hardeners shall be cured with the specified curing and sealing compound. Exterior slabs, sidewalks, curbs, and architectural concrete, not receiving a penetrating sealer, shall be cured with the specified clear, non-yellowing curing and sealing compound. Maximum coverage shall be 200 ft²/gallon on steel troweled surfaces and 150 ft²/gallon on floated or broomed surfaces for the curing/sealing compound.
- D. Curing for Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods listed in paragraph F below.

3.10 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid epoxy joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor shall engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
 - 2. Slump: ASTM C 143; one test at point of placement (prior to pumping) for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 - 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
 - 5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 - 6. Compression Test Specimens: ASTM C 31/C 31M;
 - a. Cast and laboratory cure one set of four standard cylinder specimens for each composite sample.
 - b. Cast and field cure one set of four standard cylinder specimens for each day's pour.
 - c. Cast extra two cylinders for each day's pour (14 day compressive strength)
 - d. Cast two extra cylinders per pour.
 - 7. Compressive-Strength Tests: ASTM C 39;
 - a. Test two laboratory-cured specimens at 7, two at 14 days, and two at 28 days.
 - b. Test two field-cured specimens at 7 days, two at 14 days, and two at 28 days.
 - c. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.

- C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- E. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for all tests.
- F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
- G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Engineer. Contractor shall pay for cored cylinder collections and testing if standard cylinder specimens fail to confirm conformance with the specifications.

END OF SECTION

JOINT PERMITS

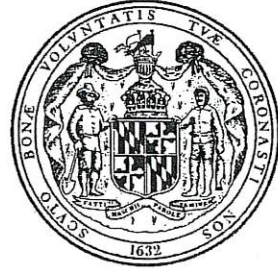
STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION
WETLANDS AND WATERWAYS PROTECTION PROGRAM
LETTER OF AUTHORIZATION

AUTHORIZATION NUMBER: 26-NT-2018/202660237

EFFECTIVE DATE: April 17, 2026

EXPIRATION DATE: April 17, 2031

AUTHORIZED PERSON: Worcester County Roads Division
5764 Worcester Highway
Snow Hill, MD 21863
Attn: Kevin Lynch, Superintendent



IN ACCORDANCE WITH ENVIRONMENT ARTICLE §5-503(a) AND §5-906(b), ANNOTATED CODE OF MARYLAND, COMAR 26.17.04, 26.23.01, AND 26.08.02, AS APPLICABLE, AND THE ATTACHED CONDITIONS OF AUTHORIZATION, Worcester County Roads Department ("AUTHORIZED PERSON"), IS HEREBY AUTHORIZED BY THE WATER AND SCIENCE ADMINISTRATION ("ADMINISTRATION") TO CONDUCT A REGULATED ACTIVITY IN A NONTIDAL WETLAND, BUFFER, OR EXPANDED BUFFER, AND/OR TO CHANGE THE COURSE, CURRENT OR CROSS-SECTION OF WATERS OF THE STATE, IN ACCORDANCE WITH THE ATTACHED PLANS APPROVED BY THE ADMINISTRATION ON April 17, 2026 ("APPROVED PLAN") AND PREPARED BY Davis, Bowen and Friedel, Inc. AND INCORPORATED HEREIN, AS DESCRIBED BELOW:

Replace existing bridge No. WO-507 in-kind. The project will temporarily impact 30 linear feet (393 sq ft) of stream, 342 square feet of emergent nontidal wetland, 174 square feet of the 25-foot nontidal wetland buffer and permanently impact 7 square feet of emergent nontidal wetland. The project is located on Hotel Road, .20 miles north of the intersection with Hammond Road in Worcester County.

MD Grid Coordinates N 88031 E 556130

William Seiger

for

Heather L. Nelson
Program Manager
Wetlands and Waterways Protection Program

Attachments: Approved plans

cc: MDE Compliance Program <Worcester co
Tyler O'Neal, Nontidal Wetlands Division
Kersey Walters, ERI

1. **Validity:** Authorization is valid only for use by Authorized Person. Authorization may be transferred only with prior written approval of the Administration. In the event of transfer, transferee agrees to comply with all terms and conditions of Authorization.
2. **Initiation of Work, Modifications and Extension of Term:** Authorized Person shall initiate authorized activities in waterways, including streams and the 100-year nontidal floodplain, within two (2) years of the Effective Date of this Authorization or the Authorization shall expire. [Annotated Code of Maryland, Environment Article §5-510(a)-(b) and Code of Maryland Regulations 26.17.04.12]. Authorized Person may submit written requests to the Administration for (a) extension of the period for initiation of work, (b) modification of Authorization, including the Approved Plan, or, (c) not later than 45 days prior to Expiration Date, an extension of term. Requests for modification shall be in accordance with applicable regulations and shall state reasons for changes, and shall indicate the impacts on nontidal wetlands, streams, and the floodplain, as applicable. The Administration may grant a request at its sole discretion. (Annotated Code of Maryland, Environment Article §5-510(c), and Code of Maryland Regulations 26.17.04.12, and Annotated Code of Maryland, Environment Article §5-907 and Code of Maryland Regulations 26.23.02.07).
3. **Responsibility and Compliance:** Authorized Person is fully responsible for all work performed and activities authorized by this Authorization shall be performed in compliance with this Authorization and Approved Plan. Authorized Person agrees that a copy of the Authorization and Approved Plan shall be kept at the construction site and provided to its employees, agents and contractors. A person (including Authorized Person, its employees, agents or contractors) who violates or fails to comply with the terms and conditions of this Authorization, Approved Plan or an administrative order may be subject to penalties in accordance with §5-514 and §5-911, Department of the Environment Article, Annotated Code of Maryland (2007 Replacement Volume).
4. **Failure to Comply:** If Authorized Person, its employees, agents or contractors fail to comply with this Authorization or Approved Plan, the Administration may, in its discretion, issue an administrative order requiring Authorized Person, its employees, agents and contractors to cease and desist any activities which violate this Authorization, or the Administration may take any other enforcement action available to it by law, including filing civil or criminal charges.
5. **Suspension or Revocation:** Authorization may be suspended or revoked by the Administration, after notice of opportunity for a hearing, if Authorized Person: (a) submits false or inaccurate information in Permit application or subsequently required submittals; (b) deviates from the Approved Plan, specifications, terms and conditions; (c) violates, or is about to violate terms and conditions of this Authorization; (d) violates, or is about to violate, any regulation promulgated pursuant to Title 5, Department of the Environment Article, Annotated Code of Maryland as amended; (e) fails to allow authorized representatives of the Administration to enter the site of authorized activities at any reasonable time to conduct inspections and evaluations; (f) fails to comply with the requirements of an administrative action or order issued by the Administration; or (g) does not have vested rights under this Authorization and new information, changes in site conditions, or amended regulatory requirements necessitate revocation or suspension.
6. **Other Approvals:** Authorization does not authorize any injury to private property, any invasion of rights, or any infringement of federal, State or local laws or regulations, nor does it obviate the need to obtain required authorizations or approvals from other State, federal or local agencies as required by law.
7. **Site Access:** Authorized Person shall allow authorized representatives of the Administration access to the site of authorized activities during normal business hours to conduct inspections and evaluations necessary to assure compliance with this Authorization. Authorized Person shall provide necessary assistance to effectively and safely conduct such inspections and evaluations.
8. **Inspection Notification:** Authorized Person shall notify the Administration's Compliance Program at least five (5) days before starting authorized activities and five (5) days after completion. For Allegany, Carroll, Frederick, Garrett, Howard, Montgomery and Prince George's and Washington Counties, Authorized Person shall call 301-689-1480. For Baltimore City, Anne Arundel, Baltimore, Calvert, Charles, Harford and St. Mary's Counties, Authorized Person shall call 410-537-3510. For Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico and Worcester Counties, Authorized Person shall call 410-901-4020. If Authorization is for a project that is part of a mining site, please contact the Land and Materials Administration's Mining Program at 410-537-3557 at least five (5) days before starting authorized activities and five (5) days after completion.
9. **Sediment Control:** Authorized Person shall obtain approval from the Worcester County Soil Conservation District for a grading and sediment control plan specifying soil erosion control measures. The approved grading and sediment control plan shall be included in the Approved Plan, and shall be available at the construction site.
10. **Best Management Practices During Construction:** Authorized Person, its employees, agents and contractors shall conduct authorized activities in a manner consistent with the Best Management Practices specified by the Administration.
11. **Disposal of Excess:** Unless otherwise shown on the Approved Plan, all excess fill, spoil material, debris, and construction material shall be disposed of outside of nontidal wetlands, nontidal wetlands buffers, and the 100-year floodplain, and in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands.
12. **Temporary Staging Areas:** Temporary construction trailers or structures, staging areas and stockpiles shall not be located within nontidal wetlands, nontidal wetlands buffers, or the 100-year floodplain unless specifically included on the Approved Plan.

13. **Temporary Stream Access Crossings:** Temporary stream access crossings shall not be constructed or utilized unless shown on the Approved Plan. If temporary stream access crossings are determined necessary prior to initiation of work or at any time during construction, Authorized Person, its employees, agents or contractors shall submit a written request to the Administration and secure the necessary permits or approvals for such crossings before installation of the crossings. Temporary stream access crossings shall be removed and the disturbance stabilized prior to completion of authorized activity or within one (1) year of installation.
14. **Discharge:** Runoff or accumulated water containing sediment or other suspended materials shall not be discharged into waters of the State unless treated by an approved sediment control device or structure.
15. **Instream Construction Prohibition:** To protect important aquatic species, motor driven construction equipment shall not be allowed within stream channels unless on authorized ford crossings. Activities within stream channels are prohibited as determined by the classification of the stream (COMAR 26.08.02.08): Carey Branch is a Use I waterway; in-stream work may not be conducted from March 1 through June 15, inclusive, of any year.
16. **Instream Blasting:** Authorized Person shall obtain prior written approval from the Administration before blasting or using explosives in the stream channel.
17. **Minimum Disturbance:** Any disturbance of stream banks, channel bottom, wetlands, and wetlands buffer authorized by this Authorization or Approved Plan shall be the minimum necessary to conduct permitted activities. All disturbed areas shall be stabilized vegetatively no later than seven (7) days after construction is completed or in accordance with the approved grading or sediment and erosion control plan.
18. **Restoration of Construction Site:** Authorized Person shall restore the construction site upon completion of authorized activities. Undercutting, meandering or degradation of the stream banks or channel bottom, any deposition of sediment or other materials, and any alteration of wetland vegetation, soils, or hydrology, resulting directly or indirectly from construction or authorized activities, shall be corrected by Authorized Person as directed by the Administration.

FEDERALLY MANDATED STATE AUTHORIZATIONS

The State of Maryland issued a Water Quality Certification to the U.S. Army Corps of Engineers for projects receiving federal authorization under the Maryland State Programmatic General Permit, Regional General Permit for Chesapeake Bay Total Maximum Daily Load (TMDL) Activities and non-suspended Nationwide Permits. In addition, as applicable, this Authorization constitutes the State's concurrence with the Applicant's certification that the activities authorized herein are consistent with the Maryland Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. Activities in the following counties are not subject to the Maryland Coastal Zone Management requirement: Allegany, Carroll, Frederick, Garrett, Howard, Montgomery, and Washington.

U.S. ARMY CORPS OF ENGINEERS AUTHORIZATION

The U.S. Army Corps of Engineers has reviewed this activity and:

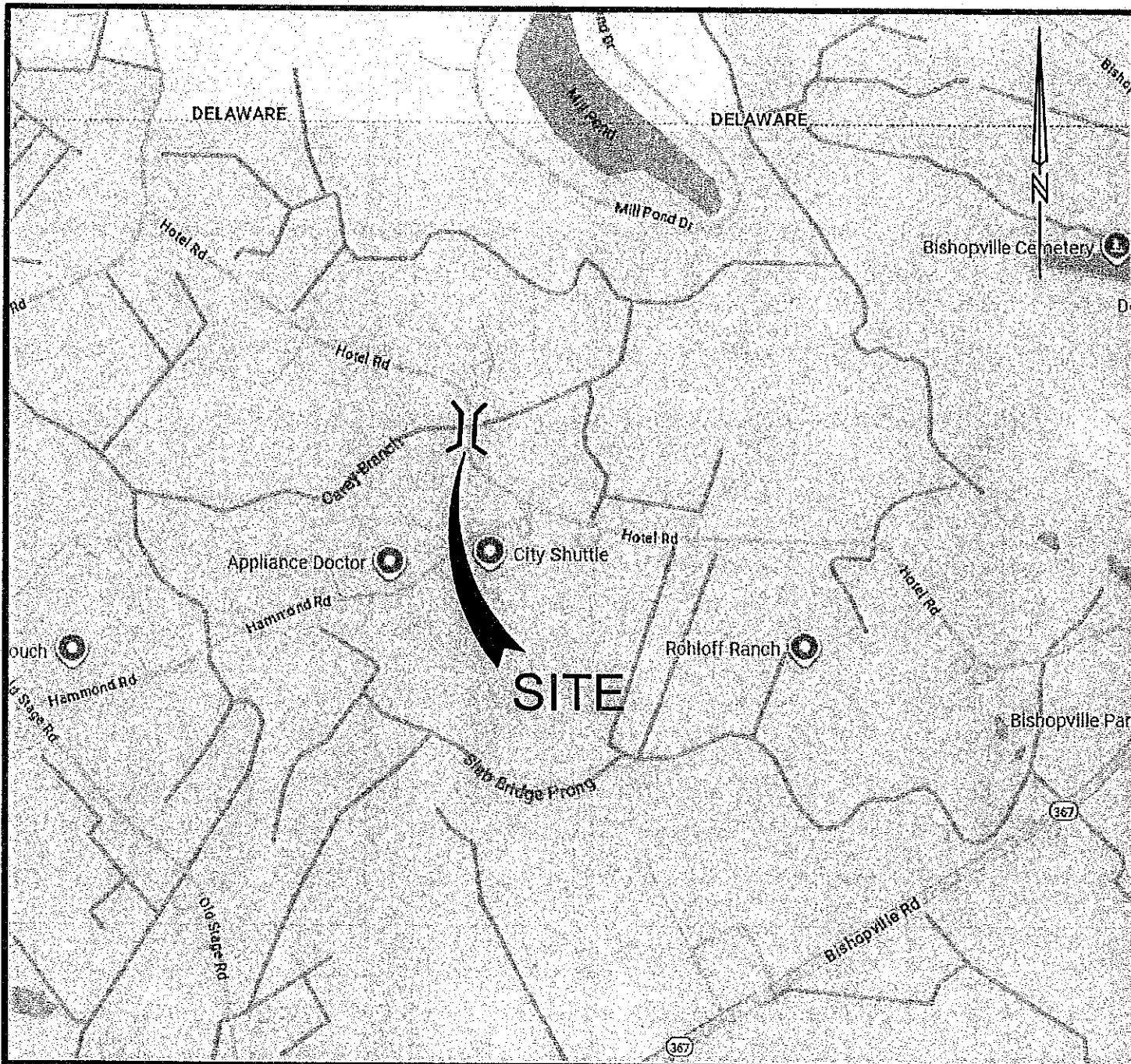
X Granted authorization under the Maryland State Programmatic General Permit (MDSPGP-6), as a Category A B(1) activity. The terms and conditions of the MDSPGP-6 as outlined in the documents found on the Maryland Department of the Environment's website, https://mde.maryland.gov/programs/Water/WetlandsandWaterways/Pages/MDSPGP6_conditions.aspx, should be followed when performing the authorized work, or

___ Will issue a Category B authorization or Individual Permit directly to the Authorized Person.

___ No authorization per Section 404 of the Clean Water Act is required for this activity as the U.S. Army Corps of Engineers does not regulate the impacted resources

**BEST MANAGEMENT PRACTICES FOR WORKING IN
NONTIDAL WETLANDS, WETLAND BUFFERS,
WATERWAYS AND 100-YEAR NONTIDAL FLOODPLAINS**

- 1) No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- 2) Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year nontidal floodplain.
- 3) Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
- 4) Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year nontidal floodplain.
- 5) Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
- 6) Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year nontidal floodplain temporarily impacted by any construction.
- 7) All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (Lolium multiflorum), Millet (Setaria italica), Barley (Hordeum sp.), Oats (Uniola sp.), and/or Rye (Secale cereale). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. **Kentucky 31 fescue shall not be utilized in wetland or buffer areas.** The area should be seeded and mulched to reduce erosion after construction activities have been completed.
- 8) After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
- 9) To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream:
 - Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year.
 - Use III waters: In-stream work shall not be conducted during the period October 1 through April 30, inclusive, during any year.
 - Use IV waters: In-stream work shall not be conducted during the period March 1 through May 31, inclusive, during any year.
- 10) Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
- 11) Culverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.



LOCATION MAP

PLANS APPROVED BY: *[Signature]*

DATE: *4/17/16*

500 FT

WATER AND SCIENCE ADMINISTRATION

WATERWAY CONSTRUCTION DIVISION

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Date: FEBRUARY, 2026

Scale: AS NOTED

Dwn.By: SS1

Proj.No.: 0085B057.A01

LOCATION MAP

Dwg.No.: S-001

HOTEL RD. BRIDGE

HOTEL ROAD OVER CAREY BRANCH

WORCESTER COUNTY, MD



**DAVIS
BOWEN &
FRIEDEL, INC.**

ARCHITECTS • ENGINEERS • SURVEYORS

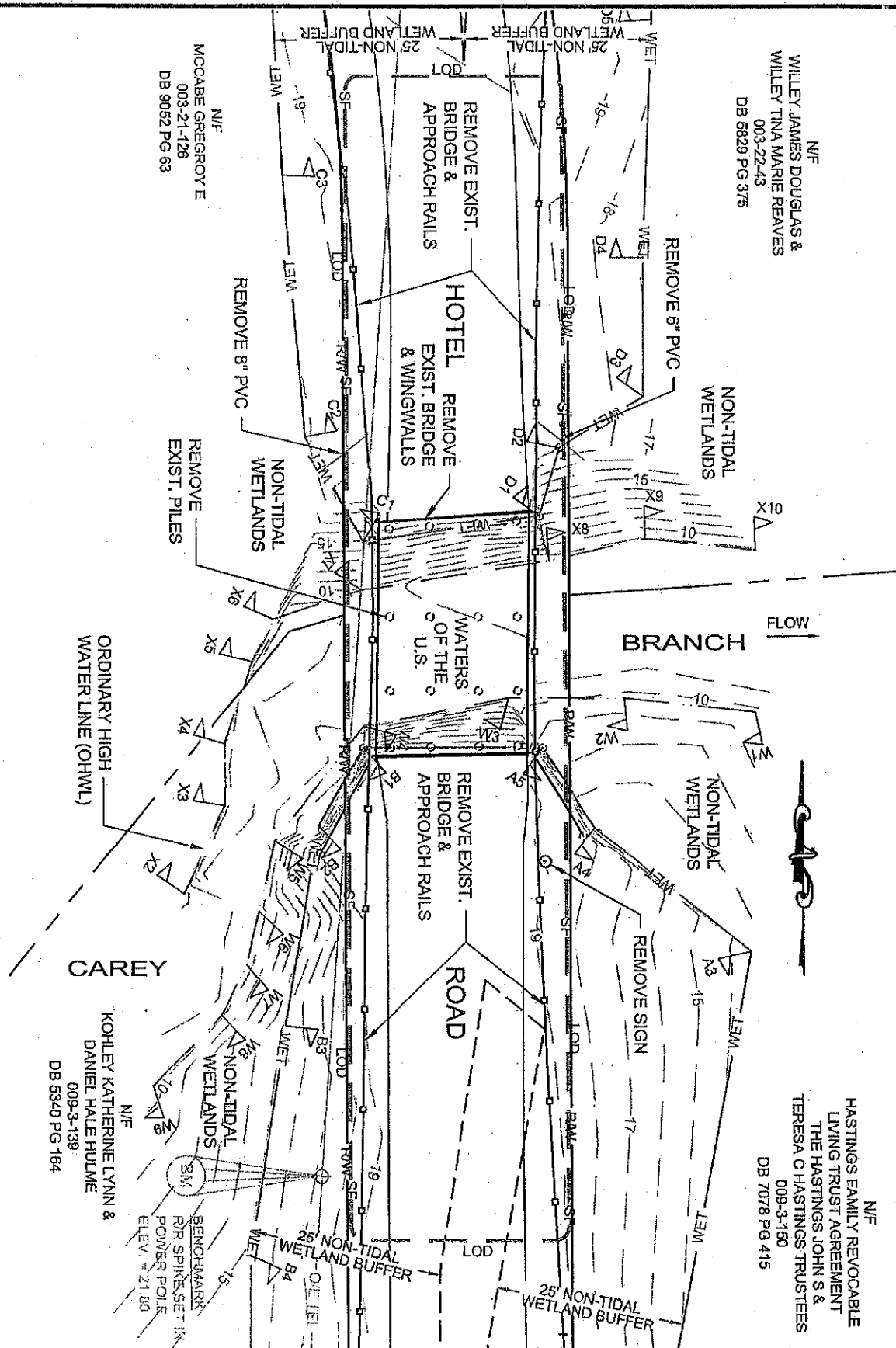
EASTON, MARYLAND
410.770.4744

MILFORD, DELAWARE
302.424.1441

SALISBURY, MARYLAND
410.543.9091

EXISTING CONDITIONS

1" = 20'



N/F
WILLEY JAMES DOUGLAS &
WILLEY TINA MARIE REAVES
003-22-43
DB 5829 PG 376

N/F
HASTINGS FAMILY REVOCABLE
LIVING TRUST AGREEMENT
THE HASTINGS JOHN S &
TERESA C HASTINGS TRUSTEES
009-3-160
DB 7078 PG 415

N/F
KOHLEY KATHERINE LYNN &
DANIEL HALE HULME
009-3-139
DB 5340 PG 164

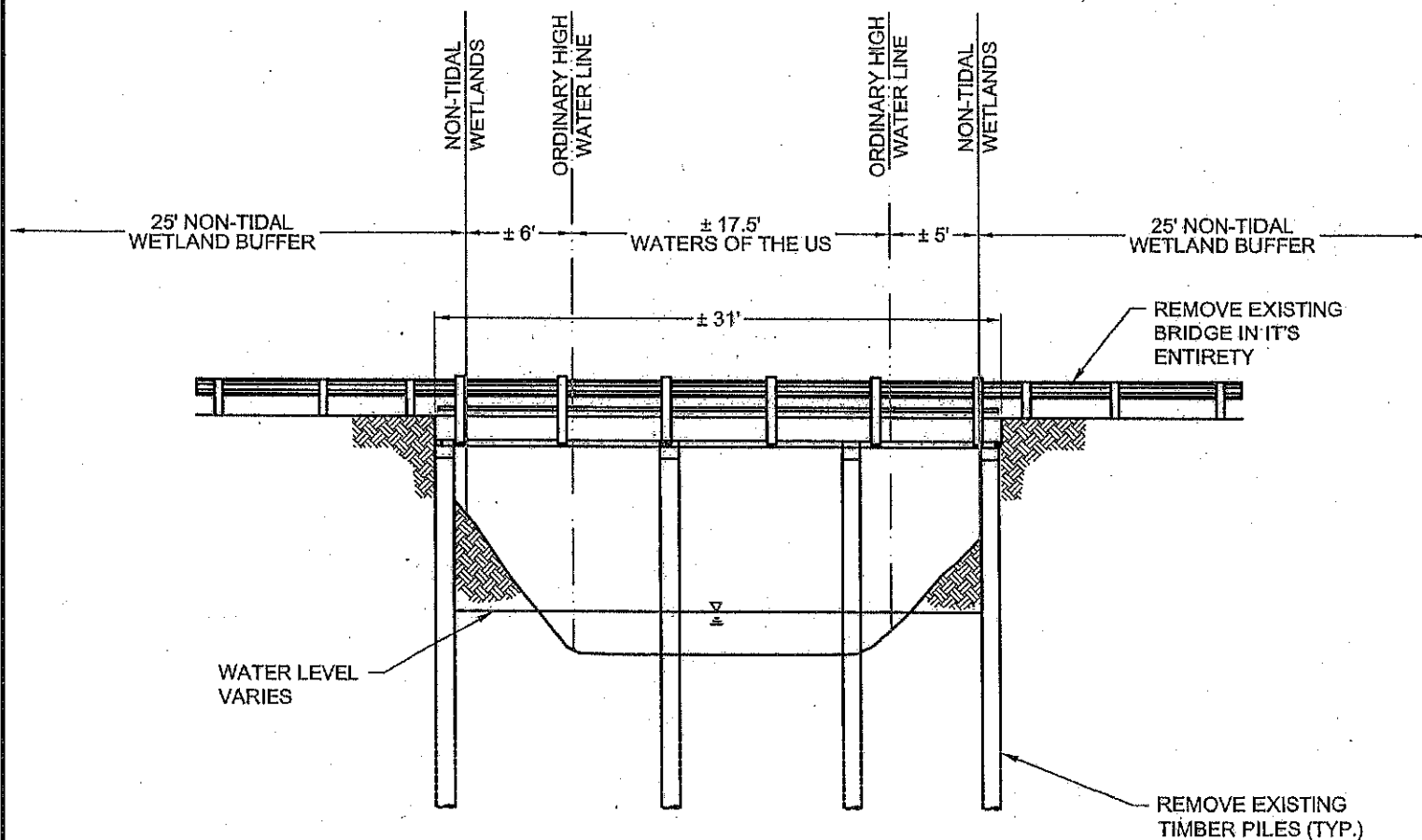
Date:	FEBRUARY, 2026
Scale:	AS NOTED
Dwn.By:	SS1/KWW
Proj.No.:	0085B057.A01
EXISTING CONDITIONS	
Dwg.No.:	S-002

HOTEL RD. BRIDGE
HOTEL ROAD OVER CAREY BRANCH
WORCESTER COUNTY, MD



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MILFORD, DELAWARE 302.424.1441
BALTIMORE, MARYLAND 410.543.9091



EXISTING BRIDGE ELEVATION

N.T.S.

Date: FEBRUARY, 2026

Scale: AS NOTED

Dwn.By: SS1/KWW

Proj.No.: 0085B057.A01

EXIST. ELEVATION

Dwg.No.: S-003

HOTEL RD. BRIDGE

HOTEL ROAD OVER CAREY BRANCH

WORCESTER COUNTY, MD



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MILFORD, DELAWARE
302.424.1441

SALISBURY, MARYLAND
410.543.9091

#7 SQ. FT. OF PERMANENT —
IMPACTS TO NON-TIDAL
WETLANDS (SEE SHEET S-005)

BRANCH

FLOW

DB 1018 PG 410

HASTINGS FAMILY REVOCABLE
LIVING TRUST AGREEMENT
THE HASTINGS JOHN S &
TERESA C HASTINGS TRUSTEES
008 3-150

之

N/F
MCCABE GREGORY E
003-21-126
DB 9052 PG 63

NOTES:

1. ANCHORAGE OF VEHICULAR RAILING DESIGN, LAYOUT, ATTACHMENT AND INSTALLATION SHALL BE IN ACCORDANCE WITH MD SHA STANDARD NO. MD 605.41, TYP. (APPROXIMATELY 25 LT)
2. INSTALL SHA 605.03 TYPE C END TREATMENT TO REPLACE EXISTING END TREATMENTS.
3. TIE IN NEW RAILINGS WITH EXISTING RAILINGS IN ACCORDANCE WITH MD SHA STANDARDS.
4. THE CONTRACTOR SHALL IMMEDIATELY REMOVE STONE/SEDIMENT SPILLED, DROPPED OR TRACKED ONTO ADJACENT ROADWAYS BY VACUUMING, SCRAPING AND/OR SWEEPING.
5. LIMIT OF DISTURBANCE IS 4,440 SF.

TEMPORARY
COFFERDAM
STREAM
DIVERSION

ORDINARY HIGH —
WATER LINE (OHWL)

CAREY

N/F
KOHLEY KATHERINE LYNN &
DANIEL HALE HULME
009-3-139
DB 5340 PG 164

DE 5340 PG 164

~~BENCHMARK
R/R SPIKESET INN
POWER POLE
ELEV. = 21.80~~

PROPOSED SITE PLAN

1" = 20 FEET

**NOTE: SEE SHEET S-005 FOR
PILES, STREAM DIVERSION &
IMPACTS**

Date: FEBRUARY, 2026

Scale: AS NOTED

Dwn.By: SS1/KWW

Proj.No.: 0085B057.A01

SITE PLAN

Dwg.No.: S-004

HOTEL RD. BRIDGE

HOTEL ROAD OVER CAREY BRANCH

WORCESTER COUNTY, MD



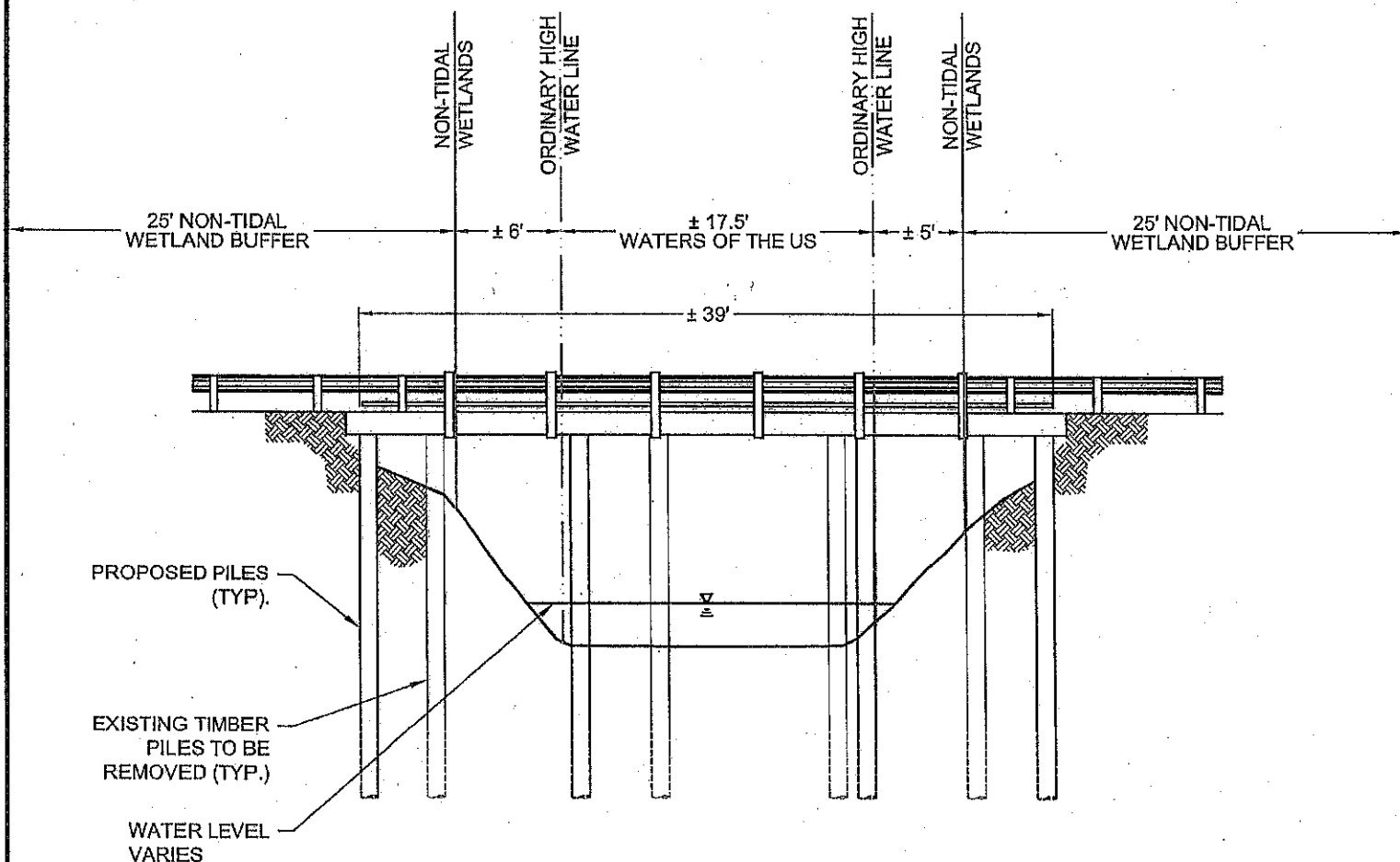
**DAVIS
BOWEN &
FRIEDEL, INC.**

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EASTON, MARYLAND
410.770.4744

MILFORD, DELAWARE
302.424.1441

SALISBURY, MARYLAND
410.543.9091



PROPOSED BRIDGE ELEVATION

N.T.S.

Date: FEBRUARY, 2026

Scale: AS NOTED

Dwn.By: SS1/KWW

Proj.No.: 0085B057.A01

PROPOSED ELEVATION

Dwg.No.: S-005

HOTEL RD. BRIDGE

HOTEL ROAD OVER CAREY BRANCH

WORCESTER COUNTY, MD



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MILFORD, DELAWARE
302.424.1441

SALISBURY, MARYLAND
410.543.9091

COFFERDAM DETAILS

1. "REPLY MAIL" MARKED ON ENVELOPE AND MAIL BOXES. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	2. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	3. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	4. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	5. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	6. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	7. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	8. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	9. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.	10. MAIL BOXES MUST BE KEPT OPENED AND UNLOCKED AT ALL TIMES. IF A MAIL BOX IS KEPT CLOSED, THE MAIL BOXES WILL BE OPENED AND THE MAIL INSIDE WILL BE DESTROYED.
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U.S. DEPARTMENT OF AGRICULTURE NATIONAL RESOURCES CONSERVATION SERVICE	2011	WAPLAD, DEPARTMENT OF DAMBOURDIT WATER MANAGEMENT
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SPECIFICATIONS

[illegible]

IF TEMPORARY STABILIZATION IS REQUIRED, FORTIFICATION SETTING SHALL BE PERFORMED DURING THE NEXT APPLICABLE FUND FOR PARAGRAPH (7) ABOVE.

442-259 (014) 5744
BORGES, JUAN
3012-08-2000
11/26/01 03:44

5809 HILL DR. #1003
PHOENIX, (610) 622-2244

REMOVED BY RESPONSIBLE PERSONNEL ONLY DATE [illegible]

