



DEPARTMENT OF FINANCE AND PURCHASING

345 South Main Street
Harrisonburg, VA 22801

Table with 3 columns: ISSUE DATE (December 16, 2014), INVITATION TO BID NUMBER (2015018-PW-B), FOR (West Rock Street Bridge Replacement), DEPARTMENT (Public Works), DATE/TIME OF CLOSING (January 27, 2015 at 2:00 PM Local Time), CONTRACT ADMINISTRATOR (Kim Cameron, PE Public Works Engineering)

MANDATORY PRE-BID MEETING WILL BE TUESDAY JANUARY 6, 2015 AT 2:00 PM LOCAL TIME AT 345 South Main St, Room 205, Harrisonburg, VA 22801

Bids - In accordance with the following and in compliance with all terms and conditions, unless otherwise noted, the undersigned offers and agrees, if the bid is accepted, to furnish items or services for which prices are quoted, delivered or furnished to designated points within the time specified. It is understood and agreed that this entire ITB and any addendums shall constitute a contract.

NAME AND ADDRESS OF FIRM:

Telephone/Fax No.:

Federal Employer Identification # :

State Corporation Commission #:

E-mail:

By signing this bid, Vendor(s) certifies, acknowledges, understands, and agrees to be bound by the conditions set forth in this ITB.

CHECK ONE: [] INDIVIDUAL [] PARTNERSHIP [] CORPORATION [] LLC

Vendor's Legally Authorized Signature

Date

Print Name

Title

Sealed bids, subject to terms and conditions of this Invitation to Bid will be received by the City of Harrisonburg Purchasing Office, 345 South Main Street, Room 201, Harrisonburg, Virginia 22801 until the date/ time specified above for furnishing items or services delivered or furnished to specified destinations within the time specified or stipulated by the vendor(s).

The City does not discriminate against small and minority businesses or faith-based organizations.

*This document must be completed & returned with bid submission.

PROJECT MANUAL
FOR
CITY OF HARRISONBURG, VIRGINIA

**Proposed Superstructure Replacement of
West Rock St. Bridge over Blacks Run**

**PROJECT:
STR-8006**

CITY OF HARRISONBURG, VIRGINIA
DEPARTMENT OF PUBLIC WORKS

December 16, 2014

Prepared by

Department of Public Works
City of Harrisonburg
320 East Mosby Road
Harrisonburg, Virginia 22801

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SECTION 0001
INVITATION TO BIDDERS

1. PROJECT

Proposed Superstructure Replacement of West Rock St. Bridge over Blacks Run for the City of Harrisonburg, VA.

2. DESCRIPTION OF WORK

This project includes replacement of an existing steel beam concrete deck bridge, 40 feet long with a new concrete slab span. Also, includes new approach sidewalks, entrances, curb and gutter, handrails and repaving approaches. Start work by April 6, 2015. Entire project must be completed by September 4, 2015.

3. DOCUMENTS

Bid documents are available for viewing on the internet at www.harrisonburgva.gov/bids-proposals and also on the eVA website at www.eva.virginia.gov. Bid documents are available for purchase at DTS Reprographics 4803 South Valley Pike, Harrisonburg VA, 22801, (540) 433-8373.

A. MANDATORY PRE-BID CONFERENCE

Tuesday, January 6, 2015 at 2:00 PM EST at the City Municipal Building, 345 South Main Street, Harrisonburg, Room 205. Attendance is mandatory and bidder's representative must be present for entire conference. Questions are due by January 20, 2015 at 12:00 PM (Noon) EST, and will be posted on the City's website at www.harrisonburgva.gov/bids-proposals as well as on the eVA website at www.eva.virginia.gov.

4. BID BOND

Bids shall be accompanied by a 5% bid security. Bid bond must be in the form of a cashier's check, certified check or a bid bond issued by a surety.

5. BIDS DUE

Tuesday, January 27, 2015 at 2:00 PM EST at the City of Harrisonburg, Department of Purchasing, 345 South Main Street, Room 201, Harrisonburg, VA, 22801. Bids will be opened and read publicly.

PLEASE NOTE: The City of Harrisonburg Municipal Building (345 South Main St) is currently undergoing construction around the facility. Parking options tend to be congested throughout the day. It is recommended to park on the North side of the building in visitor parking. Please take this into account when submitting your bid/proposal document and give yourself enough time to park and take your bid/proposal to the correct office for acceptance.

6. OWNER

City of Harrisonburg, 345 South Main Street, Harrisonburg, VA, 22801

7. CONTRACT ADMINISTRATOR

Kim Cameron, PE, 320 East Mosby Road, Harrisonburg, VA 22801. Telephone: 540-434-5928. Email: Kimberly.Cameron@harrisonburgva.gov

SECTION 0100
INSTRUCTIONS TO BIDDERS

1. SECURING DOCUMENTS

Bid documents are available for viewing at the following Harrisonburg locations: Department of Public Works, 320 East Mosby Road.

Bid documents are available for viewing on the internet at www.harrisonburgva.gov/bids-proposals and also on the eVA website at www.eva.virginia.gov.

Bid documents are available for purchase at DTS Reprographics 4803 South Valley Pike, Harrisonburg VA, 22801, (540) 433-8373.

2. BIDDER ELIGIBILITY

A. Bids

Bids will only be accepted from Contractors who are experienced in and actively engaged in the type of construction of the item(s) called for in the bid. All contractors, Prime and Sub, shall be VDOT Pre-Qualified in all areas of work they propose to perform on this project. No proposal will be accepted from or contract awarded to any person, firm, or corporation that is in arrears or is in default to the City upon any debt or contract, or that is a defaulter, as surety or otherwise, upon any obligation to said City or had failed to perform faithfully any previous contract with the City. Where an installation or assembly is to be performed by a subcontractor, the bidder must name the subcontractor, and the City reserves the right to determine whether the named subcontractor is fit and capable to perform the required work.

B. Bidders are required under Chapter 11, Title 54, Code of Virginia, to show evidence of certificate of registration before bid may be received and considered.

C. Bidders must certify in the bid form that they are not currently barred from bidding on contracts by any agency of the Commonwealth of Virginia or any federal agency.

3. BID FORM AND SUBMISSION

In order to receive consideration, submit bids in accordance with the following:

A. Make bids upon the forms provided herewith, properly signed and with all items filled out. Do not change the wording of the bid form, and do not add words to the bid form. Unauthorized conditions, limitations, or provisions attached to the bid will be cause for rejection of the bid.

B. Address bids to the Owner, and deliver to the address specified in the invitation to bid on or before the day and hour set for opening the bids. Enclose each bid in a sealed envelope bearing the title of the Work, the project number(s), the name of the bidder, Virginia contractor registration number and the date and hour of the bid opening, Submit only the original signed copy of the bid. The City of Harrisonburg is not

responsible for delays in the delivery of the mail by the U.S. Postal Service, private couriers, or the inter-office mail system. It is the sole responsibility of the bidder to see that his bid is received on time. No faxed or emailed bid will be considered. No bids received after the time fixed for receiving them will be considered. Late or incomplete bids may be returned to the bidder. All expenses for making bids to the City shall be borne by the bidder.

- C. Indicate receipt of issued Addenda. All Bidders are cautioned to check at www.harrisonburgva.gov/bids-proposals or at www.eva.virginia.gov to assure that all Addenda have been received and that the cost consequences thereof have been included in the bid.
- D. Although the bid is based upon unit prices, many items are to be priced under lump sum designations. It is the bidder's responsibility to verify the exact scope of work for all items in order to establish a bid price.
- E. The following documents fully completed and signed where appropriate are required for a responsive bid:
 - i) Signed Cover Sheet
 - ii) Bid Form
 - iii) Bid Tab
 - iv) Bid Security
 - v) Contractor Eligibility and Registration
 - vi) State Corporation Commission Registration
 - vii) Insurance Requirements for the City of Harrisonburg
 - viii) Proof of VDOT Pre-Qualification
 - ix) VDOT Form C48 (City Revision)
 - x) Signed Addenda, if applicable

4. BONDS

- A. Bid security in the amount stated in the Invitation to Bid must accompany each bid. The successful bidder's security will not be returned until he has signed the Contract and has furnished the required Certificates of Insurance.
- B. The Owner reserves the right to retain the security of all bidders until the successful bidder enters into the Contract or until 90 days after bid opening, whichever is sooner. Other bid security will be returned as soon as practicable. If any bidder refuses to enter into a Contract, the Owner may retain his bid security as liquidated damages but not as a penalty.
- C. Prior to signing the Contract, the Owner will require the successful bidder to secure and post a Labor and Materials Payment Bond and a Performance Bond, each in the amount of 100% of the Contract Sum. Such Bonds shall be issued by a Surety acceptable to the Owner.

5. EXAMINATION OF DOCUMENTS AND SITE OF WORK

Before submitting a bid, each bidder shall examine the Drawings carefully, shall read the Project Manual and all other proposed Contract Documents, and shall visit the site of the Work. Each bidder shall fully inform himself prior to bidding as to existing conditions and limitations under which the Work is to be performed, and shall include in his bid a sum to cover the cost of items necessary to perform the Work as set forth in the proposed Contract Documents. No allowance will be made to a bidder because of lack of such examination and knowledge. The submission of a bid will be considered as conclusive evidence that the bidder has made such examination.

6. MODIFICATION AND WITHDRAWAL OF BIDS

- A. Bidder may modify or withdraw his bid, either personally or by written request, at any time prior to the scheduled time for opening of bids.
- B. After bid opening, Code of Virginia 2.2-4330 B. 1. Shall apply: “The bidder shall give notice in writing of their claim of right to withdraw within two business days after the conclusion of the bid opening procedure and shall submit original work papers with such notice.”

7. INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO BIDDING

If any person contemplating submitting a bid for construction of the Work is in doubt as to the true meaning of any part of the proposed Contract Documents, or finds discrepancies on or omissions from any part of the proposed Contract Documents, they shall submit a written request to Ms. Pat Hilliard, Procurement Manager, by email to Purchasing@harrisonburgva.gov or by fax to 540-432-7778. Oral questions will not be permitted. All questions must be received no later than January 20, 2015 at 12:00 pm (noon) EST. The person submitting the request shall be responsible for any other interpretations of the proposed Contract Documents. Questions will be answered in Addendum format and posted as outlined in the invitation to bid, at www.harrisingurgva.gov/bids-proposals and at www.eva.virginia.gov. It is the responsibility of all bidders to ensure that they have received all addenda and to include signed copies of any and all addenda with their bid submission.

8. AWARD OF CONTRACT

The Contract, if awarded, will be awarded to the lowest responsive and responsible bidder, meeting all specifications, subject to the Owner's right to reject any or all bids and to waive informality and irregularity in the bids and in the bidding. If the bid from the lowest responsive, responsible bidder exceeds available funds, the City may negotiate with the apparent low bidder to obtain a contract price within available funds.

9. EXECUTION OF AGREEMENT

- A. The form of the Agreement which the successful bidder will be required to execute is included in the Project Manual.

- B. The bidder to whom the Contract is awarded shall, within ten (10) calendar days after notice of award and receipt of Agreement forms from the Owner, sign and deliver required copies to the Owner.
- C. At or prior to delivery of the signed Agreement, the bidder to whom the Contract is awarded shall deliver to the Owner those Certificates of Insurance and Endorsement required by the Contract Documents and such Labor and Materials Payment Bonds and Performance Bond and City Business License, as are required by the Owner.
- D. Bonds and Certificates of Insurance shall be approved by the Owner before the successful bidder may proceed with the Work. Failure or refusal to provide Bonds or Certificates of Insurance and Endorsement in a form satisfactory to the Owner shall subject the successful bidder to loss of time from the allowable construction period equal to the time of delay in furnishing the required material.

10. CONSTRUCTION TIME AND LIQUIDATED DAMAGES

- A. After award of contract, the successful bidder shall submit for review, a detailed construction schedule prior to beginning the project. The Owner shall be notified in advance of any major changes in the Construction Schedule as the project progresses. In order to assist the Engineer with Project Staffing Requirements for the following week, the CONTRACTOR shall provide the Engineer (and City Engineer's Office) on each Friday, with a detailed work schedule for the following week. The CONTRACTOR shall provide the Engineer with at least a 72-hour notice for the following items:
 - (1) All concrete placements
 - (2) All surface preparations
 - (3) All bridge deck grooving
 - (4) All applications of epoxies
 - (5) All survey party operations
 - (6) All traffic control layouts
 - (7) All planned acceptance tests
 - (8) Railing installation
 - (9) All approach work
 - (10) Demolition of existing structure
- B. The Agreement includes a stipulation that all Work be completed by a specified date (see section 0501). Any work not completed by the specified date will be assessed Liquidated Damages at a rate of \$1,000 per each consecutive calendar day until work is substantially completed. The contractor is not to begin work until the receipt of the Owner's Notice to Proceed which will be effective upon receipt. This is a Fixed Completion date project.
- C. This is a Phase Inspection project. The contractors may be charged for additional costs of inspection when materials and workmanship are found not to be ready for inspection at the time the contractor calls for inspection.

11. INSURANCE REQUIREMENTS

This form must be signed and returned with your bid submission.

Independent Contractors/Vendors must have the following insurance coverages before beginning work on City premises:

- 1.) The contractor/vendor will maintain a general liability policy with \$1,000,000 combined single limits. Coverage is to be on an occurrence basis with an insurer licensed to conduct business in the Commonwealth of Virginia. Excess Liability coverage in the amount of \$1,000,000. The insurer must have an A. M. Best rating of A- or better. **The insurer must list the City of Harrisonburg and Schwartz and Associates, Inc., consulting engineers, it's officers, agents and employees as an additional insured. The endorsement must be issued by the insurance company. A notation on the certificate of insurance is not sufficient.**
- 2.) The contractor/vendor will maintain workers' compensation coverage in compliance with the laws of the Commonwealth of Virginia. The coverage must have statutory limits and be with an insurer licensed to conduct business in the Commonwealth of Virginia. The insurer must have an A. M. Best rating of A- or better. As an alternative, it is acceptable for the contractor to be insured by a group self insurance association that is licensed by the Virginia Bureau of Insurance. The contractor will also carry employers liability insurance with a limit of at least \$100,000 bodily injury by accident/\$500,000 bodily injury by disease policy limit/\$100,000 bodily injury by disease each employee.
- 3.) The contractor/vendor will maintain automobile liability insurance with limits of at least \$1,000,000. The coverage is to be written with a symbol "1". The insurer must be licensed to conduct business in the Commonwealth of Virginia. The insurer must have an A. M. Best rating of A- or better.

OFFEROR STATEMENT

We understand the Insurance Requirements of these specifications and will comply in full if awarded this contract.

FIRM

SIGNATURE

RETURN THIS PAGE

12. CITY BUSINESS LICENSE

City of Harrisonburg Business License is required for successful award of this project. At or prior to delivery of the signed Agreement/Contract, the bidder to whom the Contract is awarded shall deliver to the Owner a copy of their City Business License. The bidder shall ensure that the Business License indicates a basis amount equal to or greater than the awarded Contract value. For information on City Business Licenses contact the Harrisonburg Commissioner of Revenue office at 540-432-7781.

13. STATE CORPORATION COMMISSION IDENTIFICATION NUMBER

Refer to 0303 for State Corporation Commission requirements. **Form has to be signed and returned with your bid submission.**

Pursuant to Code of VA 2.2-4311.2 subsection B, a bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 is required to include in its bid or proposal the identification number issued to it by the State Corporation Commission (SCC). Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law is required to include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized. Link to the SCC site is <http://www.scc.virginia.gov>.

14. STANDARD SPECIFICATIONS AND STANDARDS

Work in this project shall conform to the latest editions of the Virginia Department of Transportation (VDOT) Road and Bridge specifications, the VDOT Road and Bridge Standards, the Virginia Erosion and Sediment Control handbook, the Virginia Erosion and Sediment Control regulations and the City of Harrisonburg Design and Construction Standards Manual. In the event of conflict between any of these standards, specifications or plans, the most stringent shall govern.

15. CONSIDERATION OF PROJECT COMPLEXITIES

- D. In preparing this bid, Contractor shall understand and account in his costs for the complexities involved in administrating the construction required by this Contract. Contractor shall be aware that the project area receives heavy vehicular and pedestrian traffic. Contractor shall accommodate such traffic through and around the work area in a safe and well-marked manner.
- E. Submission of a bid shall be an affirmation that the Contractor understands these complexities and difficulties associated with this project, that he has included in his bid a sufficient dollar amount to compensate for the additional time and effort these complexities and difficulties will require on his part, and that he understands that the Owner will not accept any claim for time extension or additional costs associated with them.

END INSTRUCTIONS TO BIDDERS

0300 BID FORM



Mr. James Baker
Director
Department of Public Works
320 East Mosby Road
Harrisonburg, Virginia 22801

Dear Sir:

The undersigned, having visited and examined the site and having carefully studied the drawings and project manual for the City of Harrisonburg, West Rock Street Bridge Replacement, hereby proposes to furnish all plant, labor, equipment, materials, and services and to perform all operations necessary to execute and complete the work required for the project in strict accordance with the drawings dated December 10, 2014 and the project manual dated December 16, 2014, together with addenda numbered _____, issued during bidding period and hereby acknowledged subject to the terms and conditions of the Agreement for the following sums of money:

BASE BID PROPOSAL

All labor, material, services and equipment necessary for the completion of the work shown on the Drawings and in the Project Manual and in the Addenda (if issued).

_____ (\$_____)

This bid submitted by (name of firm): _____

It is understood and agreed that the Owner, in protecting his best interests, reserves the right to:

Reject any and all bids, or waive any defects in favor of the City

Or

Accept any bid at the bid price, whereupon the contractor shall furnish equipment and materials as specified.

Contractors shall indicate a unit price for each item listed in the Pay Items Summary which follows. The listed pay items are to contain all necessary costs required for completion of the work. It is understood that all quantities listed below are estimated quantities and the Owner reserves the right to raise, lower or eliminate any quantity or item. Unit prices shall be used in determining partial and full payment.

BID PROPOSAL

Rev. 12-10.14

**PROPOSED SUPERSTRUCTURE REPLACEMENT OF WEST ROCK STREET
OVER BLACKS RUN
CITY OF HARRISONBURG, VIRGINIA**

NO MAJOR ITEMS & NO PRICE ADJUSTMENTS

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QUANTITIES</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
1	MOBILIZATION	LUMP SUM	LUMP SUM	\$ _____
2	CONCRETE, CLASS A4.5	121.7 C.Y.	\$ _____	\$ _____
3	CONCRETE, CLASS A3	9.5 C.Y.	\$ _____	\$ _____
4	STRUCTURE EXCAVATION	35.0 C.Y.	\$ _____	\$ _____
5	POROUS BACKFILL	17.0 C.Y.	\$ _____	\$ _____
6	BRIDGE DECK GROOVING	147 S.Y.	\$ _____	\$ _____
7	CORROSION RESISTANT REINFORCING STEEL, CLASS I	26,980 LBS.	\$ _____	\$ _____
8	ALUMINUM RAILING	81 L.F.	\$ _____	\$ _____
9	REMOVE PORTION OF EXISTING STRUCTURE (#8006)	LUMP SUM	LUMP SUM	\$ _____
10	CONCRETE SUBSTRUCTURE SURFACE REPAIR	8 S.Y.	\$ _____	\$ _____
11	REPOINT MORTAR JOINTS, TYPE A	250 L.F.	\$ _____	\$ _____
12	DRY RIPRAP, CLASS A1	3 TONS	\$ _____	\$ _____
13	ASPHALT CONCRETE, TYPE SM-12.5A	39 TONS	\$ _____	\$ _____
14	ASPHALT CONCRETE BASE COURSE, TYPE BM-25.0A	13 TONS	\$ _____	\$ _____
15	AGGREGATE BASE MATERIAL TYPE I, #21-A	56 TONS	\$ _____	\$ _____
16	CRUSHER RUN AGGREG. #25 OR #26	20 TONS	\$ _____	\$ _____
17	FLEXIBLE PAVEMENT PLANING (0-2" DEPTH)	300 S.Y.	\$ _____	\$ _____
18	TEMPORARY SILT FENCE (ST'D. EC-5)	100 L.F.	\$ _____	\$ _____

NO MAJOR ITEMS & NO PRICE ADJUSTMENTS

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QUANTITIES</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
19	SILTATION CONTROL EXCAVATION	20 C.Y.	\$ _____	\$ _____
20	SEEDING	LUMP SUM	LUMP SUM	\$ _____
21	HANDRAIL HR-1, TYPE II	28 L.F.	\$ _____	\$ _____
22	DEMOLITION OF PAVEMENT	160 S.Y.	\$ _____	\$ _____
23	COMBINATION CURB & GUTTER ST'D. CG-6	62 L.F.	\$ _____	\$ _____
24	CONCRETE ENTRANCE, ST'D. CG-9A (7" DEPTH)	61 S.Y.	\$ _____	\$ _____
25	HYDRAULIC CEMENT CONC. SIDEWALK (4" DEPTH)	25 S.Y.	\$ _____	\$ _____
26	HYDRAULIC CEMENT CONC. SIDEWALK MOD. (4" DEPTH)	22 S.Y.	\$ _____	\$ _____
27	CONSTRUCTION SURVEYING	LUMP SUM	LUMP SUM	\$ _____
28	MAINTENANCE OF TRAFFIC	LUMP SUM	LUMP SUM	\$ _____
TOTAL BASE BID				\$ _____

0301 BID SECURITY

We are properly equipped to execute work of the character and extent indicated by the bidding documents and so covered by this bid and will enter into agreement for the execution and completion of the work in accordance with the drawings and project manual and this bid; and we further agree that if awarded the contract, we will commence the work on the date stated in the "Notice to Proceed" document and prosecute the work and all obligations by the specified completion dates.

Enclosed herewith is the following security, offered as evidence that the undersigned will enter into agreement for the execution and completion of the work in accordance with the drawings and project manual.

Certified check or Cashier's check for the sum of

\$ _____

Name of Bank

Bidder's Bond in the amount of

\$ _____

Bond issued by

The undersigned further agrees that in case of failure on his part to execute the said agreement within the ten consecutive calendar days after written notice being given on the award of the contract, the monies payable by the security accompanying this bid shall be paid to the City of Harrisonburg, Virginia as liquidated damages for such failure, otherwise, the security accompanying this bid shall be returned to the undersigned.

This bid is subject to acceptance within a period of 30 days from this date.

Respectfully submitted,

Company Name

By _____
Signature of Authorized

Printed Name _____

Date _____

0302 CONTRACTOR ELIGIBILITY AND REGISTRATION

This is to certify that I (we) are not currently barred from bidding on contracts by any agency of The Commonwealth of Virginia, nor am I (we) a part of any firm/corporation that is currently barred from bidding on contracts by any agency of The Commonwealth of Virginia.

Check one:

_____ I am currently registered as a contractor in the Commonwealth of Virginia.

_____ My registration number is _____

_____ I am currently not required to register as a contractor in the Commonwealth of Virginia per Chapter 11, Title 54 of the Code of Virginia.

Contractor

[SEAL]

Address

Attest

By: _____
Signature

Title

Date

0303 State Corporation Commission Form

Virginia State Corporation Commission (“SCC”) registration information:

The undersigned Offeror:

is a corporation or other business entity with the following SCC identification number:
_____ **-OR-**

is not a corporation, limited liability company, limited partnership, registered limited liability partnership, or business trust **-OR-**

is an out-of-state business entity that does not regularly and continuously maintain as part of its ordinary and customary business any employees, agents, offices, facilities, or inventories in Virginia (not counting any employees or agents in Virginia who merely solicit orders that require acceptance outside Virginia before they become contracts, and not counting any incidental presence of the Offeror in Virginia that is needed in order to assemble, maintain, and repair goods in accordance with the contracts by which such goods were sold and shipped into Virginia from bidder’s out-of-state location) **-OR-**

is an out-of-state business entity that is including with this bid an opinion of legal counsel which accurately and completely discloses the undersigned Offeror’s current contacts with Virginia and describes why those contacts do not constitute the transaction of business in Virginia within the meaning of § 13.1-757 or other similar provisions in Titles 13.1 or 50 of the Code of Virginia.

****NOTE**** >> Check the following box if you have not completed any of the foregoing options but currently have pending before the SCC an application for authority to transact business in the Commonwealth of Virginia and wish to be considered for a waiver to allow you to submit the SCC identification number after the due date for proposals (the Commonwealth reserves the right to determine in its sole discretion whether to allow such waiver):

Signature: _____ **Date:** _____

Name: _____
Print

Title: _____

Name of Firm: _____

0304 NON-COLLUSION AFFIDAVIT

Under oath, I hereby affirm under penalty of perjury:

- (1) That I am the bidder or a partner of the bidder, or an officer or employee of the bidding corporation with authority to sign on its behalf;
- (2) That the attached bid or bids have been arrived at by the bidder and have been arrived at and submitted without collusion or any design to limit bidding or competition;
- (3) That the contents of the bid or bids have not been communicated to any person not an employee or agent of the bidder on any bid furnished with the bid or bids, and will not be communicated to any such person prior to the official opening of the bid or bids; and
- (4) That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Signed _____

Title _____

Firm Name _____

CITY OF HARRISONBURG
COMMONWEALTH OF VIRGINIA, to wit:

I, _____, a Notary Public, do certify that
_____ whose name is signed to the foregoing has
this date acknowledged the same before me in my City foresaid.

Given under my hand this _____ day of _____, 20__.

My Commission expires _____.

Notary Public

Section 0400

GENERAL TERMS AND CONDITIONS FOR THE CITY OF HARRISONBURG, VA

PURCHASING AND CONTRACTING MANUAL: This solicitation is subject to the provisions of The Purchasing and Contracting Policy Manual for the City of Harrisonburg (City) and any revisions thereto, which are hereby incorporated into this contract in their entirety. A copy of the manual is available for review at www.Harrisonburgva.gov/bids.

APPLICABLE LAWS AND COURTS: This solicitation and any resulting contract shall be governed in all respects by the laws of the Commonwealth of Virginia and any litigation with respect thereto shall be brought in the courts of the Commonwealth. The contractor shall comply with all applicable federal, state and local laws, rules and regulations.

ANTI-DISCRIMINATION: By submitting their (bids/proposals), (bidders/offerors) certify to the City that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and 2.2-4311 of the *Virginia Public Procurement Act*.

In every contract over \$10,000 the provisions below apply:

1. During the performance of this contract, the contractor agrees as follows:
 - a. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
 - b. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor is an equal opportunity employer.
 - c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting these requirements.

The contractor will include the provisions of 1. above in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

2. The City does not discriminate against small and minority businesses or faith based organizations.

ETHICS IN PUBLIC CONTRACTING: By submitting their (bids/proposals), (bidders/offerors) certify that their (bids/proposals) are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other (bidder/offeror), supplier, manufacturer or subcontractor in connection with their (bid/proposal), and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

IMMIGRATION REFORM AND CONTROL ACT OF 1986: By submitting their (bids/proposals), (bidders/offerors) certify that they do not and will not during the performance of this contract employ illegal alien workers or otherwise violate the provisions of the federal Immigration Reform and Control Act of 1986.

DEBARMENT STATUS: By submitting their (bids/proposals), (bidders/offerors) certify that they are not currently debarred by the Commonwealth of Virginia from submitting bids or proposals on contracts for the type of goods and/or services covered by this solicitation, nor are they an agent of any person or entity that is currently so debarred.

ANTITRUST: By entering into a contract, the contractor conveys, sells, assigns, and transfers to the City all rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or acquired by the City under said contract.

MANDATORY USE OF CITY FORM AND TERMS AND CONDITIONS FOR IFBs AND RFPs

1. **(For Invitation For Bids(ITB):)** Failure to submit a bid on the form provided, (if provided) shall be a cause for rejection of the bid. Modification of or additions to any portion of the Invitation for Bids may be cause for rejection of the bid; however, the City reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such a bid as nonresponsive. As a precondition to its acceptance, the City may, in its sole discretion, request that the bidder withdraw or modify nonresponsive portions of a bid which do not affect quality, quantity, price, or delivery. No modification of or addition to the provisions of the contract shall be effective unless reduced to writing and signed by the parties.
2. **(For Request For Proposals(RFP):)** Failure to submit a proposal on the form provided, (if provided) shall be a cause for rejection of the bid. Modification of or additions to the General Terms and Conditions of the solicitation may be cause for rejection of the proposal; however, the City reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such a proposal.

REVISIONS TO THE OFFICIAL ITB/RFP: No offeror shall modify, revise, edit or make any unauthorized change(s) to the original Official Invitation to Bid (ITB) or Official Request for Proposal (RFP). The Official solicitation document and the Addenda(s) are the

documents posted on the City of Harrisonburg's web site and/or authorized by the City of Harrisonburg's Purchasing Agent. Any such violation as stated above may result in rejection of the ITB/RFP response. In addition, violations may result in the debarment of the offeror by the City of Harrisonburg.

CLARIFICATION OF TERMS: If any prospective (bidder/offeror) has questions about the specifications or other solicitation documents, the prospective (bidder/offeror) should contact the person whose name appears on the face of the solicitation no later than five working days before the due date. Any revisions to the solicitation will be made only by addendum issued by the buyer.

PAYMENT:

1. To Prime Contractor:

- a. Invoices for items ordered, delivered and accepted shall be submitted by the contractor directly to the payment address shown on the purchase order/contract. All invoices shall show the purchase order number; social security number (for individual contractors) or the federal employer identification number (for proprietorships, partnerships, and corporations).
- b. Any payment terms requiring payment in less than 30 days will be regarded as requiring payment 30 days after invoice or delivery, whichever occurs last. This shall not affect offers of discounts for payment in less than 30 days, however.
- c. All goods or services provided under this contract or purchase order, that are to be paid for with public funds, shall be billed by the contractor at the contract price.
- d. The following shall be deemed to be the date of payment: the date of postmark in all cases where payment is made by mail, or the date of offset when offset proceedings have been instituted as authorized under the Virginia Debt Collection Act.
- e. Individual contractors shall provide their social security numbers, and proprietors, partnerships, and corporations shall provide the City with a federal employer identification number, prior to receiving any payment from the City.
- f. **Unreasonable Charges.** Under certain emergency procurements and for most time and material purchases, final job costs cannot be accurately determined at the time orders are placed. In such cases, contractors should be put on notice that final payment in full is contingent on a determination of reasonableness with respect to all invoiced charges. Charges which appear to be unreasonable will be researched and challenged, and that portion of the invoice held in abeyance until a settlement can be reached. Upon determining that invoiced as to those

charges which it considers unreasonable and the basis for the determination. A contractor may not institute legal action unless a settlement cannot be reached within thirty (30) days of notification. The provisions of this section do not relieve the City of its prompt payment obligations with respect to those charges which are not in dispute (*Code of Virginia, 2.2.4363*).

2. To Subcontractors:

a. A contractor awarded a contract under this solicitation is hereby obligated:

(1) To pay the subcontractor(s) within seven (7) days of the contractor's receipt of payment from the City for the proportionate share of the payment received for work performed by the subcontractor(s) under the contract; or

(2) To notify the City and the subcontractor(s), in writing, of the contractor's intention to withhold payment and the reason.

b. The contractor is obligated to pay the subcontractor(s) interest at the rate of one percent per month (unless otherwise provided under the terms of the contract) on all amounts owed by the contractor that remain unpaid seven (7) days following receipt of payment from the City, except for amounts withheld as stated in (2) above. The date of mailing of any payment by U. S. Mail is deemed to be payment to the addressee. These provisions apply to each sub-tier contractor performing under the primary contract. A contractor's obligation to pay an interest charge to a subcontractor may not be construed to be an obligation of the City.

PRECEDENCE OF TERMS: General Terms and Conditions shall apply in all instances. In the event there is a conflict between any of the other General Terms and Conditions and any Special Terms and Conditions in this solicitation, the Special Terms and Conditions shall apply.

QUALIFICATIONS OF (BIDDERS/OFFERORS): The City may make such reasonable investigations as deemed proper and necessary to determine the ability of the (bidder/offeror) to perform the services/furnish the goods and the (bidder/offeror) shall furnish to the City all such information and data for this purpose as may be requested. The City reserves the right to inspect (bidder's/offeror's) physical facilities prior to award to satisfy questions regarding the (bidder's/offeror's) capabilities. The City further reserves the right to reject any (bid/ proposal) if the evidence submitted by, or investigations of, such (bidder/offeror) fails to satisfy the City that such (bidder/offeror) is properly qualified to carry out the obligations of the contract and to provide the services and/or furnish the goods contemplated therein.

TESTING AND INSPECTION: The City reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications.

ASSIGNMENT OF CONTRACT: A contract shall not be assignable by the contractor in whole or in part without the written consent of the City.

CHANGES TO THE CONTRACT: Changes can be made to the contract in any of the following ways:

1. The parties may agree in writing to modify the scope of the contract. An increase or decrease in the price of the contract resulting from such modification shall be agreed to by the parties as a part of their written agreement to modify the scope of the contract.
2. The Purchasing Agent or City delegated agent may order changes within the general scope of the contract at any time by written notice to the contractor. Changes within the scope of the contract include, but are not limited to, things such as services to be performed, the method of packing or shipment, and the place of delivery or installation. The contractor shall comply with the notice upon receipt. The contractor shall be compensated for any additional costs incurred as the result of such order and shall give the City a credit for any savings.

DEFAULT: In case of failure to deliver goods or services in accordance with the contract terms and conditions, the City, after due oral or written notice, may procure them from other sources and hold the contractor responsible for any resulting additional purchase and administrative costs. This remedy shall be in addition to any other remedies, which the City may have.

CANCELLATION OF THE CONTRACT: The City may terminate any agreement resulting from this solicitation at any time, for any reason or for no reason, upon thirty days advance written notice to the Contractor. In the event of such termination the Contractor shall be compensated for services and work performed prior to termination.

TAXES: Sales to the City of Harrisonburg are normally exempt from State sales tax. State sales and use tax certificates of exemption, Form ST-12, will be issued upon request.

(NOT NORMALLY REQUIRED FOR SERVICE CONTRACTS)

USE OF BRAND NAMES: Unless otherwise provided in this solicitation, the name of a certain brand, make or manufacturer does not restrict (bidders/offerors) to the specific brand, make or manufacturer named, but conveys the general style, type, character, and quality of the article desired. Any article which the public body, in its sole discretion, determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted. The (bidder/offeror) is responsible to clearly and specifically identify the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the City to determine if the product offered meets the requirements of the solicitation. This is required even if offering the exact brand, make or manufacturer specified. Normally in competitive sealed bidding only the information furnished with the bid will be considered in the evaluation. Failure to furnish adequate data for evaluation purposes may result in declaring a bid nonresponsive. Unless the (bidder/offeror) clearly indicates in its (bid/proposal) that the product offered is an

“equal” product, such (bid/proposal) will be considered to offer the brand name product referenced in the solicitation.**(NOT NORMALLY REQUIRED FOR SERVICE CONTRACTS)**

TRANSPORTATION AND PACKAGING: By submitting their (bids/proposals), all (bidders/offerors) certify and warrant that the price offered for FOB destination includes only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped. Except as otherwise specified herein, standard commercial packaging, packing and shipping containers shall be used. All shipping containers shall be legibly marked or labeled on the outside with purchase order number, commodity description, and quantity.**(NOT NORMALLY REQUIRED FOR SERVICE CONTRACTS)**

INSURANCE: By signing and submitting a bid or proposal under this solicitation, the bidder or offeror certifies that if awarded the contract, it will have insurance coverages per the solicitation document at the time the contract is awarded. For construction contracts, if any subcontractors are involved, the subcontractor will have workers’ compensation insurance in accordance with 2.2-4332 and 65.2-800 et seq. of the *Code of Virginia*. The bidder or offeror further certifies that the contractor and any subcontractors will maintain these insurance coverages during the entire term of the contract and that all insurance coverages will be provided by insurance companies authorized to sell insurance in Virginia by the Virginia State Corporation Commission. **(NOT NORMALLY REQUIRED FOR GOODS CONTRACTS. INSURANCE IS REQUIRED WHEN WORK IS TO BE PERFORMED ON CITY OWNED OR LEASED FACILITIES OR PROPERTY.)**

AVAILABILITY OF FUNDS: Agreements are made subject to the appropriation of funds by the Harrisonburg City Council and are null and void in the event of non-appropriation by the City Council. Non-appropriation of funds shall not be deemed a cancellation and shall terminate this agreement without recourse and with no liability on the part of the City.

SELECTION PROCESS/AWARD: Upon the award or the announcement of the decision to award a contract as a result of this solicitation, the department will publicly post such notice for a minimum of ten (10) days, or will notify all responsive bidders/offerors.

BID/PROPOSAL ACCEPTANCE PERIOD: Any bid/proposal resulting from this solicitation shall be valid for (30) days. At the end of the (30) days the bid/proposal may be withdrawn at the written request of the Bidder/Offeror. If the bid or proposal is not withdrawn at that time it remains in effect until an award is made or the solicitation is canceled.

EXCUSABLE DELAY: The City shall not be in default of any failure in performance of this agreement in accordance with its terms if such failure arises out of causes beyond its reasonable control and without the fault of or negligence of the City. Such causes may include, but are not restricted to acts of God or the public enemy, fires, flood, epidemics, quarantine restrictions, strikes, freight embargoes, and usually severe weather, but in every case the failure to perform must be beyond the reasonable control and without the fault or negligence of the City.

DRUG-FREE WORKPLACE: During the performance of this contract, the contractor agrees to (i) provide a drug-free workplace for the contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

SAFETY and OSHA STANDARDS: All parties performing services for the City shall comply with all Occupational Safety and Health Administration (OSHA), State Occupational Health Standards, and any other applicable rules and regulations. All parties shall be held responsible for the training, supervision, and safety of their employees. Any unsafe acts or hazardous conditions that may cause injury or damage to any persons or property within and around the work site areas under this contract shall be remedied per the regulatory agency's guidelines.

PERMITS AND FEES: All proposals submitted shall have included in price the cost of any business or professional licenses, permits or fees required by the City of Harrisonburg or the Commonwealth of Virginia. The offeror must have all necessary licenses to perform the services in Virginia and, if practicing as a corporation, be authorized to do business in the Commonwealth of VA.

COOPERATIVE PROCUREMENT: This procurement is being conducted on behalf of other public bodies, in accordance with 2.2-4304 (A) of the Code of VA. The successful bidder has the option to provide these same items (services), except architectural and engineering services, at the same prices, awarded as a result of this solicitation to any public body within the Commonwealth of Virginia. If any other Public body decides to use the final contract, the contractor(s) must deal directly with that public body concerning the placement of orders, issuance of the purchase orders, contractual disputes, invoicing and payment. Failure to extend a contract to any public body will have no effect on consideration of your bid.

LIABILITY AND LITIGATION: The City shall not indemnify or hold harmless any Contractor or other third party. The City does not waive any right or release any party from liability, whether on its own behalf or on behalf of any boards, employees or agents. The City does not waive the right to trial by jury for any cause of action arising from the Contract and shall not submit any Contract claim to binding arbitration or mediation. The City shall not be liable to Contractor for any special, punitive or exemplary damages arising from the performance of the contract, including, but not limited to, incidental damages, and lost profit and lost wages, even if such special damages are reasonably foreseeable. Any provision(s) in the Contract contrary to these statements is/are hereby deleted and rendered void.

STATE CORPORATION COMMISSION IDENTIFICATION NUMBER: Pursuant to Code of VA 2.2-4311.2 subsection B, a bidder or offeror organized or authorized to transact

business in the Commonwealth pursuant to Title 13.1 or Title 50 is required to include in its bid or proposal the identification number issued to it by the State Corporation Commission (SCC). Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law is required to include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized. Link to the SCC site is <http://www.scc.virginia.gov>.

0501 AGREEMENT

This AGREEMENT is dated as of the ___ day of _____ in the year 20__ between the City of Harrisonburg, Virginia (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR). OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents for the project titled City of Harrisonburg, Virginia, Proposed Superstructure Replacement of West Rock St. Bridge over Blacks Run. The work is generally described as follows:

This project includes replacement of an existing steel beam concrete deck bridge, 40 feet long with a new concrete slab span. Also included are new approach sidewalks, entrances, curb and gutter, handrails and repaving approaches.

ARTICLE 2. CONTRACT ADMINSTRATOR

This Project has been designed by the Schwartz and Associates, Inc., and administered by the Department of Public Works. The Director of Public Works of Harrisonburg, Virginia, or their designee, is hereinafter called CONTRACT ADMINSTRATOR, will assume all duties and responsibilities and will have the rights and authority assigned to CONTRACT ADMINSTRATOR in the Contract Documents in connection with completion of the work in accordance with the Contract Documents.

ARTICLE 3. CONSTRUCTION TIME AND LIQUIDATED DAMAGES

3.1 The CONTRACTOR shall submit for review, a detailed construction schedule prior to beginning the project. The Owner shall be notified in advance of any major changes in the Construction Schedule as the project progresses. In order to assist the Engineer with Project Staffing Requirements for the following week, the CONTRACTOR shall provide the Engineer (and City Engineer's Office) on each Friday, with a detailed work schedule for the following week. The CONTRACTOR shall provide the Engineer with at least a 72-hour notice for the following items:

- (1) All concrete placements
- (2) All surface preparations
- (3) All bridge deck grooving
- (4) All applications of epoxies
- (5) All survey party operations
- (6) All traffic control layouts
- (7) All planned acceptance tests
- (8) Railing installation
- (9) All approach work
- (10) Demolition of existing structure

3.2 Contract Time shall be Fixed Completion Date for the work as follows:

All work shall be completed by September 4, 2015.

3.3 Consideration for time extensions attributable to weather will not be given except as provided for in Section 108.04 of the VDOT Standard Specifications.

3.4 Liquidated Damages shall be in accordance with Section 0100 Instructions to Bidders, Item 10 of this Project Manual.

ARTICLE 4. CONTRACT PRICE

4.1 OWNER shall pay CONTRACTOR for performance of the Work in accordance with the Contract Documents such amounts as required by the Contract Documents.

ARTICLE 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Virginia Department of Transportation's Road & Bridge Specifications. Applications for Payment will be processed by CONTRACT ADMINISTRATOR as provided in the Virginia Department of Transportation's Road & Bridge Specifications.

5.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by CONTRACT ADMINISTRATOR, on or about the 1st day of each month during construction as provided below. All Progress Payments will be on the basis of the progress of the Work measured by the schedule of values established in Virginia Department of Transportation's Road & Bridge Specifications.

5.1.1 Prior to completion Progress Payments will be made in an amount equal to:

95% of the Work completed, and

95% of the materials and equipment not incorporated in the Work but delivered and suitably stored less in each case the aggregate of payment previously made.

5.1.2 Upon substantial completion, OWNER shall pay amount sufficient to increase total payments to CONTRACTOR to 98% of the Contract Price, less such amount as CONTRACT ADMINISTRATOR shall determine in accordance with Virginia Department of Transportation's Road & Bridge Specifications.

5.2. Final Payment. Upon final completion and acceptance of the Work in accordance with the Virginia Department of Transportation's Road & Bridge Specifications, OWNER shall pay the remainder of the Contract Price as recommended by CONTRACT ADMINISTRATOR as provided in said Virginia Department of Transportation's Road & Bridge Specifications.

ARTICLE 6. INTEREST

All monies not paid when due hereunder shall bear interest at maximum rate allowed by law at the place of the Project.

ARTICLE 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

7.1 CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

7.2 CONTRACTOR has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which were relied upon by CONTRACT ADMINISTRATOR in the preparation of the Drawings and Specifications and which have been identified in the Supplementary Conditions.

7.3 CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in Paragraph 7.2. as he deems necessary for the performance of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examination, investigations, tests, reports or similar data are or will be required by CONTRACTOR for such purposes.

7.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.

7.5 CONTRACTOR has given CONTRACT ADMINISTRATOR written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by CONTRACT ADMINISTRATOR is acceptable to CONTRACTOR.

ARTICLE 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR are attached by reference to this Agreement, made a part hereof and consist of the following:

- 8.1 This Agreement (pages 1 to 5, inclusive)
- 8.2 Performance and Payment bonds
- 8.3 Certificate of Insurance and Endorsement
- 8.4 Notice of Award

- 8.5 Notice to Proceed
- 8.6 Project Manual entitled “Proposed Superstructure Replacement of W. Rock Street Bridge over Blacks Run”
- 8.7 Drawings, consisting of a cover sheet and sheets numbered 1 through 16
- 8.8 Signed Addenda
- 8.9 Contractor’s Bid
- 8.10 City of Harrisonburg Standard General Terms and Conditions
- 8.11 Documentation submitted by Contractor prior to Notice of Award.
- 8.12 Any modifications or change orders, duly delivered after execution of Agreement.

All contract documents must be listed in this article. Contract documents may be altered, amended or repealed only as allowed by the Virginia Department of Transportation’s Road & Bridge Specifications.

ARTICLE 9. MISCELLANEOUS

9.1 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, monies that may become due and monies that are now due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.2 OWNER and CONTRACTOR each binds himself, his partners, successors, assigns and legal representatives to the party hereto, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

ARTICLE 10. OTHER PROVISIONS

IN WITNESS WHEREOF, the parties hereto have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and CONTRACT ADMINISTRATOR. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by CONTRACT ADMINISTRATOR on their behalf.

This Agreement is effective: _____
Date

OWNER: City of Harrisonburg

CONTRACTOR: _____

Signature _____

Signature _____

Name & Title: Kurt Hodgen, City Manager

Name & Title: _____

Attest _____

Attest _____

Address for giving notices:

Address for giving notices:

License No. _____

END OF AGREEMENT

0502 NOTICE TO PROCEED

DATE: _____

TO: _____

Re: City of Harrisonburg

PROJECT TITLE: _____

PROJECT NO: _____

In accordance with the Contract between the City of Harrisonburg and Contractor you are notified that the Time for Completion under the above Agreement will commence to run on _____, 20 _____. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Contract between Owner and Contractor, the Work shall be substantially completed within _____ calendar days from and after the said date, which is _____, 20_____.

Before you may start any Work at the site, the City of Harrisonburg requires that you deliver to the City the Certificates of Insurance which the Contractor is required to purchase and maintain in accordance with the Contract Documents.

By _____
Owner Authorized Signature

Name & Title (Print)

0800 APPLICATION FOR PAYMENT

1. Applications for progress payment shall be made on forms identical to those shown on pages 0800-2 and 0800-3. The following application for payment is an excel spreadsheet and will be made available for the contractor's use.
2. A draft of the application for progress payment shall be emailed to the Project Manager and Project Coordinator for review. After review and approval by the City, the contractor shall mail two signed applications for progress payment to: 320 East Mosby Road, Harrisonburg, VA 22801.

0800 APPLICATION AND CERTIFICATE FOR PAYMENT

To Owner: City of Harrisonburg
320 E. Mosby Rd.
Harrisonburg, VA 22801

Project:

Application No.:

Period To:

From Contractor:

Contract Date:

1. Original Contract Sum	\$	CHANGE ORDER SUMMARY	Additions	Deductions
2. Net Change by Change Order	\$	Total Changes Approved Previously		
3. Contract Sum To Date (line 1 + line 2)	\$	Total Approved this Month		
4. Total Completed and Stored To Date (column G)	\$	Totals		
5. Retainage:		Net Changes by Change Order		
a. ___% of Completed Work (column D + column E)	\$			
b. ___% of Stored Materials (column F)	\$			
6. Total Earned Less Retainage (line 4 less line 5)	\$			
7. Less Previous Applications for Payment	\$			
8. Current Payment Due	\$ <input style="border: 1px solid black; width: 80px; height: 20px;" type="text"/>			
9. Balance to Finish, Plus Retainage	\$			

The undersigned contractor hereby swears and under penalty of perjury that (1) all previous progress payments received from the owner on account of work performed under the contract referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with work covered by prior applications for payment under said contract, being Applications for Payment 1 through ___ inclusive; and (2) all materials and equipment incorporated in said project or otherwise listed in or covered by this application for payment are free and clear of all liens, claims, security and encumbrances.

Signature _____ Date _____
Printed Name _____ Title _____

State of _____ County of _____

Before me this ____ day of _____, 20__ personally appeared _____ known to me, who being duly sworn, did depose and say that he/she is the _____ of the contractor above mentioned, that he/she executed the above application for payment on behalf of said contractor and that all of the statements contained herein are true, correct and complete.

Notary Public _____ Registration No. _____

My Commission Expires _____

APPLICATION NO.:

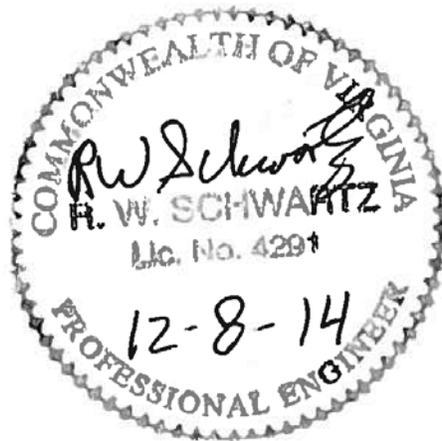
PERIOD TO:

PROJECT:

A	B	C				D		E		F	G		H
ITEM NO.	WORK DESCRIPTION	SCHEDULED VALUE				COMPLETED WORK PREVIOUS PERIOD		COMPLETED WORK THIS PERIOD		STORED MATERIALS (not in D or E)	TOTAL COMPLETED AND STORED (D+E+F)	% (G/C)	BALANCE TO COMPLETION (C-G)
		Unit	Qty.	Unit Price	Amount	Qty.	Total	Qty.	Total				
1	MOBILIZATION	LS	1	\$200.00	\$200.00	0.50	\$100.00	0.50	\$100.00		\$200.00	100%	\$0.00
2					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
3					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
4					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
5					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
6					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
7					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
8					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
9					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
10					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
11					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
12					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
13					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
14					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
15					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
16					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
17					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
18					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
19					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
20					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
21					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
22					\$0.00				\$0.00		\$0.00	#DIV/0!	\$0.00
TOTALS		\$200.00					\$100.00		\$100.00	\$0.00	\$200.00		\$0.00

**PROPOSED SUPERSTRUCTURE REPLACEMENT OF
WEST ROCK STREET OVER BLACKS RUN**

**CITY OF HARRISONBURG, VA
DEPARTMENT OF PUBLIC WORKS**



COMMISSION NO. 13021

**TECHNICAL PORTION PREPARED BY
SCHWARTZ & ASSOCIATES, INC.
FOR
DEPARTMENT OF PUBLIC WORKS
320 EAST MOSBY ROAD
HARRISONBURG, VIRGINIA 22801**

DIVISION I
GENERAL REQUIREMENTS

CITY OF HARRISONBURG, VIRGINIA
DEPARTMENT OF PUBLIC WORKS

Prepared by

SCHWARTZ & ASSOCIATES, INC.
for
Department of Public Works
320 East Mosby Road
Harrisonburg, Virginia 22801

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SECTION 01010

SUMMARY OF WORK

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The "PROJECT," which the "WORK" of this CONTRACT constitutes, is titled, "PROPOSED SUPERSTRUCTURE REPLACEMENT OF W. ROCK STREET BRIDGE OVER BLACKS RUN."

The work shall be completed in strict accordance with the Contract Documents as modified herein.

- B. Related requirements specified elsewhere:

1. Project Meetings: Section 01200.
2. Construction Schedule: Section 01310.
3. Schedule of Values: General Conditions.
4. Temporary Facilities: Section 01510.

- C. CONTRACTOR'S Duties:

1. Except as especially noted, provide and pay for:
 - a. Labor, materials and equipment.
 - b. Tools, construction equipment and machinery.
 - c. Water, heat, and utilities required for construction.
 - d. Other facilities and services necessary for proper execution and completion of Work.
2. Secure and pay for, as necessary for proper execution and completion of Work, and as applicable at time of receipt of bids.
 - a. Permits - None required
 - b. Government fees - None required
 - c. Licenses - City Business License, Contractor shall contact Commissioner of Revenue for more information, cost, etc.
3. Give required notices.
4. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of Work.

5. Promptly submit written notice to ENGINEER of observed variance of Contract Documents from legal requirements.
6. Enforce strict discipline and good order among employees. Do not employ on Work:
 - a. Unfit persons.
 - b. Persons not skilled in assigned task.

1.02 CONTRACTS:

- A. Construct Work specified by the Contract Documents under prices shown in Bid Form.

1.03 CONCURRENT WORK:

- A. Keep Work clear of encroachment into areas required for concurrent work.

1.04 WORK SEQUENCE:

- A. Schedule Work as required by sequence of operations shown on Drawings and in Section 01310 and coordinate all activities which will affect other contractors and the ENGINEER.

1.05 CONTRACTOR USE OF PREMISES:

- A. Confine operations at site to areas permitted by:
 1. Law
 2. Ordinances
 3. Permits
 4. Contract Documents
- B. Do not unreasonably encumber site with materials or equipment.
- C. Do not load structure with weight that will endanger structure.
- D. Assume full responsibility for protection and safekeeping of products stored on premises.
- E. Move any stored products which interfere with operations of OWNER or other contractor.
- F. Obtain and pay for use of additional storage or work areas needed for operations.

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G. Use of site: exclusive and complete, for execution of work, except:

1. For OWNER'S and OWNER'S representative's unrestricted access.
2. Access required for other construction at the site that may or may not be a part of these Contract Documents.

1.06 COMPLETION OF THE WORK:

A. All work described in these Contract Documents shall be completed and have passed all tests as required by the Contract Documents no later than the Date of Final Acceptance of the Project.

END OF SECTION

01010-3

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor and materials and perform all field engineering and construction layout necessary to insure that the work conforms to the lines, grades and elevations shown on the Contract Documents.
- B. Structural design of shores, forms, and similar items provided by the CONTRACTOR as part of his means and methods of construction.

1.02 RELATED WORK

- A. Related Requirements Specified Elsewhere:
 - 1. OWNER'S Responsibilities: General Conditions
 - 2. Summary of Work: Section 01010
 - 3. Construction Schedules: Section 01310
 - 4. Shop Drawings and Project Data: Section 01340
 - 5. CONTRACTOR'S Record Drawings: Section 01720

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.04 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Upon request of the ENGINEER submit:
 - 1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
 - 2. Documentation verifying accuracy of field engineering work.
 - 3. Certification, signed by the CONTRACTOR'S retained field engineer, certifying that elevations and locations of improvements are in conformance or non-conformance with requirements of the Contract Documents.

1.05 PROCEDURES

A. In addition to procedures directed by the CONTRACTOR for proper performance of the CONTRACTOR'S responsibilities:

1. Locate and protect control points before starting work on the site.
2. Preserve permanent reference points during progress of the Work.
3. Do not change or relocate reference points or items of the Work without specific approval from the ENGINEER.
4. Promptly advise the ENGINEER when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.
 - a. Upon direction of the ENGINEER require the field engineer to replace reference stakes or markers.
 - b. Locate such replacements according to the original survey control.

END OF SECTION

01050-2

SECTION 01153

CHANGE ORDER PROCEDURE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Make such changes in the Work, in the Contract Sum in the Contract Time of Completion, or any combination thereof, as are described in written Change Orders signed by the OWNER and the ENGINEER and issued after execution of the Contract, in accordance with the provisions of this Section.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- 1. Changes in the Work: General Conditions
- 2. Change in Contract Price: General Conditions
- 3. Construction Schedules: Section 01310
- 4. Shop Drawings and Project Data: Section 01340
- 5. CONTRACTOR'S Record Drawings: Section 01720

1.03 SUBMITTALS

- A. Make submittals directly to the ENGINEER at the address shown on the Project Directory in the Project manual.
- B. Submit the number of copies called for under the various items listed in this Section.

1.04 PRODUCT HANDLING

- A. Maintain a "Register of Bulletins and Change Orders" at the job site, accurately reflecting current status of all pertinent data.
- B. Make the Register available to the ENGINEER for review at his request.

1.05 PROCESSING CHANGES INITIATED BY THE OWNER

- A. Should the OWNER contemplate making a change in the Work or a change in the Contract Time of Completion, the ENGINEER will issue a "Bulletin" to the CONTRACTOR.

- 1. Bulletins will be dated and will be numbered in sequence.

2. The Bulletin will describe the contemplated change and will carry one of the following instructions to the CONTRACTOR:
 - a. Make the described change in the Work at no change in the Contract Sum and no change in the Contract Time of Completion;
 - b. Make the described change in the Work, credit or cost for which will be determined in accordance with Article 11 of the General Conditions;
 - c. Promptly advise the ENGINEER as to credit or cost proposed for the described change. This is not an authorization to proceed with the change.
 - B. If the CONTRACTOR has been directed by the ENGINEER to make the described change in the Work at no change in the Contract Sum and no change in the Contract Time of Completion, but the CONTRACTOR wishes to make a claim for one or both of such changes, the CONTRACTOR shall notify the ENGINEER as provided for in Article 11 or Article 12 of the General Conditions.
 - C. If the CONTRACTOR has been directed by the ENGINEER to promptly advise him as to credit or cost proposed for the described change, the CONTRACTOR shall:
 1. Analyze the described change and its impact on costs and time;
 2. Secure the required information and forward it to the ENGINEER for review;
 3. Meet with the ENGINEER as required to explain costs and, when appropriate, determine other acceptable ways to achieve the desired objective;
 4. Alert pertinent personnel and subcontractors as to the impending change and, to the maximum extent possible, avoid such work as would increase the OWNER'S cost for making the change, advising the ENGINEER in writing when such avoidance no longer is practicable.
- 1.06 PROCESSING CHANGES INITIATED BY THE CONTRACTOR
- A. Should the CONTRACTOR discover a discrepancy among the Contract Documents, a concealed condition as described in Section 4.3 of the General Conditions, or other cause for suggesting a change in the Work, a change in the Contract Sum, or a change in the Contract Time of Completion, he shall notify the ENGINEER as required by pertinent provisions of the Contract Documents.

- B. Upon agreement by the ENGINEER that there is reasonable cause to consider the CONTRACTOR'S proposed change, the ENGINEER will issue a Bulletin in accordance with the provisions described in Article 1.05 above.

1.07 PROCESSING BULLETINS

- A. Make written reply to the ENGINEER in response to each Bulletin:
 - 1. State proposed change in the Contract Sum, if any;
 - 2. State proposed change in the Contract Time of Completion, if any;
 - 3. Clearly describe other changes in the Work required by the proposed change, or desirable therewith, if any;
 - 4. Include full backup data such as subcontractor's letter of proposal or similar information;
 - 5. Submit this response in a single copy.
- B. When cost or credit for the change has been agreed upon by the OWNER and the CONTRACTOR, or the OWNER has directed that cost or credit be determined in accordance with provisions of Section 11.3 of the General Conditions, the ENGINEER will issue a "Change Order" to the CONTRACTOR.

1.08 PROCESSING CHANGE ORDERS

- A. Change Orders will be dated and will be numbered in sequence.
- B. The Change Order will describe the change or changes, will refer to the Bulletin or Bulletins involved, and will be signed by the OWNER and ENGINEER.
- C. The ENGINEER will issue three copies of each Change Order to the CONTRACTOR:
 - 1. The CONTRACTOR promptly shall sign all three copies and return two copies to the ENGINEER.
 - 2. The ENGINEER will retain one signed copy in his file, will forward one signed copy to the OWNER.
- D. Should the CONTRACTOR disagree with the stipulated change in Contract Sum or change in Contract Time of Completion, or both:
 - 1. The CONTRACTOR promptly shall return three copies of the Change Order, unsigned by him, to the ENGINEER with a letter signed by the CONTRACTOR and stating the reason or reasons for the CONTRACTOR'S disagreement.
 - 2. The CONTRACTOR'S disagreement with the Change Order shall not in any way relieve the CONTRACTOR of his responsibility to proceed with the change as ordered and to seek settlement of the dispute under pertinent provisions of the Contract Documents.

END OF SECTION

SECTION 01200

PROJECT COORDINATION AND PROGRESS MEETINGS

1.01 GENERAL

A. Related Requirements Specified Elsewhere:

1. Summary of Work: Section 01010.
2. Construction Schedules: Section 01310.
3. Shop Drawings and Project Data: Section 01340.

B. The ENGINEER will schedule and administer progress meetings.

1. Prepare agenda.
2. Distribute written notice and agenda of regular and called meetings 4 days in advance of meeting date.
3. Make physical arrangements for meetings.
4. Preside at meetings.
5. Record minutes; include significant proceedings and decisions.
6. Distribute copies of minutes to participants, within 4 days after the meetings.

C. All CONTRACTORS working at the Project Site at the time of such Project meetings shall attend meetings.

1.02 PRE-CONSTRUCTION MEETING

A. To be scheduled within 5 days after Date of Notice to Proceed.

B. Attendance:

1. OWNER.
2. ENGINEER and his Consultants.
3. Other CONTRACTORS working at the Project Site.
4. Major subcontractors of all CONTRACTORS.
5. Representative of Governmental or other Regulatory Agencies as necessary.

C. Minimum Agenda:

1. Distribute and discuss:
 - a. List of major subcontractors.
 - b. Tentative Construction Schedule.
2. Critical Work sequencing.
3. Relation and coordination of CONTRACTORS.
4. Designation of responsible personnel.
5. Processing of field decisions and Change Orders.
6. Adequacy of distribution of Contract Documents.
7. Submittal of shop drawings, project data and samples.
8. Procedures for maintaining Record Documents.
9. Use of premises:
 - a. Office and storage areas.
 - b. OWNER'S requirements.
10. Major equipment deliveries and priorities.
11. Safety and first-aid procedures.
12. Security procedures.
13. Housekeeping procedures.

1.03 PROGRESS MEETINGS

- A. Schedule Regular Meetings to be held monthly at a time and place mutually agreed upon between CONTRACTOR and ENGINEER and OWNER.
- B. Hold Called Meetings as progress of Work dictates.
- C. Attendance:
 1. ENGINEER and his Consultants.
 2. All CONTRACTORS working at the Project Site.
 3. Subcontractors as pertinent to agenda.
 4. Safety Representatives.
 5. Representatives of Governmental or other Regulatory Agencies, as required.

D. Minimum Agenda:

1. Review, approve minutes of previous meeting.
2. Review Work Progress since last meeting.
3. ENGINEER will accept and give preliminary review of all Applications for Progress Payments.
4. Note field observations, problems, and decisions.
5. Identify problems which impede planned progress.
6. Review off-site fabrication problems.
7. Develop corrective measures and procedures to regain planned schedule.
8. Review Construction Schedule as indicated.
9. Plan progress during next work period.
10. Coordinate projected progress with other CONTRACTORS on the Project Site.
11. Review submittal schedules, expedite as required to maintain schedule.
12. Review maintaining of quality and work standards.
13. Review changes proposed by OWNER for:
 - a. Effect on Construction Schedule.
 - b. Effect on completion date.
14. Complete other current business.

1.04 GAS COMPANY

The Contractor shall coordinate with Columbia Gas Company for any gas line relocations, temporary and permanent supports, and/or any other gas line work associated with this project which will be the responsibility of the Columbia Gas Company.

END OF SECTION

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SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 GENERAL

1.01 GENERAL:

A. Related Requirements Specified Elsewhere:

1. Summary of Work: Section 01010.
2. Shop Drawings and Project Data: Section 01340
3. Schedule of Values: General Conditions.

B. Provide projected construction schedules for entire Work to ENGINEER - revise monthly.

C. The Construction Schedule in the form specified will be used as the "Schedule of Values" when dollar values are assigned to each activity. See General Conditions.

1.02 FORM OF SCHEDULES:

A. Prepare in form of horizontal bar chart.

1. Provide separate horizontal bar column for each activity.
2. Order: Table of Contents of Specifications.
3. Identify each column:
 - a. By distinct graphic delineation.
 - b. Maximum of 100 activities will be allowed for all work.
 - c. Activity No. 1 shall be "Mobilization."
 - d. Activity No. 2 shall be "General Expense Items."
4. Horizontal time scale: Identify first work day of each week.
5. Scale and spacing: To allow space for updating.

B. Sheet size: 11" x 17" on transparent reproducible material.

1.03 CONTENT OF SCHEDULES:

A. Provide complete sequence of construction by activity.

1. Shop Drawings, Project Data and Samples:

a. Submittal dates.

b. Dates reviewed copies will be required.

2. Product procurement and delivery dates.

3. Dates for beginning, and completion of, each element of construction, specifically:

a. Concrete placement.

b. Subcontractor work.

c. Material installations.

d. Material tests.

B. Identify Work of separate phases, or other logically grouped activities.

C. Provide separate subschedule, showing submittals, review times, procurement schedules, and delivery dates.

D. Provide subschedules to define critical portions of entire schedule.

1.04 UPDATING:

A. Show all changes occurring since previous submission of updated schedule.

B. Indicate progress of each activity, show completion dates.

C. Include:

1. Major changes in scope.

2. Corrective action taken, or proposed, and its effect.

3. Revised projections due to changes.

4. Other identifiable changes.

D. Provide narrative report, including:

1. Discussion of problem areas, including current and anticipated delay factors, and their impact.

2. Corrective action taken, or proposed, and its effect.
3. Effect of change in schedules of other contractors at the project site.
4. Description of revisions:
 - a. Effect on schedule due to change of scope.
 - b. Revisions in duration of activities.
 - c. Other changes that may affect schedule.

1.05 SUBMITTALS

- A. Submit initial schedules within 15 days after date of Notice to Proceed:
 1. ENGINEER will review schedules and return review copy within 10 days after receipt.
 2. If required, resubmit within 7 days after return of review copy.
- B. Submit monthly updated schedules accurately depicting progress.
- C. Submit 2 copies to be retained by ENGINEER.

1.06 DISTRIBUTION:

- A. Distribute copies of review schedules to:
 1. Job site file.
 2. Other contractors.
 3. Subcontractors.

END OF SECTION

SECTION 01340

SHOP DRAWINGS AND PROJECT DATA

1.01 GENERAL:

- A. Submit, to the ENGINEER, shop drawings, project data, warranty data, installation instructions, and samples (including hydraulic cement concrete mix designs, asphalt concrete mix designs, notarized letters of certification for all materials used) required by Specification sections.
- B. Related requirements specified elsewhere:
 - 1. Construction Schedules: Section 01310.
 - 2. CONTRACTOR'S Record Drawings: Section 01720.
- B. Prepare and submit, with Construction Schedule, a separate schedule listing dates for submission and dates for reviewing shop drawings.
- C. No separate payment will be made for any of the requirements of this Section. The cost for all shop drawing submissions shall be deemed included in the Contract Lump Sum Price for this Contract.

1.02 SHOP DRAWINGS:

- A. Drawings specifically prepared by CONTRACTOR, a subcontractor, supplier or distributor, for this Work, which illustrate some portion of the Work; showing fabrication, layout, setting or erection details. Installation instructions and any manufacturer's warranties that are required in a specific specifications section shall also be submitted with the shop drawings.
- B. Shop drawings shall be prepared by a qualified detailer.
- C. Identify details by reference to sheet and detail numbers shown on Contract Drawings and/or section number of the Specifications.
- D. Reproductions for submittals: opaque diazo prints or blueprints.

1.03 PROJECT DATA:

- A. Manufacturer's standard schematic drawings:
 - 1. Modify drawings to delete information which is not applicable to Work.
 - 2. Supplement standard information to provide additional information applicable to Work.

- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.
 - 1. Clearly mark each copy to identify pertinent materials, products or models.
 - 2. Show dimensions and clearances required.
 - 3. Show performance characteristics and capacities.
 - 4. Show schematic and physical wiring diagrams and controls.

1.04 CONTRACTOR RESPONSIBILITIES:

- A. CONTRACTOR is responsible for: dimensions which shall be confirmed and correlated at the Work site; fabricating processes and techniques of construction; coordination of his work with that of all other trades and the satisfactory performance of his Work.
- B. Review and approve Shop Drawings, Project Data and Samples prior to submission.
- C. Verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
- D. Coordinate each submittal with requirements of Work and of Contract Documents.
- E. CONTRACTOR'S responsibility for errors and omissions in submittals is not relieved by ENGINEER'S review of submittals.
- F. CONTRACTOR'S responsibilities of deviations in submittals from requirements of Contract Documents is not relieved by ENGINEER'S review of submittals. The CONTRACTOR may submit specific deviations to the ENGINEER for review, but such deviations will require the ENGINEER'S written approval for the specific deviation.
- G. Notify ENGINEER, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.
- H. Begin no work which requires submittals until return of submittals with ENGINEER'S stamp and initials or signature indicating review.
- I. Where shop drawings prepared by one trade require cross checking with the shop drawings of some other trade or trades, the CONTRACTOR shall assemble the shop drawings of all interdependent

trades, cross check and coordinate them himself, require corrections as necessary from the various trades and then present the corrected drawings in one submission. As an alternate to this procedure, the CONTRACTOR may make composite drawings showing the interrelation of the concerned trades, and subsequent shop drawings of these trades shall be required to conform to these reviewed composite drawings. Fragmentary or piecemeal transmittals of shop drawings for individual trades in violation of this requirement will be returned to the CONTRACTOR unchecked and will not be considered as a submission.

J. After ENGINEER'S review, distribute copies.

1.05 SUBMISSION REQUIREMENTS:

A. Schedule submissions at least 30 days before dates reviewed submittals will be needed.

B. Submit five (5) copies and one reproducible of shop drawings. Reproducible will be returned to the CONTRACTOR for his further distribution.

C. Submit number of samples specified in each of Specification sections.

D. Accompany submittals with transmittal letter, in duplicate, containing (Submittals without proper letter of transmittal will be returned without review):

1. Date.

2. Project title and OWNER'S and ENGINEER'S project numbers.

3. CONTRACTOR'S name and address.

4. The number of each shop drawing, project datum and sample submitted.

5. Statement that the submittals meet the requirements of the Contract Documents or notification of deviations from Contract Documents and justification for such deviations.

6. Other pertinent data.

E. Submittals shall include:

1. Date and revision dates.

2. Project title and number.

3. The names of:

a. ENGINEER.

- b. CONTRACTOR.
 - c. Subcontractor.
 - d. Supplier.
 - e. Manufacturer.
 - f. Separate detailer when pertinent.
- 4. Identification of product or material.
 - 5. Relation to adjacent structure or materials.
 - 6. Field dimensions, clearly identified as such.
 - 7. Applicable specification section number.
 - 8. Applicable standards, such as ASTM number or Federal Specifications.
 - 9. A blank space, 4" x 4".
- 10. Identification of deviations from Contract Documents.
 - 11. CONTRACTOR'S stamp, initialed or signed, certifying the review of submittal, verification of field measurements and compliance of Contract Documents.

1.06 RESUBMISSION REQUIREMENTS:

A. Shop Drawings:

- 1. Review initial drawings as required and resubmit as specified for initial submittal.
- 2. Indicate on drawings any changes including those requested by ENGINEER.

B. Project Data and Samples: Submit new data and samples as required for initial submittal.

C. Each submittal, regardless of action taken, will count as one submission.

1.07 ENGINEER'S DUTIES:

A. Review submittals within fourteen (14) days from receipt of submission.

B. Review for general compliance with the design concept of the Project and general compliance with the information given in the Contract Documents. Any action shown is subject to the requirements of the Plans and Specifications.

- C. Review of separate item does not constitute review of an assembly in which item functions.
- D. Affix stamp and initials or signature indicating the review of submittal.
- E. Disposition will be one of the following: No Exception Taken, Make Corrections Noted, Rejected, Revise and Resubmit, or Submit Specified Item.
- F. Return required copies of submittals to CONTRACTOR for distribution.

END OF SECTION

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SECTION 01510

TEMPORARY FACILITIES

PART 1 GENERAL

1.01 BY WHOM WORK TO BE DONE

- A. Except as may be otherwise specifically noted herein, all work covered by this section shall be the responsibility of the CONTRACTOR.

1.02 WORK INCLUDED

- A. Furnish labor and materials to complete all temporary construction and services essential to the carrying on of the complete construction.
- B. The cost of permanently installed utilities shall be borne by the CONTRACTOR until issuance of the Certificate of Substantial Completion and occupancy of the Project by the OWNER at which time the OWNER will assume responsibility for such costs.

PART 2 FACILITIES TO BE PROVIDED

2.01 TEMPORARY ENCLOSURES

- A. Provide temporary weathertight enclosures as needed.
- B. Provide temporary field office for CONTRACTOR usage located on project site in staging area.

2.02 TEMPORARY TELEPHONE

- A. Provide temporary telephone to the CONTRACTOR'S field office.

2.03 TEMPORARY HEAT

- A. Provide, without extra cost to OWNER, temporary heating required for proper protection and drying of work. The system of temporary heat to be used shall be subject to the acceptance of the ENGINEER. Salamanders and similar temporary heating equipment will not be permitted. Heat shall be maintained around the clock (24 hours), seven (7) days a week, as necessary to fully meet Contract requirements.

2.04 TEMPORARY ELECTRIC POWER

- A. Provide temporary service and remove as required for construction.
- B. All power required for construction shall be furnished and cost paid by the CONTRACTOR.

- C. Cost of all lamps shall be paid by the CONTRACTOR.
- D. All electrical work shall conform to all applicable laws, rules, and regulations.

2.05 TEMPORARY SIGNS

- A. Signs or advertisements: Not permitted to be displayed without OWNER'S written permission. CONTRACTOR may erect one painted sign giving project name, names and addresses of ENGINEER, CONTRACTOR, and various subcontractors. Such sign shall be subject to the OWNER'S review and acceptance. Sign shall be no larger than 24 square feet (per zoning administration) with edges sealed, painted plywood, free standing. Locate as directed.

2.06 TEMPORARY STAIRS, LADDERS, RAMPS, ETC.

- A. Furnish, maintain equipment such as temporary stairs, ladders, ramps, scaffolds, runways, derricks, chutes, elevators and the like as required for proper execution of work by trades. Such apparatus, equipment, construction: as per Labor Law, other State or local laws applicable thereto.

2.07 TEMPORARY TOILET

- A. Provide, maintain, sanitary temporary toilet located where directed and in close proximity to the work in progress for use by those engaged on work.

2.08 STORAGE SHEDS

- A. CONTRACTOR shall provide, where directed, all storage sheds and work space as required and shall remove same when directed.

2.09 PUMPS AND DRAINAGE

- A. CONTRACTOR shall do all pumping, bailing and drainage of all water which may be discharged into any portion of the project during its construction. Water accumulating in trenches must be removed.

2.10 TEMPORARY WATER

- A. The CONTRACTOR shall furnish, maintain and pay for drinking water. Water used to fill pipes for testing will be provided free of charge for two events. Subsequent refills and other uses, such as road construction, will be charged at the City of Harrisonburg's current rate per 1000 gallons. The City's fire hydrant use policy shall be applicable to this project.

END OF SECTION

SECTION 01551

SITE, ACCESS, STAGING, PARKING AND TRAFFIC REGULATIONS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. General Requirements: General Conditions.
- B. Summary of Work: Section 01010.
- C. Clearing: Section 02100
- D. Maintenance of Traffic: Section 02703

1.02 ACCESS

- A. The CONTRACTOR shall provide reasonable and safe access to the Project Site at all reasonable times for the OWNER, ENGINEER, representative of other governmental agencies and his workmen.

1.03 PARKING AND STAGING AREA

- A. The CONTRACTOR shall provide off-street parking for all workmen engaged on the work of the Project and shall endeavor to ensure the use thereof. The CONTRACTOR shall make appropriate arrangements with local property owners in order to provide this area.

1.04 MAINTENANCE

- A. The CONTRACTOR shall provide for the prompt removal from traveled streets and roadways of all dirt and other materials that have been deposited thereon by his operations whenever the accumulation is sufficient to cause the formation of dust or mud, damage to pavements or creates a traffic hazard.

END OF SECTION

SECTION 01630

PRODUCT DELIVERY, STORAGE AND PROTECTION

PART 1 GENERAL

1.01 APPLICABILITY

- A. These specifications apply to all products furnished under this contract.

1.02 DELIVERY

- A. Shipments of materials to be used by the CONTRACTOR or any subcontractor under this contract should be delivered to the job site only during the regular working hours of the CONTRACTOR or subcontractor. If a delivery is made during other than the normal working hours of the CONTRACTOR or subcontractor, his authorized agent must be on duty to receive such material. No employee of the OWNER or the ENGINEER is authorized to receive any shipment designated for the CONTRACTOR of subcontractor.
- B. Products shall not be delivered to the OWNER or the ENGINEER.
- B. Products shall not be delivered to project site until related shop drawings have been reviewed by the ENGINEER.
- C. Products shall not be delivered to the project site until required storage facilities as specified below have been reviewed by the ENGINEER.
- D. Products shall be delivered to site in manufacturer's original, unopened, labeled containers.
- E. The CONTRACTOR shall not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

1.03 STORAGE AND PROTECTION

A. General:

- 1. The CONTRACTOR shall store and protect products in accordance with the manufacturer's recommendations and the requirements specified herein. No on-site or existing storage facilities are available for use by the CONTRACTOR. All on-site facilities shall be furnished by the CONTRACTOR if space is available in the area defined as the "Site Limits" for the Work.
- 2. When area for storage facilities is not available within the "Site Limits," the CONTRACTOR shall provide off-site, weather-

proof storage facilities reviewed by the ENGINEER at no extra charge to the OWNER in accordance with the storage requirements in the Contract Documents.

3. The CONTRACTOR shall provide weatherproof storage for all spare parts. This storage shall be off site in a facility reviewed by the ENGINEER when area within the "Site Limits" for provision of such facilities does not exist. Storage facilities shall provide for security of such spare parts and for the segregation of spare parts from uninstalled products that will be used by the CONTRACTOR in the performance of his work.
4. The CONTRACTOR shall provide all equipment, spare parts and supplies that are to be delivered to the OWNER in accordance with the Contract Documents in properly marked original packages that show the name of the item, the equipment, or system in which the item belongs, the OWNER'S requisition number, the quantity and the Specification's Section number.
5. The CONTRACTOR shall not store products in the structures being constructed unless consented to in writing by the ENGINEER.
6. The CONTRACTOR shall not block or restrict the use of access roads with stored materials.
7. The CONTRACTOR shall not store products where they will interfere with operations of the OWNER or other contractors or on the OWNER'S property outside the "Site Limits" of the Work.
8. The CONTRACTOR shall protect stored materials from damage by vandals. CONTRACTOR is fully responsible for products stored within his limits of work.
9. The CONTRACTOR shall protect all products from damage or deterioration by weather.
10. The CONTRACTOR shall not store any products directly on the ground.
11. The CONTRACTOR shall not store any products in drainage ditches or areas where water may stand.
12. The CONTRACTOR shall label containers to identify materials inside using the terminology found in these Specifications.

B. Uncovered Storage:

1. The following types of materials may be stored out-of-doors without cover:
 - a. Masonry units

- b. Reinforcing steel
 - c. Structural steel
 - d. Piping
 - e. Precast concrete items
 - f. Castings
 - g. Gratings
 - h. Hand railing
2. Store the above materials on wood blocking.
- C. Covered Storage:
- 1. The following types of materials may be stored out-of-doors if covered with material impervious to water.
 - a. Rough lumber
 - 2. Tie down covers with rope and slope to prevent accumulation of water on covers.
 - 3. Store materials on wood blocking of sufficient height to insure no contact of materials with ground.
- D. Fully Protected Storage:
- 1. Store all products not named above in buildings or trailers which have a concrete or wooden floor, a roof and fully closed walls on all sides.
 - 2. Provide heated storage space for materials which would be damaged by freezing.
 - 3. Protect mechanical and electrical equipment from being contaminated by dust and dirt.
 - 4. Maintain temperature and humidity at levels recommended by manufacturers for electrical and electronic equipment.

END OF SECTION

01630-3

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide an orderly and efficient transfer of the completed work to the OWNER.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Substantial Completion: General Conditions
- B. Completion: General Conditions
- C. Final Inspection: General Conditions
- D. Final Application for Payment: General Conditions
- E. Waiver of Claims: General Conditions
- F. Change Order Procedure: Section 01153
- G. Operations and Maintenance Data: Section 01350
- H. Cleaning: Section 01710
- I. CONTRACTOR'S Record Drawings: Section 01720

1.03 PROCEDURES

- A. Substantial Completion:
 - 1. Prepare and submit a list of items completed or to be completed.
 - 3. Within a reasonable time after receipt of the list, the ENGINEER will inspect to determine status of completion.
 - 4. Should the ENGINEER determine that the work is not substantially complete:
 - a. The ENGINEER promptly will so notify the CONTRACTOR, in writing, giving the reasons therefor.
 - b. CONTRACTOR will remedy the deficiencies and notify the ENGINEER when ready for reinspection.
 - c. The ENGINEER will reinspect the work.

4. When the ENGINEER concurs that the work is substantially complete:
 - a. The ENGINEER will prepare a "Certificate of Substantial Completion" accompanied by the CONTRACTOR'S list of items to be completed or corrected, as verified by the ENGINEER.
 - b. The ENGINEER will submit the Certificate to the OWNER and to the CONTRACTOR for their written acceptance of the responsibilities assigned to them in the Certificate.

B. Final Completion:

1. Prepare and submit the notice that work is ready for final inspection and acceptance.
2. Verify that the work is complete including, but not necessarily limited to, payment affidavits, consent of surety, receipts, waivers, operation and maintenance manuals.
3. Certify that:
 - a. Contract Documents have been reviewed;
 - b. Work has been inspected for compliance with the Contract Documents.
 - c. Work has been completed in accordance with the Contract Documents;
 - d. Equipment and systems have been tested as required, and are operational.
 - e. Work is completed and ready for final inspection.
4. The ENGINEER will make an inspection to verify status of completion.
5. Should the ENGINEER determine that the work is incomplete or defective:
 - a. The ENGINEER promptly will so notify the CONTRACTOR, in writing, listing the incomplete or defective work;
 - b. CONTRACTOR will remedy the deficiencies promptly, and notify the ENGINEER when ready for reinspection.
5. When the ENGINEER determines that the work is acceptable under the Contract Documents, he will request the CONTRACTOR to make closeout submittals.

C. Closeout submittals include, but are not necessarily limited to:

1. Project Record Documents.
3. Operation and maintenance data for items so listed in pertinent other Sections of these Specifications, and for other items when so directed by the ENGINEER.
3. Warranties and bonds.
4. Spare parts and materials extra stock.
4. Evidence of compliance with requirements of governmental agencies having jurisdiction including, but not necessarily limited to:
 - a. Certificates of Inspection
 - b. Certificates of Occupancy
6. Certificates of Insurance for products and completed operations.
7. Evidence of payment and release of liens.
8. List of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.

D. Final adjustment of accounts:

1. Submit a final statement of accounting to the ENGINEER showing all adjustments to the Contract Sum.
2. If so required, the ENGINEER will prepare a final Change Order showing adjustments to the Contract Sum which were not made previously by Change Orders.

1.04 INSTRUCTION

- A. Instruct the OWNER'S personnel in proper operation and maintenance of systems, equipment, and similar items which were provided as part of the work.

END OF SECTION

01700-3

SECTION 01710

CLEANING

PART 1 GENERAL

1.01 DESCRIPTION

A. Related Requirements Specified Elsewhere:

1. Summary of Work: Section 01010.
3. Cleaning for Specific Products of Work: Specifications Section for that work.

B. Maintain premises and public properties free from accumulations of waste, debris, and rubbish, caused by operations.

C. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight exposed surfaces; leave project clean and ready for occupancy.

1.02 SAFETY REQUIREMENTS:

A. Standards: Maintain project in accordance with the following safety and insurance standards.

1. Applicable State, City, County and Federal Codes and Regulations.

B. Hazards Control:

1. Store volatile wastes in covered metal containers and remove from premises daily.
2. Prevent accumulation of wastes which create hazardous conditions.
2. Provide adequate ventilation during use of volatile or noxious substances.

B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

1. Do not burn or bury rubbish and waste materials on project site.
3. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
3. Do not dispose of wastes into streams or waterways.

PART 2 PRODUCTS

2.01 MATERIALS:

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.01 DURING CONSTRUCTION:

- A. Execute cleaning to ensure that Work, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- B. At reasonable intervals during progress of work, clean site and public properties, and dispose of waste materials, debris and rubbish.
- C. Provide on-site dump containers for collection of waste materials, debris and rubbish.
- E. Dispose of waste materials, debris and rubbish in a legal manner.

3.02 FINAL CLEANING:

- A. Employ experienced workmen, or professional cleaners, for final cleaning.
- C. In preparation for substantial completion or occupancy, conduct final inspection of sight exposed interior and exterior surfaces and of concealed spaces.
- C. Broom clean paved surfaces; rake clean other surfaces of grounds.
- D. Maintain cleaning until project, or portion thereof, is occupied by OWNER.

END OF SECTION

01710-2

SECTION 01720

CONTRACTOR'S RECORD DRAWINGS

1.01 GENERAL:

- A. Contractor shall maintain, mark, record & submit drawings as described in more detail as follows below.

1.02 MAINTENANCE OF DOCUMENTS:

- A. Maintain at job site, one copy of:

- 1. Contract Drawings.
- 2. Contract Specifications.
- 3. Addenda.
- 4. Reviewed Shop Drawings.
- 5. Change Orders.
- 6. Other Modifications to Contract.
- 7. Field Test Records.

- B. Provide files and racks for storage of documents.

- C. Maintain drawings in clean, dry legible condition.

- D. Do not use record drawings for construction purposes.

- E. Make drawings available at all times for inspection by ENGINEER and OWNER.

1.03 MARKING DEVICES:

Provide felt marking pen for marking, conforming to the following color codes:

- A. Blue for architectural work.

- B. Green for structural work.

- C. Yellow for piping work.

- D. Black for heating, ventilating and air conditioning work.

- E. Purple for electrical work.

- F. Red for other written notations.

1.04 RECORDING:

- A. Label each drawing "CONTRACTOR'S Record Drawings" in 2-inch high printed letters.
- B. Do not permanently conceal any work until required information has been recorded.
- C. Do not permanently conceal any work until required information has been recorded.
- D. Record Drawings: Legibly mark to record actual construction on full size prints:
 - 1. Depths of various elements of foundation.
 - 2. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - 3. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by Change Order.
 - 6. Details not on original Contract Drawings.
- E. Specifications and Addenda: Legibly mark up each Section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Change Order.
 - 3. Other matters not originally specified.
- E. Shop Drawings: Maintain as record documents; legibly annotate all drawings to record changes made after review.

1.05 SUBMITTAL:

- A. At completion of Work:
 - 1. CONTRACTOR'S Record Drawings: One set of reproducible drawings, furnished to the CONTRACTOR by the ENGINEER, which the CONTRACTOR has revised, at appropriate scale and suitable for tracing, to show the required information.

B. Accompany submittal with transmittal letter, in duplicate, containing:

1. Date.
2. Project title and number.
3. CONTRACTOR'S name and address.
4. Title and number of each record document.
5. Certification that each drawing as submitted is complete and accurate.
6. Signature of CONTRACTOR, or his authorized representative.

END OF SECTION

DIVISION II

SITE WORK

CITY OF HARRISONBURG, VIRGINIA
DEPARTMENT OF PUBLIC WORKS

Prepared by

SCHWARTZ & ASSOCIATES, INC.
for
Department of Public Works
320 East Mosby Road
Harrisonburg, Virginia 22801

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SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This work shall consist of all excavation, hauling, embankment construction and compaction not covered by other items. The construction shall be in accordance with the specifications and in reasonably close conformance with the lines, grade, thickness, and typical cross sections shown on the Plans or established by the ENGINEER.

1.02 CLASSIFICATION

- A. The cost of all excavation of any nature of material called for by construction items set forth in the Contract Documents including the excavation and hauling of borrow material or the hauling and disposal of excess excavated material as applicable, shall be included in the base bids for the proposed projects. In the event the CONTRACTOR is directed by the ENGINEER to perform additional excavation operations, it shall be paid for as unclassified excavation at the contract unit price indicated.

1.03 QUALITY ASSURANCE

- A. The CONTRACTOR shall make sufficient compaction tests to assure that the compaction requirements as set forth herein are being obtained.

1.04 RELATED WORK SPECIFIED ELSEWHERE

- A. Trenching and Backfilling: Section 02221
- B. Roadway Excavation, Backfill and Compaction: Section 02223
- C. Paving and Surfacing: Section 02600

1.05 EXECUTION

- A. Unless otherwise specified, work under this section shall comply with the applicable provisions of Section 303 of the Standard Specifications.
- B. Unusable excavated material shall be properly disposed of off-site at CONTRACTOR'S expense.

END OF SECTION

SECTION 02221

TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This work includes, but is not necessarily limited to, excavation and backfilling for all underground structures, pipes, conduits, footings and related items.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Storm Drains and Culverts: Section 02501
- B. Water Distribution System: Section 02555
- C. Sanitary Sewerage System: Section 02722

1.03 CARE OF EXISTING STRUCTURES AND PROPERTY

- A. All poles, fences, sewer, gas, water or other pipes, wires, conduits, manholes, buildings, structures and property in the proximity of any excavation shall be supported and protected from injury by the CONTRACTOR during the construction.
- B. Wherever sewer, gas water or other pipes or conduits cross the excavation, the CONTRACTOR shall support said pipes and conduits without damage to them and without interrupting their use during the progress of the Work.
- C. All property shall be thoroughly cleaned of all surplus materials, earth and rubbish placed thereon by the CONTRACTOR and in accordance with Section 01710 of these Specifications.

1.04 EXISTING UNDERGROUND STRUCTURES

- A. Existing sanitary sewers, water mains, and other underground structures and their service connections have been shown on the Contract Documents according to the best available information. The exact location and protection of these facilities and structures, their support and maintenance in operation during construction (in cooperation with the proper authorities of the utility involved), is the responsibility of the CONTRACTOR in the performance of his contract.

- B. CONTRACTOR shall notify the ENGINEER at least seventy-two (72) hours in advance of proposed utility connections, utility shut-off or street excavation. CONTRACTOR shall coordinate these operations with the OWNER of the applicable Utility and all work shall be accomplished in a minimum amount of time.
- C. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost the to OWNER.
- D. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the ENGINEER and secure his instructions.
- E. Do not proceed with permanent relocation of utilities until written instructions are received from the ENGINEER.
- F. Maintain function of storm water facilities, including drop inlets, ditches, and culverts, at all times.

PART 2 - MATERIALS

2.01 GENERAL

A. Pipe Bedding Material

- 1. Where rock or boulders are encountered in the trench bottom, excavate to 6 inches below bottom of pipe. Bedding and haunching material shall be as specified.

B. Backfill:

- 1. Provide materials free from organic matter and deleterious substances, as follows:
 - a. Under pavement and road shoulders: Crusher Run Aggregate, size 26 or dense graded aggregate Size #21A, as specified in Section 206 and Section 209 respectively, of the Standard Specifications.
 - b. Within Highway Median: Select material, no lumps, no stone larger than 4 inches maximum dimension, compacted to 95% of Standard Proctor Density, and approved by the ENGINEER.
 - c. Other areas: Select material, no lumps, no stone larger than 4 inches maximum dimension, compacted to 80% of Standard Proctor Density, and approved by the ENGINEER.

2. Provide topsoil in top 6 inches of backfill for areas requiring seeding.
3. Do not permit rocks having a dimension greater than 1 inch in the upper 6 inches of fill.
4. Provide tests of proposed select material for determining Standard Proctor Density and secure approval of ENGINEER before using proposed select material.

PART 3 - EXECUTION

3.01 GENERAL

- A. All work shall conform to the requirements of all local, state, and Federal agencies having jurisdiction and the requirements of these specifications.
- B. Protect persons and property in accordance with the following minimum requirements:
 1. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.
 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movements, washout, and other hazards created by operations under this Section.
 4. Fence off trenches from livestock in pastures.

3.02 GENERAL TRENCHING

- A. Unless otherwise directed or permitted, not more than one hundred feet of any trench shall be open at any time.
- B. Surface encumbrances, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.
- C. Provide sheeting and shoring necessary for protection of the Work and for the safety of personnel.
- D. In wet trenches dewatering equipment shall be operated ahead of the pipe laying and the water level kept below the pipe invert.
- E. Dust conditions shall be kept to a minimum by the use of water, salt, calcium chloride, or other means.

F. Open cut:

1. Excavate for utilities by open cut.
2. Where it becomes necessary to excavate beyond the limits of normal excavation lines in order to remove boulders or other interfering objects, backfill the voids remaining after removal of the objects as directed by the ENGINEER.
3. When the void is below the subgrade for the utility bedding, use specified backfill materials and compact to a relative density of 95% of Standard Proctor Density.
4. When the void is in the side of the utility trench or open cut, use specified backfill compacted to a relative density of 95% of Standard Proctor Density.
5. Remove boulders and other interfering objects, and backfill voids left by such removals, at no additional cost to the OWNER.
6. Excavating for appurtenances:
 - a. Excavate for manholes and similar structures to a distance sufficient to leave at least 12" clear between outer surfaces and the embankment or shoring that may be used to hold and protect the banks.
 - b. Overdepth excavation beyond such appurtenances that has not been directed will be considered unauthorized. Fill with specified backfill as directed by the ENGINEER, and at no additional cost to the OWNER.

G. Trench to the minimum width necessary for proper installation of the pipe, with sides as nearly vertical as possible. Excavate to a minimum overdepth of 6 inches below the indicated pipe grade.

H. Where trenching occurs in existing lawns, remove turf in sections and keep damp. Replace turf upon completion of the backfilling.

3.03 STABILIZATION

- A. If portions of the bottom of trenches or excavations consist of material unstable to such a degree that, in the opinion of the ENGINEER, it cannot adequately support the pipe or structure, the bottom shall be overexcavated and stabilized with pipe bedding material. Depth of stabilization shall be as directed by the ENGINEER.

3.04 BACKFILLING

A. Sheeting

1. Prior to backfilling, remove all sheeting.
2. Do not permit sheeting to remain in the trenches except when, in the opinion of the ENGINEER, field conditions or the type of sheeting or methods of construction (such as concrete bedding) are such as to make removal of sheeting impracticable. In such cases, the ENGINEER may permit portions of sheeting to be cut off and remain in the trench.
3. When sheeting is drawn, all cavities remaining in or adjoining the trench shall be solidly filled. When sheeting is left in place, all cavities behind such sheeting shall be solidly filled.

B. Unless otherwise specified or directed by written order of the ENGINEER, all trenches and excavation shall be backfilled immediately after the structures are built therein, for a depth of at least one foot over the top of pipes and other drains.

C. Backfill shall be placed in compliance with the applicable requirements of Section 302.07 of the Standard Specifications.

D. As trenches are backfilled, the CONTRACTOR shall remove all surplus material, regrade and leave clear, free and in good order all areas within the construction limits affected by the construction of the Work. During the progress of the Project and for a one-year period thereafter, he shall maintain in good and safe condition the surface over the trenches and promptly fill all depressions over and adjacent to trenches caused by settlement of backfill material.

E. Suitable excavated material shall be incorporated into the Work. Unsuitable or excess excavated material shall be disposed of in a legal manner.

F. Restore any disturbed areas (eq. guardrail, signs, riprap, pavement, grassed areas, shoulders, etc.) to a condition equal to or better than original and as directed by the ENGINEER.

3.05 GRADING

A. Uniformly grade all areas within the limits designated on the drawings, including adjacent transition areas. Finish surfaces within specified tolerances with uniform levels or slopes between points where elevations are shown and existing grades.

- B. Finish all surfaces free from irregular changes.
 - C. Finish subgrade areas to receive topsoil within 0.10 foot of required subgrade elevations.
 - D. Shape subgrade under walks to line, grade, and cross section to within 0.10 foot of required subgrade elevations.
 - E. Shape subgrade under pavement to line, grade, and cross section to within 1/2 inch of required subgrade elevations.
 - F. Protect newly graded areas from traffic and erosion. Repair and reestablish grade in settled, eroded, or rutted areas to the specified tolerances.
 - G. Where compacted areas are disturbed by subsequent construction or adverse weather, scarify the surface, reshape and compact to the required density. Use hand tamper for recompaction over underground utilities.
- 3.06 EROSION CONTROL
- A. No disturbed area shall be denuded for more than 14 calendar days.
 - B. Comply with all local requirements and with the "Virginia Erosion and Sediment Control Handbook" by the Virginia Soil and Water Conservation Commission to control erosion and sedimentation.
 - C. Install silt fence or straw bale dams around soil stockpiles and excavations.
 - D. Protect graded areas from the action of the elements. Settlement or other damage that occurs prior to acceptance of the Work shall be repaired and grades satisfactorily reestablished.
- 3.07 REPAIR AFTER CLEANUP
- A. Upon completion of construction work and after spoils and debris have been removed, regrade any areas disturbed by the operations.
- 3.08 MEASUREMENT AND PAYMENT
- A. Work required by this section, Trenching and Backfilling, will not be measured and paid for directly but the cost thereof shall be included in the unit price bid for the respective items for which trenching and backfilling is required.

END OF SECTION

02221-6

SECTION 02223

ROADWAY EXCAVATION, BACKFILL AND COMPACTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This work shall consist of excavation, removal of existing roadway material, concrete sidewalks and curb and gutters, removal of existing storm sewers and appurtenances, hauling and legal disposal of all waste materials and the preparation of the street and roadway subgrade.

1.02 CLASSIFICATION

- A. Excavated material covered by this section shall be unclassified.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 02200
- B. Trenching and Backfilling: Section 02221
- C. Paving and Surfacing: Section 02600

1.04 EXECUTION

- A. Except as modified herein comply with Section 510 of the Standard Specifications.
- B. Excavation and removal shall extend from right-of-way to right-of-way within the project limits.
- C. Unless otherwise shown, remove all existing pavement, sidewalks, curbs and gutters, storm sewers and appurtenances within the project limits. Manhole frames and lids and inlet frames and grates shall be salvaged and removed to the City Shop, 300 East Mosby Road, Harrisonburg.
- D. Prepare, by excavation or fill, the street subgrade to lines and grades shown, ready in all respects to receive the pavement structure.

1.05 MEASUREMENT AND PAYMENT

- A. Work required by this section, roadway excavation, backfill and compaction, will not be measured and paid for directly but the cost thereof shall be included in unit price bid for the respective items for which these items are required.

END OF SECTION

02223-2

SECTION 02501

STORM DRAINS AND CULVERTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Work consists of providing pipe culverts, end sections and headwalls as indicated on the Plans.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Trenching and Backfilling: Section 02221

1.03 SUBMITTALS

- A. Certificates

1. Certify that materials comply with specification requirements.
2. Signed by Supplier and CONTRACTOR.

PART 2 - PRODUCTS

- 2.01 Culvert pipe shall be reinforced concrete, or ductile iron complying with the applicable requirements of Section 232 of the Standard Specifications. Unless otherwise shown on the plans, reinforced concrete pipe shall be Class III and ductile iron pipe shall be Class 53.

PART 3 - EXECUTION

- 3.01 Unless otherwise specified, work under this section shall comply with the applicable requirements of Section 302 of the Standard Specifications and the Standard Drawings.

END OF SECTION

SECTION 02600

PAVING AND SURFACING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Work consists of preparing and compacting the subgrade, providing compacted aggregate surface, aggregate base, asphalt base, asphalt surface and asphalt material for tack coat.

1.02 - RELATED WORK SPECIFIED ELSEWHERE:

- A. Earthwork: Section 02200.

1.03 - PAVING QUALITY REQUIREMENTS

- A. Aggregate for Surface or Base.
 - 1. Section 202 and 203 of the Standard Specifications.
- B. Asphalt Base and Asphalt Surface:
 - 1. Section 211 of the Standard Specifications.

1.04 - SUBMITTALS

- A. Certificates
 - 1. Certify that materials comply with specification requirements.
 - 2. Signed by Supplier and CONTRACTOR.

PART 2 - PRODUCTS

- 2.01 Aggregate subbase material shall be dense graded aggregate size No. 21B complying with Section 208 of the Standard Specifications.
- 2.02 Aggregate base shall be dense graded aggregate size No. 21A complying with Section 208 of the Standard Specifications.
- 2.03 Asphalt base shall be Asphalt Concrete Base Type BM 25.0A complying with Section 211 of the Standard Specifications and associated sections referred to therein.
- 2.04 Asphalt surface shall be Asphalt Surface Type SM-12.5A NP and shall comply with Section 211 of the Standard Specifications and associated Articles referred to therein.

- 2.05 Asphalt material for tack coat and asphalt material for prime coat shall comply with Section 211 of the Standard Specifications and associated articles referred to therein.

PART 3 - EXECUTION

- 3.01 The subgrade shall be prepared in compliance with all applicable provisions of Section 305 of the Standard Specifications. In the event that unsuitable material is encountered, it shall be removed to the limits directed by the ENGINEER and backfilled with a granular material the size of which shall be as accepted by the ENGINEER.
- 3.02 The construction of the compacted aggregate subbase and base shall be in compliance with all applicable provisions of Sections 308, 309, and 315 of the Standard Specifications.
- 3.03 The construction of the asphalt base, and asphalt surface courses shall be in compliance with all applicable provisions of Sections 309 and 315 of the Standard Specifications.
- 3.04 The tack coat shall be applied at the rate of 0.05 gallons per square yard unless otherwise directed by the ENGINEER. The tack coat shall comply with all applicable provisions of Section 310 of the Standard Specifications.
- 3.05 The prime coat shall be applied at the rate of 0.50 gallons per square yard unless otherwise directed by the ENGINEER. The prime coat shall comply with all applicable provisions of Section 311 of the Standard Specifications.

END OF SECTION

SECTION 02610

SIDEWALKS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This work consists of providing Portland cement concrete sidewalks, including handicap ramps at the locations shown on the Plans.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. Cast-In-Place Concrete: Section 03001

PART 2 - PRODUCTS

2.01 Hydraulic cement concrete shall conform to Section 217 of the Standard Specifications for Class A3.

2.02 Welded wire fabric shall conform to Section 223 of the Standard Specifications.

PART 3 - EXECUTION

3.01 The Work shall be performed in accordance with all applicable provisions of section 504 of the Standard Specifications.

3.02 The maximum distance between the 1/2 inch preformed expansion joints shall be 48 feet.

3.03 Dummy transverse joints shall be evenly spaced between expansion joints with the maximum spacing of six (6) feet.

3.04 Unless otherwise noted, the thickness of the cement concrete sidewalks shall be four (4) inches.

3.05 Final finish shall be a light broom finish.

END OF SECTION

SECTION 02620

CONCRETE CURBING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Work consists of the construction of the curbs, gutters or combination curb and gutter as shown on the Plans.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Paving and Surfacing: Section 02600
- B. Cast-In-Place Concrete: Section 03001

PART 2 - PRODUCTS

1.01 DESCRIPTION

- A. Curbs and combination curbs and gutters shall be CG-2 and CG-6 respectively, complying with the requirements of the Standard Drawings.
- B. Concrete for curbing shall be Class A-3.

PART 3 - EXECUTION

- 3.01 The Work shall be performed in accordance with all applicable provisions of Section 502 of the Standard Specifications except that 1/2 inch expansion joints shall be used on fifty (50) foot centers. The joint material shall be neatly trimmed to conform to the shape of the curb.

PART 4 - MEASUREMENT AND PAYMENT

- 4.01 Measurement and payment for work under this section, Curbing, will be made in accordance with Section 502 of the Standard Specifications.

END OF SECTION

02620-1

SECTION 02701

TEMPORARY TRAFFIC CONTROL DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Work consists of providing traffic control devices where called for by the Contract Documents.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Trenching and Backfilling: Section 02221
- B. Paving and Surfacing: Section 02600

1.03 SUBMITTALS

- A. Certificates
 - 1. Certify that materials comply with specification requirements.
 - 2. Signed by Supplier and CONTRACTOR.
- B. Submit shop drawings in conformance with Section 01340.

PART 2 - PRODUCTS

2.01 All signs and installations shall conform to the requirements of the Virginia Work Area Protection Manual, the Manual on Uniform Traffic Control Devices for Streets and Highways, as amended, and the Virginia Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways.

2.02 Sign posts shall conform to the requirements of Section 700.02 (i) of the Standard Specifications.

2.03 Traffic signs shall meet all applicable requirements of Section 701.02 and Section 701.03 of the Standard Specifications.

- A. The metal sheet shall be 16 gage for steel or aluminum with a thickness of 0.08 inches except that if any dimension of the sign exceeds 30 inches the thickness shall be 0.10 inches.

2.04 Paint and enamel shall meet all application requirements of Section 231 of the Standard Specifications.

PART 3 - EXECUTION

- 3.01 Installation shall comply with all applicable provisions of Section 701.03 of the Standard Specifications.
- 3.02 Posts may be driven by hand or mechanical devices to the required line and grade. Posts shall be placed vertically and signs, when attached, shall be aligned accurately. During driving, posts shall be protected by a special driving cap. Any post bent or otherwise damaged so as to be unfit for use shall be removed and replaced. If a post cannot be driven at the desired location, the post shall be installed by drilling a 12" diameter hole and backfilling with Size 78 coarse aggregate.
- 3.03 The minimum depth for posts shall be 42".

END OF SECTION

SECTION 02703

MAINTENANCE OF TRAFFIC

PART 1 - GENERAL

1.01 DESCRIPTION

This work shall consist of maintenance and protection of pedestrian and vehicular traffic through or around areas of construction. It shall include covering and uncovering existing signs, furnishing, erecting and maintenance of new construction signs, sign posts, flags, cones, Group 2 channelizing devices, Type III Barricades, concrete traffic barriers, flagmen, and all other items used for traffic maintenance as required by the contract drawings, Project Manual, and the Virginia Work Area Protection Manual. At the completion of this project the construction signs & signs posts shall be removed by the Contractor and shall remain property of the Contractor. This item also includes all costs associated with lighting and barricading the work areas from pedestrians and motorists according to the plan developed by the CONTRACTOR and approved by the ENGINEER.

In addition, it shall include all costs associated with providing at all times safe pedestrian access to all businesses and residencies within the limits of the signs erected for the project.

All work shall be scheduled and performed in such a manner as to provide a minimum of interference and maximum protection to traffic and workmen. In no case shall traffic be stopped for more than five (5) minutes at a time.

The CONTRACTOR shall take adequate precautions to prevent material, sand or other debris from being spilled, blown or tracked onto traveled roadways throughout the duration of this project. Should any material get onto a traveled roadway, the CONTRACTOR shall immediately stop work and have it removed. The ENGINEER may stop work, if conditions warrant, due to blowing sand.

1.02 METHOD OF MEASUREMENT

"Maintenance of Traffic" - will be paid for on a "Lump-Sum" basis wherein no measurement will be made.

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1.03 BASIS OF PAYMENT

Maintenance of traffic - will be paid for at the Contract "Lump-Sum" price, which price shall be full compensation for covering and uncovering existing signs, furnishing, installing, erecting, maintenance and removal of new construction signs, sign posts, concrete traffic barriers, flags, Group 2 channelizing devices, Type III Barricades, cones, lights and all costs for flagmen. Also included is lighting and barricading the work area from pedestrians and motorists; providing safe pedestrian access to all businesses and residencies; and for all materials, labor, tools, equipment, and incidentals necessary to complete the work. Payment will be made under the Contract pay item:

"MAINTENANCE OF TRAFFIC" - Pay unit will be on a "Lump-Sum" basis.

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SECTION 02790

EROSION CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This work consists of providing temporary and permanent facilities as shown on the drawings and as directed by the ENGINEER to control erosion and siltation.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork- Section 02200

1.03 SUBMITTALS

- A. Certificates
 - 1. Certify that materials comply with specification requirements.
 - 2. Signed by supplier and CONTRACTOR.

PART 2 - PRODUCTS

2.01 Comply with Virginia Erosion and Sediment Control Handbook.

2.02 Erosion control stone, filter fabric, EC-2 jute mesh and EC-3 Soil Stabilization Mat shall comply with the Standard Specifications. EC-2 and EC-3 shall be on VDOT approved materials list.

PART 3 - EXECUTION

3.01 Comply with the applicable provisions of

- A. City Code of the City of Harrisonburg;
- B. Erosion and Sediment Control Regulations (latest date of issue) of the Commonwealth of Virginia;
- C. Erosion and Sediment Control Handbook (latest date of issue) of the Commonwealth of Virginia;
- D. Standard Specifications.

- 3.02 Provide any measures shown on Drawings.
- 3.03 Temporarily seed and mulch all soil stockpiles and denuded areas when such areas are to be dormant for over thirty days. Seeding and mulching shall be accomplished within 7 days.
- 3.04 Maintain temporary facilities until upslope soil is stabilized. Adequacy of stabilization will be determined by the Erosion and Sediment Control Administrator of the City.
- 3.05 Immediately remove temporary facilities when so authorized by the Administrator.
- 3.06 Spread and stabilize collected silt upon removal of temporary facilities.

PART 4 - MEASUREMENT AND PAYMENT

- 4.01 Measurement for temporary silt fence will be made in linear feet and payment will be made at the unit price bid per linear foot.

END OF SECTION

02790-2

SECTION 02821

SEEDING AND GRASS ESTABLISHMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Work consists of fertilizing, mulching and seeding to establish an acceptable stand of grass. It includes providing seed, fertilizer, lime and mulch in a prepared seed bed.

1.02 LOCATION

- A. All disturbed areas shall be mulched and seeded except paved and gravel areas.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Clearing: Section 02100
- B. Topsoil: Section 02823

1.04 SUBMITTALS

- A. Certificates
 - 1. Certify that materials comply with the specifications. Provide seed mix for approval.
 - 2. Signed by Supplier and CONTRACTOR

PART 2 - PRODUCTS

2.01 Comply with Section 244 of the Standards Specifications

2.02 GRASS MATERIALS

- A. Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixture composed of grass species, proportions and minimum percentages of purity, germination and maximum percentage of weed seed, as specified below.

B. Permanent Seed Mix

<u>Application Rate</u>	<u>Grass Material</u>
128 lb./acre	Kentucky 31 Tall Fescue
2 lb./acre	Redtop
20 lb./acre	Annual Rye*

* For use only before May 1 and between August 15 and November 1. If seeding is performed between May 1 and August 15, substitute 20 lb./acre foxtail millet. If seeding is performed after November 1, substitute 20 lb./acre winter rye.

C. Temporary Seeding

<u>Application Rate</u>	<u>Grass Material</u>
35 lb./acre	Annual Rye Grass
50 lb./acre	Cereal Rye

Use winter rye or other substitute during winter months.

PART 3 - EXECUTION

3.01 TEMPORARY SEEDING

- A. Use in areas when final grading has not been completed or when permanent seeding cannot be done due to the specified permanent seeding dates.
- B. Apply fertilizer at a rate of 15 lbs. of 10-10-10 per 1000 square feet (600 lbs. per acre) or equivalent.
- C. Apply lime at a rate of 20 lbs/1000 square feet in open areas.
- D. Apply lime at a rate of 50 lbs/1000 square feet in wooded areas.
- E. For loose soil, work lime and fertilizer into soil and then seed. For packed or hard soil, loosen top layer while working lime and fertilizer into soil and then seed at the rate required for the temporary seeding species.
- F. Temporary Seeding is not a substitute for Permanent Seeding.

3.02 PERMANENT SEEDING

- A. Fertilize and lime per 3.01 above.
- B. Comply with applicable provisions of Section 603 of the Standard Specifications.
- C. Apply seed at specified rate.

3.03 SUPPLEMENTAL SEEDING

- A. The Contractor shall perform supplemental seeding when less than a 90% uniform stand of the permanent grass is obtained. Supplemental seeding shall consist of over-seeding at the rate of 50% of the seed mix specified above.

3.04 MAINTENANCE AND ACCEPTANCE OF SEEDED AREAS

- A. The seeded areas shall be maintained until project close-out. Maintenance shall consist of providing protection against traffic, re-seeding, weeding, re-fertilizing, watering and mowing as necessary to produce a uniform and vigorous stand of grass. At the beginning of the next planting season after that in which the permanent crop is sown, the seeded areas will be inspected. Any section not showing vigorous growth at that time shall be promptly reseeded by the Contractor as his own expense. The work under this area will be accepted only after a uniform stand of grass has been established, regardless of final completion date.

3.05 HYDROSEEDING

- A. Mix specified seed, lime, fertilizer and pulverized mulch in water, using equipment specifically designed for hydroseed application (lime may be applied separately at the discretion of the Contractor). Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.
- B. Apply slurry uniformly to all areas to be seeded. Rate of application as required to obtain seed sowing rate.

END OF SECTION

SECTION 02823

TOPSOIL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Work consists of providing topsoil where required for seeding work.

PART 2 - PRODUCTS

2.01 TOPSOIL DESCRIPTION

- A. Topsoil shall be Class B conforming to the applicable provisions of the Standard Specifications. Topsoil shall consist primarily of soil loam material. Topsoil with large quantities of gravel, silt, clay and vegetative material shall not be used. Engineer shall determine usability of all Topsoil.
- B. Soil shall have a pH between 6.2 and 7.4. Adjust as necessary to meet required pH value.

PART 3 - EXECUTION

3.01 REVIEW BY ENGINEER

- A. Do not incorporate topsoil in the Work until it has been approved for use by the ENGINEER.

3.02 INSTALLATION

- A. Place topsoil in all areas to be sodded or seeded.
- B. Topsoil Depth: 4 inches minimum
- C. Comply with Section 602.03 of the Standard Specifications.

END OF SECTION

DIVISION III

CONCRETE

CITY OF HARRISONBURG, VIRGINIA
DEPARTMENT OF PUBLIC WORKS

Prepared by

SCHWARTZ & ASSOCIATES, INC.
for
Department of Public Works
320 East Mosby Road
Harrisonburg, Virginia 22801

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SECTION 03001

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL REQUIREMENTS

1.01 The work under this section includes but is not limited to the following:

- A. Formwork
- B. Construction joints, expansion joints, and waterstops.
- C. Installation of reinforcing and cast-in-place concrete.
- D. Mixing, placing and curing cast-in-place concrete.
- E. Finishing exposed concrete surfaces.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Materials for built-in items of other trades.

1.03 RESPONSIBILITY

A. The CONTRACTOR shall be solely responsible for the ability of formwork to produce members of the size, shape, and exterior finish required, for the structural adequacy of the forms to carry construction loads without excessive deflection, and for the safe use of forms in connection with completion of the concrete work. The CONTRACTOR shall be responsible for any injury or damage arising from inadequate forms or from premature removal of formwork.

1.04 SUBMITTALS

- A. Samples and certifications shall be submitted for review as directed by the ENGINEER.
- B. Shop Drawings: Submit reinforcement steel shop drawings prepared in accordance with ACI 315 and General Conditions. Drawings shall indicate bending diagrams, shapes, dimensions, clearances, splicing and laps, accessories, and installation notes.
- C. Admixtures: Submit manufacturer's literature for all admixtures proposed for the Work.
- D. Concrete: Submit deliver tickets in accordance with ASTM C94 for each batch of ready-mixed concrete. Total water content shall be indicated.
- E. Placement Schedule: The CONTRACTOR shall submit a proposed concrete placement schedule for review of the ENGINEER.

1.05 QUALITY CONTROL

A. Materials and methods of mixing and placing concrete shall conform to the most current applicable ACI Standard Specifications.

B. "Laboratory tests: The OWNER will retain the services of an acceptable testing laboratory and pay all costs to make tests and submit reports to the ENGINEER.

Any additional tests or analysis required because concrete fails to meet specifications shall be paid for by the CONTRACTOR.

Field Tests: The OWNER will provide VDOT-Certified Concrete Technicians for field testing of concrete for slump and air content prior to placement."

C. As directed by the ENGINEER, the testing laboratory may provide for inspection of the concrete batch plant to see that the concrete is properly mixed and that the consistency of mix is being controlled.

D. Compressive Strength Tests

1. Compressive test will be required for fifty (50) cubic yards of concrete or fraction thereof, but not less than one (1) set of cylinders for each day's pour, except the ENGINEER may waive this requirement for miscellaneous, non-structural pours of less than three (3) cubic yards. For each set, a minimum of six (6) standard 4" x 8" cylinders shall be prepared in accordance with ASTM C172.

2. Owner's Inspectors will prepare cylinders for testing and arrange for breakage tests."

E. Enforcement of Strength Requirements

1. For each class of concrete, the average of any three consecutive compressive strength tests and laboratory-cured specimens shall be greater than the specified strength and not more than one of the three tests shall be less than the specified strength, the CONTRACTOR shall, at his sole expense, make appropriate corrective measures. The proposed corrective measures shall be accepted by the ENGINEER prior to commencement of the corrective work.

2. "Contractor shall consider that testing provided by the Owner will be used to qualify or disqualify the concrete for acceptance."

F. Slump Tests: Tests for slump shall be made for each strength test, in accordance with ASTM C143, and when directed by the ENGINEER.

G. Air Entrainment Tests: Determine total air content for each strength test, and when change in consistency of the concrete mix is noted. The air content tests shall be made in accordance with ASTM C1381, C173, C231, or AASHTO T-152.

1.06 ADVERSE WEATHER CONDITIONS

- A. Comply with ACI 306 and 305 as applicable for cold and hot weather concrete placement.
- B. Do not mix salt, chemicals, or other foreign materials with the concrete to prevent freezing. Maintain the temperature of concrete above 50 degrees F for 5 days after placement. When high early strength portland cement concrete is used, the temperature shall not be less than 70 degrees F for 2 days or 50 degrees F for 3 days. Transition the concrete to the ambient temperature at a rate of 1 degree F each hour for the first 24 hours and 2 degrees F each hour thereafter.
- C. In no case shall the temperature of concrete exceed 85 degrees F at the time of placement.

PART 2 - PRODUCTS

2.01 FORMWORK

- A. Form ties shall be the watersealing snap-in-type.
- B. Forms shall be made of plywood, steel or other suitable materials with an interior surface capable of producing concrete that can be finished as specified.
- C. Carton Forms: Carton form components shall be made of corrugated fiberboard, laminated with water resistant adhesive. The fabricated forms and boxes shall be capable of supporting the concrete weight plus normal construction loads.

2.02 JOINT FILLERS AND SEALANTS

- A. Joint fillers and sealants shall comply with the applicable provisions of Section 212, JOINT MATERIALS, of the Standard Specifications.

2.03 WATERSTOP

- A. Waterstop shall be polyvinyl chloride and shall be dense, homogeneous and uniform. Holes and imperfections shall be cause for rejection.
- B. Unless otherwise indicated on the Contract Documents, waterstops for construction joints shall be as follows:
 - 1. Horizontal Construction Joints: 6" x 3/16" with hollow center bulb.
 - 2. Waterstop for Expansion Joints shall be cellular by Water Seal Inc., 9" x 5/32" with u-shaped center bulb by W. R. Meadows, Inc., or equal.

C. Provide prefabricated tees, crosses, and other configurations as required for all intersections of waterstop.

D. Waterstops in structures designed specifically to retain water shall be prefabricated in the shop to the lengths required to eliminate field-splicing, except the weight of any one prefabricated length of waterstop shall not exceed 400 pounds.

2.04 REINFORCEMENT

A. Reinforcement shall comply with the applicable provisions of Sections 228 and 406 of the Standard Specifications.

B. Accessories for proper installation of reinforcement shall conform to CRSI "Manual of Standard Practice for Reinforced Concrete Construction."

C. Reinforcement fabrication shall conform to ACI 318 and 315, and shop drawings.

2.05 CONCRETE MATERIALS

A. Comply with applicable provisions of Section 219 of the Standard Specifications.

2.06 MISCELLANEOUS MATERIALS

A. Patching mortar: Mix 1 part cement to 3 parts fine aggregate. For concrete exposed to view, add white cement to match color of adjacent concrete. Mix with minimum amount of water necessary.

B. Cement Grout: Mix 1 part cement and 1 part sand with water to a thick paint consistency. Add white cement to match color of adjacent concrete. Sand shall pass a No. 188 sieve.

2.07 CONCRETE MIXTURES

A. Comply with Section 217.07 of the Standard Specifications for class of concrete specified.

B. When temperature of concrete, as placed, is less than 40 degrees F., use of an accelerator will be considered for acceptance by the ENGINEER, (except in structural concrete) but do not use calcium chloride.

C. When temperature of concrete, as placed, exceeds 65 degrees F., use of water-reducing retarder will be considered for acceptance by ENGINEER.

2.08 MIXING CONCRETE

- A. Mix in accordance with Section 217 of the Standard Specifications.
- B. Obtain approval of ENGINEER before adding water to concrete at the site, and note amount on deliver ticket initialed by ENGINEER.

PART 3 - EXECUTION

3.01 PREPARATIONS

- A. Remove existing concrete and provide openings for installation of new work as indicated on drawings. Repair all damage to existing work caused by concrete removal.
- B. Subgrade preparation: The subgrade and/or bedding shall be compacted and free of frost. If placement is allowed at temperatures below freezing, provide temporary heat and protection as required to remove all frost. Dampen subgrade prior to placing concrete in areas where vapor barrier is not required. Remove all standing water, ice, mud and foreign matter before concrete is deposited. Mud slabs shall be provided where necessary to obtain a dry and stable working platform for placement of slabs on grade.
- C. Vapor barrier: On porous subgrade or beddings (except sidewalks less than eight feet wide) lay vapor barrier. Lay sheets with 6-inch edge laps and tape or seal with mastic. Stretch and weight edges and laps to maintain their positions until concrete is placed.
- D. Fastening devices for other work: Coordinate with other trades and properly place and locate in position all necessary dowels, bolts, anchors, anchor slots, inserts, hangers, metal ties and other fastening devices required for attachment and support of adjacent work. Securely anchor all fixtures and embedded items.

3.02 FORMS

- A. Except as modified herein, forms and formwork shall comply with the applicable provisions of Section 404.03 of the Standard Specifications.
- B. Formwork shall conform to shape, lines and dimensions of the members as indicated on the drawings. Joints in forms shall be horizontal or vertical. Forms shall be properly braced or tied to maintain position and shape under all dead and live loads and to prevent leakage. Forms shall be assembled so their removal will not damage the concrete.

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C. Before concrete is placed, install dowels, anchors, inserts, sleeves, openings, joint fillers, and devices required for attachment of other work. See drawings and other sections of these Specifications for details of items to be embedded in concrete.

D. Observation of Formwork: Concrete shall not be placed until the forms have been observed by the ENGINEER to assure surfaces in conformance with the drawings and specifications. The observation of formwork by the ENGINEER does not relate to the structural adequacy or the safety of the formwork.

E. Removal of Forms: Forms shall be removed in accordance with requirements of Section 404 of Standard Specifications and ACI 318, without damaging the concrete. Leave shoring in place until concrete will safely support its own weight plus any live loads that may be placed upon it. Strength of concrete shall be based on compressive strength tests of field-cured specimens. Upon removal of forms, the ENGINEER shall be notified by the CONTRACTOR in order that a review of the newly stripped surfaces may be made prior to patching.

3.03 CONSTRUCTION JOINTS

A. General: Arrange construction joint bulkheads to allow concrete to be placed between construction joints in one continuous operation.

1. Erect bulkheads where shown on the drawings or where permitted by the ENGINEER at right angles to the main reinforcement with a tongue and grooved joint two inches deep and 1/3 of the width of the concrete chamber. Install waterstop as indicated or required.

2. Obtain the ENGINEER'S acceptance if it becomes necessary to eliminate or relocate construction joints shown on the drawings.

3. Tops of edge forms, bulkheads and screeds shall be set to the finished elevations and to provide uniform pitch to drains as indicated on Drawings. If wet screeds are used, grade stakes or other fixed markers shall be established.

B. Horizontal Joints: Provide methods of achieving a leakproof joint. No horizontal construction joints will be permitted in slabs (unless indicated otherwise), beams, or girders.

C. Vertical Joints: Joints in reinforced slabs, beams and girders will not be permitted.

3.04 EXPANSION JOINTS

A. General: Provide expansion joints and waterstops where shown. Joint fillers shall be placed on each side of the waterstops.

B. Interior Horizontal Joints: Unless otherwise indicated, provide preformed sponge rubber or preformed cork filler. Allow for two-component polyurethane sealant.

C. Exterior Horizontal Joints: For drives, pavements, parking areas, walks and slabs on grade, unless otherwise indicated, provide preformed asphalt strip filler set 1/8 inch below finished surface, without allowance for sealant. Tool concrete edges on each side of joint.

D. Interior and Exterior Vertical Joints: Unless otherwise indicated, provide preformed sponge rubber or cork filler with allowance for two-component polysulfide sealant.

E. Submerged Horizontal and Vertical Joints: Unless otherwise indicated, provide preformed sponge rubber or cork filler with allowances for two-component polysulfide sealant.

3.05 CONTROL JOINTS

A. Control joints in slabs shall consist of partial depth plastic strips set flush with finished surface or 1/8 inch wide joints cut with a diamond saw.

B. Saw joints as soon as concrete has hardened sufficiently so aggregate will not be dislodged but before shrinkage stresses develop cracks. Joints shall be filled with joint sealant in accordance with Section 213 of the Standard Specifications.

3.06 WATERSTOPS

A. Unless otherwise indicated, provide continuous waterstops in all joints of below grade slabs, exterior walls and base slabs of water-retaining structures, and walls below grade adjacent to dry occupied areas. Continuous waterstops shall be provided in all expansion joints and construction joints in walls and slabs of water-retaining structures and in walls and slabs of dry working area below grade.

B. Embed approximately half of the waterstop on each side of the joint. Field splice and join PVC waterstop by heat sealing butt joints. Rubber waterstop shall be spliced or jointed with solid web rubber unions and the manufacturer's approved cold applied cement.

C. All splices and joints shall be in accordance with the manufacturer's recommendations to produce a water-tight joint. Lap splices will not be permitted. Support and protect the waterstop during construction. Repair or replace any damaged waterstop.

D. Locate bulb, or other provision to accommodate joint movement, directly over the joint opening.

E. Position U-bulb so it is open in the hydrostatic head.

F. Brace or lash waterstop securely to prevent movement during placement of concrete.

3.07 REINFORCEMENT

A. Unless otherwise modified herein, the placement of reinforcement shall comply with the applicable provisions of Sections 406.08, 406.09 and 406.10 of the Standard Specifications.

B. Reinforcement shall be reviewed by the ENGINEER before enclosing forms are erected and shall be rechecked immediately prior to depositing concrete.

C. Provide continuous reinforcement on dowels through construction joints. One half of reinforcement shall be discontinued across control joints unless otherwise indicated. All reinforcement shall be discontinued across expansion joints, except for sleeved or greased dowels, if indicated.

D. Reinforcement for formed concrete: Secure steel reinforcement to maintain proper position during concrete placement. Provide spacer bars or other suitable devices between two layers of wall reinforcement at such spacing as to maintain the specified distance between the two layers of reinforcement. Concrete protection for reinforcement shall conform to ACI 318, except as otherwise indicated on drawings. The cover shall be as required by drawings.

E. Concrete shall not be placed before review of reinforcement by the ENGINEER.

3.08 MIXING AND TRANSPORTING CONCRETE

A. Concrete shall be ready-mixed or job-mixed at the CONTRACTOR'S option.

B. Mixing and transporting of concrete shall comply with the applicable provisions of Section 219 of the Standard Specifications.

3.09 DEPOSITING CONCRETE

A. Except as modified herein, depositing of concrete shall comply with the applicable provisions of Section 404 of the Standard Specifications.

B. Concrete shall be placed in accordance with the requirements of ACI 318. Place concrete only during normal working hours unless the ENGINEER is notified at least 72 hours in advance. Concrete shall not be placed unless ENGINEER is present.

C. Concrete shall not be more than 60 minutes old for placement at 90 degrees F. and higher; below 90 degrees F., maximum age of concrete shall be 90 minutes. Concrete that has partially hardened or has been contaminated shall not be used.

D. Whenever new concrete is to be placed against existing concrete surfaces (over 30 days old), roughen and clean the surface to improve bond and apply epoxy bonding compound in accordance with the manufacturer's recommendations.

3.10 FINISHING CONCRETE SURFACES

A. Except as modified herein, finishing of concrete surfaces shall comply with the applicable provisions of Section 404 of the Standard Specifications.

B. Sidewalks and steps shall receive a broom finish in addition to a Class 7 finish.

C. Retaining walls, headwalls and other such exposed surfaces shall receive a Class 2 finish.

D. All other surfaces, including curbs, shall receive a Class 1 finish.

E. Broom Finish: Broom at right angles to direction of traffic to give a non-skid finish. Use a fine, soft-bristled broom for pedestrian ramps and walks, and a coarse, hard-bristled broom for vehicular pavement.

3.11 PROTECTION AND CURING

A. Comply with the applicable provisions of Section 404 of the Standard Specifications.

3.12 DEFECTIVE CONCRETE

A. Any concrete not formed as shown on the drawings within specified tolerances shall be removed and replaced.

B. Concrete that has a defective surface shall be patched or replaced. If patching does not restore the quality and appearance of the surface, the defective concrete shall be replaced.

C. Temperature and shrinkage cracks which develop prior to final acceptance of the work shall be repaired.

3.13 FINISHING FORMED CONCRETE

A. Patching

1. After review by the ENGINEER, patch tie holes and defective areas. Where necessary, chip out defective areas to a minimum depth of 1 inch. Wet the area to be patched and the

surrounding 6 inches to prevent absorption of water from the patching mortar and/or apply a brush coat of a suitable bonding compound or cement grout immediately prior to patching with mortar.

2. Thoroughly compact patching mortar into place and screed, leaving the patch slightly higher than the surrounding surface. For holes passing entirely through the wall, use a plunger grout gun to force the mortar through the wall, starting at the back face. Leave undisturbed for a period of one to two hours to permit initial shrinkage before final finishing. The patch shall be finished to match the texture and appearance of the adjoining surface.

3.14 MISCELLANEOUS CONCRETE WORK

A. Equipment Pads and Supports: Provide concrete equipment pads and supports as shown and conforming to shop drawings. Fastening devices and accessories shall be located by templates or setting diagram furnished by the manufacturer.

B. Correcting Slab Tolerances: Slabs exceeding specified tolerances shall have high spots ground down and low spots filled with 100 percent epoxy resin. Epoxy resin shall be applied in strict accordance with the manufacturer's printed instructions.

3.15 CLEAN-UP

A. All concrete floor construction shall have the surfaces thoroughly scrubbed and cleaned with clear water. Cleaning shall be done immediately before application or finish flooring or coating. After cleaning, the slabs shall be protected until they are accepted for floor finishing work.

B. Clean all surfaces affected by the concrete work. No extraneous concrete or discoloration shall be left on any construction.

END OF SECTION

SECTION 03010

SPECIAL PROVISION VIII

ARMATEC 110 BONDING EPOXY

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish all materials, labor, tools, and equipment to bond plastic cement mortar/concrete to hardened hydraulic cement mortar/concrete as designated by the Owner or required by Contract Drawings and these Special Provisions.

1.02 RELATED WORK

- A. Hydraulic cement mortar/concrete placement
- B. Crack repairs

1.03 QUALITY ASSURANCE

- A. Manufacturer shall provide a well trained technical field representative to direct the Contractor's work. This individual shall be at the project site for a minimum of two days at the beginning of this installation.
- B. Provide a notarized certificate stating that the epoxy resin adhesive meets the specified requirements and have the manufacturer's current printed literature on the specified product.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver the specified product in original, unopened containers with the manufacturer's name, labels, product identification and batch numbers.
- B. Store and condition the specified product as recommended by the manufacturer.

1.05 JOB CONDITIONS

- A. Environmental Conditions: Do not apply material if it is raining or snowing or if they appear to be imminent. Do not apply material if air or surface temperature is below 45 degrees F or is expected to fall below 40 degrees F before new concrete is placed.
- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the epoxy resin adhesive.

PART 2 - PRODUCERS

2.01 ACCEPTABLE MANUFACTURERS

- A. Sika Armatec 110 EpoCem, as manufactured by Sika Corporation, Lyndhurst, New Jersey, is considered to conform to the requirements of this specification and has performed satisfactorily for bonding plastic hydraulic cement mortar/concrete to hardened hydraulic cement mortar/concrete.
- B. Substitutions: The use of other than the specified product will be considered providing the Contractor requests its use in writing to the Engineer. This request shall be accompanied by (a) A certificate of compliance from an approved independent testing laboratory that the proposed substitute product meets or exceeds the specified performance criteria, tested in accordance with the specified test standards; and (b) Documented proof that the proposed substitute product has a three-year proven record of performance of bonding plastic hydraulic cement mortar/concrete to hardened hydraulic cement mortar/concrete, confirmed by actual field tests and five successful installations that the Engineer can investigate.

2.02 PERFORMANCE CRITERIA

- A. Properties of the mixed epoxy resin/portland cement adhesive.
 - 1. Pot Life: 90 minutes @ 73° F
 - 2. Contact Time: 95°F (35°C) 6 hours
 - 80-95F (26-35C) 6 Hours
 - 65-79F (18-26C) 12 Hours
 - 50-64F (10-17C) 16 Hours
 - 40-49F (4-9C) wet on wet
 - 3. Color: dark gray
- B. Properties of the cured epoxy resin/portland cement adhesive.
 - 1. Compressive Strength (ASTM C-109)
 - a 3 day: 4500 psi (31.0 MPa)
 - b. 7 day: 6500 psi (44.8 MPa)
 - c. 28 day: 8500 psi (58.6 MPa)
 - 2. Splitting Tensile Strength (ASTM C-496)
 - a. 28 days: 600 psi (4.1 MPa)
 - 3. Flexural Strength (ASTM C-348)
 - a. 1250 psi (8.6 MPa)
 - 4. Bond Strength ASTM C-882 at 14 days
 - a. Wet on Wet, 0-hr. open time: 2800 psi (19.3 MPa)
 - 5. Bond of Steel Reinforcement to Concrete (Pullout Test)
 - a. Sika Armatec 110 coated 625 psi (4.3 MPa)
 - b. Epoxy coated 508 psi (3.5 MPa)
 - c. Plain Reinforcement 573 psi (3.95 MPa)
 - 6. The epoxy resin/portland cement adhesive shall not produce a vapor barrier.
 - 7. Material must be proven to prevent corrosion of reinforcing steel when tested under the procedures as set forth by the Federal Highway Administration Program Report No. FHWA/RD86/193. Proof shall be in the form of an independent testing laboratory corrosion report showing prevention of corrosion of the reinforcing steel.

Note: Tests above were performed with material and curing conditions at 73°F and 45-55% relative humidity.

2.03 MATERIALS

A. Epoxy resin/hydraulic cement adhesive:

1. Component "A" shall be an epoxy resin/water emulsion containing suitable viscosity control agents. It shall not contain butyl glycidyl ether.
2. Component "B" shall be primarily a water solution of a polyamine.
3. Component "C" shall be a blend of selected Portland cements and sands.
4. The material shall not contain asbestos.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. Concrete surface must be clean and sound. Substrate may be dry or damp, but free of standing water and frost. Remove dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, coatings, and disintegrated materials by mechanical means, i.e. - sandblasting, high-pressure waterblasting, etc., as approved by the Engineer.
- B. Cracks in the substrate in the area of the patching or overlay work must be treated as directed by the Engineer.
- C. Extend all existing control and expansion joints through any patch or overlay. Install new joints as directed by the Engineer. Fill all joints as directed by the Engineer.
- D. Supply and place hydraulic cement mortar/concrete as directed by the Engineer. Mix designs must be pre-approved by the Engineer.

3.02 MIXING AND APPLICATION

- A. Mixing the epoxy resin: Shake contents of Components "A" and Component "B". Completely empty both components into a clean, dry mixing pail. Mix thoroughly for 30 seconds using a jiffy paddle with a low-speed (400-600 rpm) drill. Slowly add the entire contents of Component "C" while continuing to mix for 3 minutes until uniform with no lumps. Mix only that quantity that can be applied within its pot life.

B. Placement procedure:

1. Apply to prepared surface with a stiff-bristle brush, broom or "hopper type" spray equipment.

a. For hand-applied mortars - Place fresh, concrete/mortar while the bonding bridge adhesive is "wet" or within open times indicated in section 2.02.

b. For machine-applied mortars - Apply while the bonding bridge adhesive is "wet" or within the open times indicated in section 2.02.

C. Adhere to all limitations and cautions for the epoxy resin/portland cement adhesive in the manufacturers current printed literature.

3.03 CLEANING

A. The uncured epoxy resin/hydraulic cement adhesive can be cleaned from tools with water. The cured epoxy resin/hydraulic cement adhesive can only be removed mechanically.

B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

PART 4 - COMPENSATION

4.01 METHOD OF MEASUREMENT

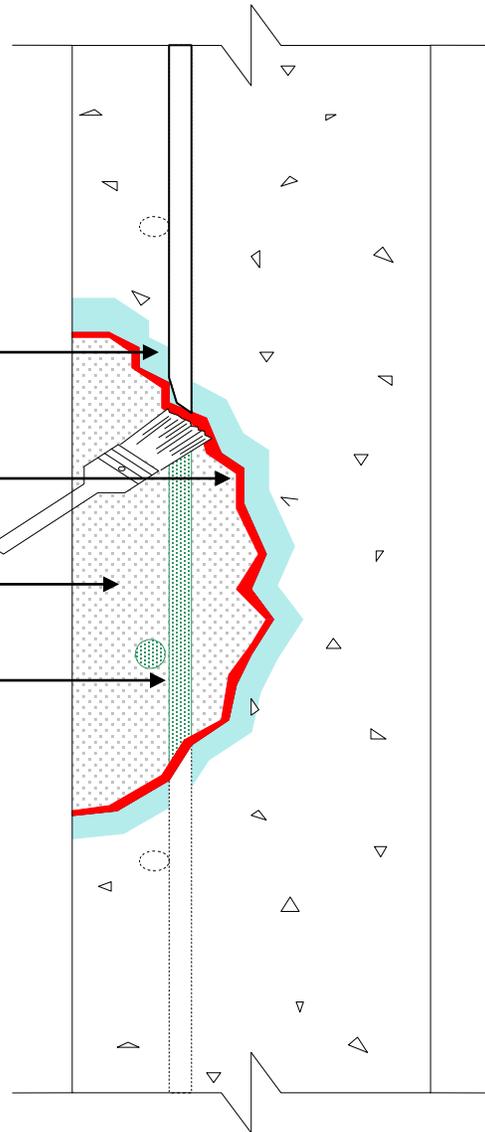
No measurement will be required for Armatec 110 Bonding Epoxy; the costs shall be included in the associated concrete bid items.

4.02 BASIS OF PAYMENT

Armatec 110 Bonding Epoxy is not a pay item. It shall be paid for in associated concrete bid items.

Bonding Epoxy

1. Pre-wet surface (keep wet min. 3 hours) to saturated surface dry (SSD).
2. Apply by stiff bristle brush or spray apply with "hopper type" or equal equipment.
3. Place repair material while **Sika Armatec 110 EpoCem** is still wet or within indicated open times.
4. Indicates **Sika Armatec 110 EpoCem** applied to reinforcing steel per spec.



SECTION 03038

SANDBLASTING SAND

PART 1 GENERAL

All sand used in cleaning or sandblasting operations shall be a type that will create a minimum amount of dust. It shall also be sharp, coarse and hard so that it will cut quickly.

All sand shall, as a minimum, meet the following gradation:

<u>Sieve Size</u>	<u>Percent Passing Sieve, by Weight</u>
20	63 Max.
30	9 Max.
40	0.8 Max.
50	0.1 Max.
70	0 Max.

PART 2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- 2.01 Sandblasting sand will not be measured as a separate pay item.
- 2.02 The cost of sandblasting sand and all costs associated with it shall be included in the Contract price of other items bid.

END OF SECTION

03038-1

SECTION 03120

ADHESIVE ANCHORS

PART 1 GENERAL

1.01 DESCRIPTION

- A. This item consists of drilling holes in existing concrete, cleaning holes, placing reinforcing steel or continuous coil threaded rod (galvanized to meet ASTM A123) in holes and anchoring reinforcing steel or continuous coil threaded rod with anchoring material, all in accordance with the Contract Drawings and these Special Provisions.

1.02 QUALITY ASSURANCE

- A. The Contractor shall provide a notarized certification stating that the material meets the specified requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. The steel shall be reinforcing steel meeting requirements of ASTM A615 Grade 60 of the size specified on the Drawings.
- B. The anchoring material shall be a polyester resin (made in USA) with no weakening additives or fillers.
- C. The threaded rod shall meet the requirements of ASTM A307.

2.02 ACCEPTABLE MANUFACTURERS

- A. Anchoring Material - KELIBOND SYSTEM as manufactured by Kelken-Gold, Incorporated, South Plain Field, New Jersey, is considered to conform to the requirements of this specification.
- B. Substitutions: The use of other than the specified products will be considered providing the Contractor requests their use in writing to the Engineer. This request shall be accompanied by (a) a notarized certificate of compliance from an approved independent testing laboratory stating that the proposed substitute products meet or exceed the specified performance criteria, tested in accordance with the specified test standards of the acceptable manufacturer listed and (b) tests reports from independent testing laboratory giving data proving to the satisfaction of the Engineer the system is capable of achieving minimum yield strength of embedment steel.
- C. The anchoring material shall have the following properties:

Compressive Strength	(ASTM D695)	17,000 psi
Tensile Strength	(ASTM D638)	5,510 psi
Tensile Modulus	(ASTM D638)	1.14 x 10 ⁶ psi
Flexural Modulus	(ASTM D790)	1.06 x 10 ⁶ psi

Temperature Range During Installation - 10 degrees F. to 110 F.

2.03 PHYSICAL PROPERTIES

<u>REINFORCING BAR DIAMETER (LBS)</u>	<u>90% OF YIELD OF REINFORCING BAR</u>
4	10,800
5	16,740
6	23,760
7	32,400
8	42,660
9	54,000
10	68,580
1 1/4" diameter Cont. Coil Threaded Rod	45,000

PART 3 EXECUTION3.01 APPLICATION

A. Basic steps for Adhesive Anchors are:

1. Clean the area around the hole to be drilled.
2. Drill hole in concrete to required depth.
 - a. Extreme caution shall be taken in order that existing reinforcing steel is not damaged. Any reinforcing steel damaged shall be corrected at Contractor's expense.
 - b. Holes shall be drilled with vacuum air drills using hollow drill bits.
 - c. The holes shall be vacuum cleaned during drilling with air vacuumed through the hollow bits.
 - d. The holes shall be horned out by use of a stiff mechanic's or metal bristle brush in order to add roughness to the sidewall.
 - e. At the completion of drilling and after drill is removed, full penetration air "blowout" and vacuuming shall be used to perform the final "clean-out" of hole.
3. Mixing Anchoring Material and Placement of Reinforcement Steel or Threaded Rod:
 - a. Pour hardening powder from its container into resin. Hand mix by stirring vigorously for 60 seconds. Then pour into the bottom half of several clean, drilled holes. The holes may be damp but may not have running or standing water present.
 - b. The anchors are pushed to the bottom of the holes and rotated to be sure of total "wetting".
 - c. If horizontal hole is used, use polypropylene disposable gun that will reach to base of hole in order to insert anchoring material. For horizontal holes across cut stoppers shall also be used to prevent loss of anchoring material.
 - d. They are left undisturbed until gel occurs, which happens within minutes to approximately one hour depending on the temperature at the time of installation.
 - e. After the material has cooled, it will have 50 to 60 percent of its ultimate strength.

- B. Make sure that all material is installed using manufacturer's recommended equipment and in strict accordance with manufacturer's recommendations.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. No measurement shall be required for "Adhesive Anchors" as the quantity shall be paid for in the concrete bid items in which it is used.

4.02 BASIS OF PAYMENT

- A. "Adhesive Anchors" - shall be paid for in other bid items and shall not be measured as a pay item.

SECTION 03125

REPOINT MORTAR JOINTS

PART 1 - GENERAL

1.01 DESCRIPTION:

This item shall consist of raking and repointing Engineer designated exposed mortar rubble masonry (stone) joints in retaining walls. It is not the intent that underwater repairs be performed but that the repairs near the normal water elevation be performed during the dry season when the water level drops to the desired elevation.

1.02 CHIPPING AND REMOVING

All loose, unsound and disintegrated stone or mortar material shall be removed from the areas the Engineer designates to be repaired in a manner and to an extent as to expose a sound surface. Unless otherwise specified, chipping of the mortar is to be carried to a minimum depth of 1" and in general to a well bonded mortar is encountered.

The boundaries of the areas to be repaired shall be cut at an approximate 45 degree angle to a depth of not less than one inch to avoid thin or feather edges in the finished surface.

Where existing reinforcing rods are exposed at the surface, the concrete shall be cut back of the rods so that the reinforcing can be more thoroughly embedded in the concrete. Wherever this procedure is impractical, additional pressure mortar shall be applied over the reinforcing to obtain proper coverage. The chipping of all surfaces shall be performed by means of pneumatic tools.

After completion of chipping, the joints shall be cleaned of all loose mortar, dust and dirt with high pressure water blast or sand blast followed by high pressure air blast.

1.03 BONDING

All mortar chipped surfaces shall be rough, clean, sound mortar free of oil, dust, dirt and loose particles. The bonding surface shall be thoroughly wet prior to the application of mortar which shall be applied to all mortar surfaces to be restored.

1.04 REPOINTING

The joints shall then be restored, cut flush with the stone face with concrete mortar consisting of one part cement to one part sand, plus non-metallic, non-shrink additive and mortar shall be applied with trowel, driving it well into the joint (to the full depth prepared which shall be 1" to 2" for "Repoint Mortar Joint- Type A").

PART 2 - PRODUCTS

2.01 SAND

Sand shall be clean and sharp and evenly graded from fine to coarse with a "fineness modulus" between 2.0 and 3.25. Moisture content shall be as near to 4% by weight as practical. The sand and cement shall be thoroughly mixed before being placed.

2.02 CEMENT AND WATER

Cement and water used shall meet all requirements of VDOT Road & Bridge Specifications, 2002.

PART 3 - EXECUTION

3.01 PLACING MORTAR

The mortar shall be placed using hand tools such as trowels.

PART 4 - MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

The method of measurement for "Repointing of Mortar Joints - "Type A" will be on the basis of "linear feet" of joints actually raked and repointed and will be based on measurements taken along the exposed face of the joints where raking and repointing was completed.

4.02 BASIS OF PAYMENT

The unit price shown on the contract for this item shall be full compensation for raking, cleaning, repointing with mortar, removal and disposal of existing material, and all other expenses involved that are necessary to complete the work according to the drawings and specifications or as directed by the Engineer and includes the furnishing of all materials, labor, tools, equipment, and incidentals necessary to complete the work. Payment will be made under the Contract pay item "Repointing of Mortar Joints - Type A". Pay units shall be on a "linear foot" basis of joints actually repointed.

End of Section

SECTION 03131

HYDRAULIC CEMENT CONCRETE SIDEWALK MODIFIED (4" DEPTH)

PART I - GENERAL

1.01 Description

This item shall consist of furnishing and placing A3 concrete, welded wire fabric, handrail anchor bolts, forming, finishing concrete, curing, excavation, backfilling, disposal of excess material and shop drawings.

Also included in this item shall be the cleaning, sand blasting and pre-wetting existing wing or retaining wall that contacts new concrete.

1.02 Method Measurement

"Hydraulic Cement Concrete Sidewalk Modified (4" Depth) - shall be paid for on a Square Yard basis, complete-in-place.

1.03 Basis of Payment

The unit price shown on the Contract for this item shall be full compensation for excavation and disposal of material, backfilling, shop drawings, finishing, curing, forming and removal of forms, cleaning, sand blasting and pre-wetting existing wings or retaining wall that contacts new concrete, furnishing and placement of concrete, welded wire fabric, handrail anchor bolts, furnishing of all materials, labor, tools, equipment and incidentals necessary to complete the work. Payment will be made under the contract pay item of:

"Hydraulic Cement Concrete Sidewalk Modified (4" Depth) - Pay unit will be on a per "square yard" basis, complete-in-place.

03130-1

DIVISION IV
REVISIONS TO VIRGINIA DEPARTMENT OF
TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, 2007

CITY OF HARRISONBURG, VIRGINIA
DEPARTMENT OF PUBLIC WORKS

Prepared by

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Department of Public Works
320 East Mosby Road
Harrisonburg, Virginia 22801

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DIVISION IV - MISCELLANEOUS REVISIONS

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1.02	Epoxy	04010-2
1.03	Asphalt Concrete	04010-2
1.04	Materials - General	04010-2
1.03	Miscellaneous Notes	04010-3 - 04010-18

SECTION 04010

REVISIONS TO VIRGINIA DEPARTMENT OF
TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, 2007

1.01 HYDRAULIC CEMENT CONCRETE

1. Testing - Section 404 of 2007 Virginia Department of Transportation (VDOT) Road and Bridge Specifications is changed in regard to testing and all testing of concrete shall be as detailed below.

- a. All material shall be shipped from stockpiles approved by VDOT. A notarized letter of certification from the contractor stating that all materials used in the concrete mix and the overall mix meet all requirements of the specifications and the special provisions shall be provided. All mix designs shall be submitted to the ENGINEER for his review.
- b. Change of Supply Tests - If during the course of this project, the CONTRACTOR desires to change his source of supply of fine or coarse aggregates, or both, he shall secure the services of an approved laboratory and have the tests prescribed by the VDOT specifications performed and new design mixes prepared, and submit them to the ENGINEER for review a minimum of fifteen (15) days before placing concrete. Payment for all change of supply tests shall be made by the CONTRACTOR.
- c. Job Tests - The ENGINEER may reject any shipment of concrete which in his opinion, does not meet the VDOT specifications, or these specifications.

The ENGINEER, at any time, may require the contractor to have an approved laboratory perform the prescribed tests on the materials being used. If the material meets the specifications then the OWNER shall bear all expense of the tests, otherwise such tests shall be at the CONTRACTOR'S expense, and all concrete placements shall stop until satisfactory materials are obtained. The ENGINEER shall have the CONTRACTOR'S assistance in performing all job tests deemed necessary by the ENGINEER.

- d. Cement Mill test - the cement company supplying Hydraulic cement to the project shall furnish to the ENGINEER for each car of cement, two copies of the certified mill test reports.
- e. Concrete Test Cylinders - During the progress of the work, the ENGINEER at his discretion, may require that concrete test cylinders be taken at various intervals.

The cylinders will be taken by the ENGINEER with the CONTRACTOR'S assistance.

Curing and testing of cylinders will be as directed by the ENGINEER. The CONTRACTOR shall furnish the materials for concrete cylinders at his expense and the OWNER shall bear the expense of cylinder testing.

1.02 EPOXY

1. Materials - Material for epoxy resin systems shall conform with Section 243 of 2002 VDOT Road and Bridge Specifications. A letter of certification shall be required stating that epoxy meets all requirements of the VDOT specifications. The letter must show epoxy manufacturer name, VDOT system (EP-4, EP-5, etc.), batch numbers and expiration date of epoxy. In the event this specific type of epoxy to be used is not specified on the plans, the type selected for use shall be submitted in writing to the ENGINEER and shall be subjected to his review prior to use.

Containers shall be identified as "Component A--Contains Epoxy Resin" and "Component B--Contains Hardener" and shall show the type, class and mixing directions. Each container shall be marked with the name of the manufacturer, the class, batch or lot number, the date of packaging, the date of shelf life expiration, pigmentation, if any, and the quantity contained therein in pounds (kg) and gallons (l). Potential hazards shall be so stated on the package in accordance with the Federal Hazardous Products Labeling Act with the following warning:

CAUTION:

Epoxies will cause dermatitis if proper precautions are not followed. Avoid contact with the skin and eyes, use gloves and protective creams on the hands. In the event of contact, wash thoroughly with soap and water. Goggles should be used to protect the eyes; however, in the event of eye contact, flush with water for ten (10) minutes and secure immediate medical attention.

Containers not marked as required above are not to be opened and used.

1.03 ASPHALT CONCRETE TYPE SM-12.5A AND TYPE BM-25.0A

1. Materials - CONTRACTOR shall submit mix designs, for the ENGINEER'S review, a minimum of fifteen (15) days before placing asphalt concrete. A letter of certification shall be required stating that asphalt concrete meets all requirements of the VDOT specifications.

1.04 MATERIALS - GENERAL

The CONTRACTOR shall provide the ENGINEER certifications for all materials used in this work. These certifications shall give manufacturer's name and address, name of material, VDOT Model No., Batch Number, Federal Color Number (if paint), VDOT Paint Number, quantity contained therein and shall be delivered to the ENGINEER'S office a minimum of five (5) work days before material is to be placed. The certifications shall state that the material meets all the requirements of these Specifications and shall be signed by the CONTRACTOR and notarized. Unless otherwise approved by ENGINEER, all samples taken for testing shall be taken at the manufacturer's plant.

1.05 MISCELLANEOUS NOTES

1. Section 101 Virginia Department of Transportation or Department shall be deemed to mean the City of Harrisonburg.

SECTION 105.10 of the Specifications is replaced by the following:

Section 105.10 Construction Stakes, Lines and Grades - This work shall consist of providing all surveying and stakeout for the successful prosecution of work as indicated on the plans and as directed by the Engineer. Stakeout work shall be in accordance with the Department's current Survey Manual.

The following surveying work shall be performed by or under the direct control and personal supervision of a surveyor who is licensed in Virginia as a Land Surveyor and is experienced in highway construction stakeout: Right of way and boundaries affecting property ownership, horizontal and vertical control for bridges, horizontal and vertical control for box culverts and culverts having spans or openings larger than 48 inches, horizontal and vertical control for culverts with design grades, horizontal and vertical control for additional centerlines or baselines for roadways, ramps, loops and connections.

All other surveying work may be performed by or under the direct supervision and control of the Contractor, who is experienced in highway construction stakeout.

The Contractor shall preserve any reference points, control data, and benchmarks that the Department may have established.

The Contractor shall provide the Engineer with a record copy of survey drawings, field notes and computations prior to the use of said stakeout information for construction. Survey record drawings shall be prepared and certified in accordance with the requirements of the sample figure drawings as shown in the Survey Manual. Electronic data files may be submitted along with paper sketches and drawings, subject to the prior approval of the Engineer. All electronic copies submitted shall be in a format fully compatible with the Department's existing computer hardware and software. It shall be the responsibility of the Contractor to check all surveying work for correctness.

Consideration will not be given for any delays to the project that are a result of inaccurate stakeout or time lost to correct elements of the defective survey work. Contractor shall bear all cost to correct all deficiencies resulting from defective survey work. Should a discrepancy arise during construction, the Contractor shall immediately provide oral and written notice to the Department, accurately describing and documenting the discrepancy. The Department will respond to the Contractor's notice and provide direction on how the work is to proceed.

Culvert construction: The Contractor shall stake box culverts and culverts having spans or openings larger than 48 inches and culverts with design grades. Stakeout work and record drawings shall be in accordance with the requirements of Sample Figure 1 as shown in the Survey Manual. Certified record drawings, field notes, and computations shall be submitted to the Engineer.

Bridge construction: The Contractor shall stake all bridges. Stakeout work and record drawings shall be in accordance with the requirements of Sample Figures 2 and 3 as shown in the Survey Manual. Certified record drawings, field notes, and computations shall be submitted to the Engineer.

Locating and setting right-of-way monuments: The Contractor shall set hub and tack points for RM-1 right-of-way monuments in accordance with the Road and Bridge Standards. The Contractor shall furnish RM-2 right-of-way monuments and locator posts. The Department will furnish the required caps for installation by the Contractor. Surveying work and drawings shall be in accordance with the requirements of Sample Figure 4 as shown in the Survey Manual. Certified record drawings, field notes, and computations shall be submitted to the Engineer.

Measurement and Payment: Construction surveying will be paid for at the contract lump sum price, which price shall be full compensation for performing the work prescribed herein and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment for construction surveying will be made upon written request by the Contractor. Such requests shall be submitted to the Engineer no earlier than five days, and no later than two days prior to the progress estimate date. Payment may be made in increments selected by the Contractor. However, payments will not exceed 60 percent of the contract unit price bid until the Contractor has provided the Engineer with surveying field notes, layouts, computations, sketches, and drawings in the format approved by the Engineer.

Locating and setting RM-1 and RM-2 right-of-way monuments will be measured and paid for in accordance with the requirements of Section 503 of the Specifications. No payment will be made until the Engineer has received certified documents from the Contractor.

Payment will be made under:

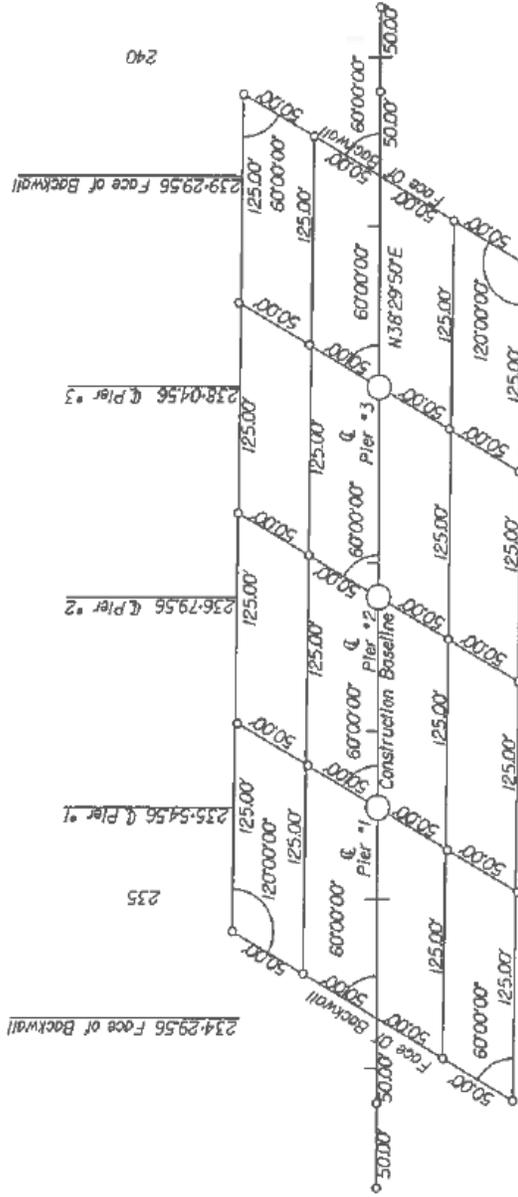
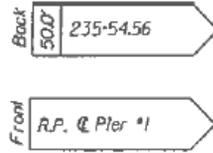
Pay Item	Pay Unit
Construction Surveying	Lump sum

SAMPLE

March 2001

Benchmark #1 - 3 Nails Set In The Base Of A 36' Oak, 85' Lt. Of Sta. 232+00 Construction Baseline
Elevation = 433.98

Benchmark #2 - Railroad Spike Set In The Top Of A 48' Stump, 105' Rt. Sta. 240+50 Construction Baseline.
Elevation = 429.22



Note:

1. At Least Two Offset Points Shall Be Set On Each Side Of The Abutments And Piers.
2. Offsets When Possible Will Be Set Equal Distance From Backwall And Piers.
3. Angles And Distances Shall Be Checked At Ends Of All Offset Lines.
4. A Minimum Of Two Benchmarks Shall Be Set In The Immediate Vicinity Of The Bridge. The Descriptions And Station And Offset From The Construction Baseline Shall Be Shown On The Bridge Stake Out Sketch.
5. All Bridges Should Be Staked By One Field Crew And This Stake Out Verified By Another Field Crew Prior To Submittal Of TMS Sketch.
6. All Reestablishing Of Face Of Backwall And Centerlines Of Piers Will Be By Intersection Only. Distances Are Provided For Checking Purposes Only.

Certification

I, Licensed Land Surveyor, Hereby State The Stake Out Of Bridge *Project* Was Conducted Under My Direct Control or Personal Supervision And This Sketch Correctly Represents The Location Of All Offset Points Staked In The Field.

Land Surveyor _____

Reg.# _____

Date _____

FIGURE 3



VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 214—HYDRAULIC CEMENT

3. **SECTION 214—HYDRAULIC CEMENT** of the Specifications is amended as follows:

Section 214.02(b) Portland cements is amended by replacing 1. with the following:

1. The SO₃ content as specified in AASHTO M85 will be permitted, provided supporting data specified in AASHTO M85 are submitted to the Department for review and acceptance prior to use of the material.

Section 214.02(b) Portland cements is amended by deleting 3., 4., and 5.

Section 214.02—Detail Requirements is amended by adding the following:

- (c) **Expansive hydraulic cement** shall conform to the requirements of ASTM C 845 Type K.

4. **SECTION 215—HYDRAULIC CEMENT CONCRETE ADMIXTURES** of the Specifications is amended as follows:

Section 215.02(g) Fly ash is replaced with the following:

- (g) **Pozzolan** shall conform to Section 241 of the Specifications.

Section 215.02—Materials is amended by adding the following:

- (k) **Metakaolin** shall conform to the requirements of AASHTO M321

5. **SECTION 217—HYDRAULIC CEMENT CONCRETE** of the Specifications is amended as follows:

Section 217.02(a) Cementitious Materials is replaced with the following:

Cementitious materials shall be a blend of mineral admixtures and Portland cement or a blended cement. In overlay concretes, expansive hydraulic cement is permitted in lieu of Portland cement. Portland cement (Types I, II, III) blended cements (Type IP, Type IS) or expansive cement (Type K) shall comply with Section 214 of the Specifications. Flyash, ground granulated iron blast-furnace slag (GGBFS), silica fume or metakaolin shall conform to Section 215 of the Specifications. As a portion of the cementitious material, Table 1 lists the minimum percents of specific pozzolans required by mass of the cementitious material depending on the alkali content of the cement. Any other mineral admixture or any other amount or combination of mineral admixtures may be used if approved by the Engineer. As a portion of the cementitious material, the fly ash content shall not exceed 30 percent for Class F, the ground granulated blast-furnace slag content shall not exceed 50 percent and the silica fume content shall not exceed 10 percent unless approved by the Engineer. Class C Flyash or other pozzolans may be used provided the contractor demonstrates that the percent usage of Class C Flyash or other pozzolans have a maximum expansion of 0.15% according to ASTM C227 at 56 days using borosilicate glass as aggregate. Blended cements require no further pozzolan additions to meet minimum pozzolan content to compensate for the alkali-silica reaction.

Up to 7 percent silica fume may be added to all combinations of cementitious materials to reduce early permeability without approval by the Engineer. Other silica fume additions must be approved by the Engineer.

Table 1 - Minimum percent pozzolan required by mass of cementitious material as a portion of the total cementitious materials and are based upon the alkali content of the cement.

	Total Alkalies of Cement is less than or equal to 0.75%	Total Alkalies of Cement is greater than 0.75% and less than or equal to 1.0%
Class F Flyash	20%	25%
GGBF Slag	40%	50%
Silica Fume	7%	10%
Metakaolin	7%	10%

TABLE II-17 Requirements for Hydraulic Cement Concrete is replaced with the following:

**TABLE II-17 (To be used on Bridge only)
Requirements for Hydraulic Cement Concrete**

Class of Concrete	Design Min. Laboratory Compressive Strength at 28 days (f'c) (psi)	Aggregate Size No. ⁶	Design Max. Laboratory Permeability at 28 Days (Coulombs) ⁵	Nominal Max Aggregate Size (in)	Min. Grade Aggregate	Min. Cementitious Content (lb./cu yd)	Max. Water/Cementitious Mat. (lb. Water/lb. Cement)	Consistency (in of slump)	Air Content (percent) ¹
A4.5	4,500	56 or 57	2,500	1	A	635	0.40	2-4	6 1/2 ± 1 1/2
A4 General	4,000	56 or 57	2,500	1	A	635	0.40	2-4	6 1/2 ± 1 1/2
A4 Post & rails	4,000	7,8 or 78	2,500	0.5	A	635	0.40	2-5	7±2
A3 General	3,000	56 or 57	3,500	1	A	588	0.40	1-5	6±2
A3a Paving	3,000	56 or 57	3,500	1	A	564	0.49	0-3	6±2
A3b Paving	3,000	357	3,500	2	A	N.A.	0.49	0-3	6±2
B2 Massive or lightly Reinforced	2,200	57	N.A.	1	B	494	0.58	0-4	4±2
C1 Massive Unreinforced	1,500	57	N.A.	1	B	423	0.71	0-3	4±2
T3 Tremie Seal	3,000	56 or 57	N.A.	1	A	635	0.49	3-6	4±2
Latex hydraulic cement concrete overlay ³	3,500	7,8 or 78	1,500	0.5	A	658	0.40	4-6	5±2
Silica fume, silica fume/Class F Fly Ash or silica fume/slag concrete overlay ⁴	5,000	7,8 or 78	1,500	0.5	A	658	0.40	4-7	6±2
Class F Fly Ash or slab overlay	4,000	7,8 or 78	1,500	0.5	A	658	0.40	4-7	6±2

(See next page for notes on TABLE II-17).

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- ¹ When a high-range water reducer is used, the upper limit for entrained air may be increased by 1% and the slump shall not exceed 7 inches.
- ² When Class A5 concrete is used as the finishing bridge deck riding surface, or when it is to be covered with asphalt concrete with or without waterproofing, the air content shall be $5 \frac{1}{2} \pm 1 \frac{1}{2}$ percent.
- ³ The latex modifier content shall be 3.5 gallons per bag of cement. Slump shall be measured approximately 4.5 minutes after discharge from the mixer.
- ⁴ Silica fume with a minimum of 7% by weight of cementitious material; silica fume with a range of 2.5-5 % shall be combined with Class F Fly Ash in range of 15-20% and minimum cement of 77.5% by weight of cementitious material; silica fume with a range of 2.5-5% shall be combined with Ground Granulated Blast Furnace Slag in the range of 30-35% and a minimum cement of 67.5% by weight of cementitious material.
- ⁵ The permeability testing does not apply to small bridges identified on the bridge plans and to concrete structures and incidental concrete as described in Sections 219, 232, 302, 415, 502, 504, 506 and 519. Curing and testing of test cylinders for permeability will be in accordance with VTM 112.
- ⁶ The contractor may use different aggregate sizes or a combination of sizes to increase the coarse aggregate content of the concrete as approved by the Engineer. The maximum size of the coarse aggregate shall not exceed 2.5 inches.

Note: With the approval of the Engineer, the Contractor may substitute a higher class of concrete for that specified at the Contractor's expense.

Section 217.02(b) Formulated latex modifier is amended by adding the following:

For latex-modified concrete, Type I, Type II, Type III or Type K, cement shall be used without mineral admixtures.

Section 217.04(a)4. Admixtures is replaced with the following:

4. **Admixtures** shall be dispensed and used according to the manufacturer's recommendations. They shall be added within a limit of accuracy of 3 percent, by means of an approved, graduated, transparent, measuring device before they are introduced into the mixer. If more than one admixture is to be used, they shall be released in sequence rather than in the same instant. Once established, the sequence of dispensing admixtures shall not be altered. However, when the amount of admixture required to give the specified results deviates appreciably from the manufacturer's recommended dosage, use of the material shall be discontinued.

Section 217.05—Equipment is amended to replace the first paragraph with the following:

Equipment and tools necessary for handling materials and performing all parts of the work will be approved by the Engineer and must be in accordance with one of the following procedures:

1. having a current National Ready Mix Concrete Association Plant and Truck Certification, or
2. having a Department approved self-certification program in-place prior to the production of concrete for the Department.

Failure to comply with one or the other of these procedures will result in the concrete production being unapproved and work will not be allowed to proceed.

Section 217.05(a) Batching Equipment is amended to replace the second paragraph with the following:

Scales used for weighing aggregates and cement shall be approved and sealed in accordance with the requirements of Section 109 of the Specifications.

Section 217.05—Equipment is amended to add the following:

- (d) **High Performance Volumetric Mixers (HPVMs):** The Contractor may produce the specified class of hydraulic cement concrete in Table II-17 in accordance with Section 217.02(a) of the Specifications provided that the manufacturer's equipment meets the tolerance requirements of Section 217.04(a) of the Specifications and has a stamped plate from the Volumetric Mixers Manufacturers Bureau stating that the equipment conforms to the requirements in ASTM C685.

The hydraulic cement concrete shall be mixed at the point of delivery by a combination of materials transport and mixer unit conforming to the following:

1. The unit shall be equipped with calibrated proportioning devices for each ingredient added to the concrete mix. The unit shall be equipped with a working recording meter that is visible at all times and furnishes a ticket printout with the calibrated measurement of the mix being produced. If at anytime the mixer fails to discharge a uniform mix, production of concrete shall halt until any problems are corrected.
2. Each unit shall have a metal plate(s) attached in a prominent place by the manufacturer on which the following are plainly marked: the gross volume of the transportation unit in terms of mixed concrete, the discharge speed and the mass calibrated constant of the machine in terms of volume.
3. HPVMs shall be calibrated by a Department approved testing agency in accordance with the manufacturer's recommendations at an interval of every 6 months or a maximum production of 2500 cubic yards, whichever occurs first prior to use on the project. The yield shall be maintained within a tolerance of ± 1 percent and verified using a minimum 2 cubic feet container every 500 cubic yards or a minimum once per week.
4. The three cubic feet initially discharged from the truck shall be discarded and not used for concrete placement. Acceptance of the specified class of concrete shall comply with Section 217.08 of the Specifications except that the sample secured for acceptance testing will be taken after four cubic feet is discharged from the delivery vehicle. During discharge, the consistency as determined by ASTM C143 on representative samples taken from the mixer discharge at random intervals shall not vary more than 1 inch. Acceptance tests shall be performed on each load. If test data demonstrates that consistency of concrete properties are being achieved, the Engineer may reduce testing requirements.
5. The HPVM shall be operated by a person who is a certified operator by the HPVM manufacturer. Any equipment adjustments made during the on-site production of concrete shall be done under the direct on-site supervision of the producer's VDOT Concrete Plant and Field Certified Technician.

Each load of HPVM produced concrete shall be accompanied by a Form TL-28 signed by the producer's VDOT Certified Concrete Plant Technician or a designated company representative working under the direct on-site supervision of the producer's VDOT Concrete Plant and Field Certified Technician. The form shall be delivered to the Inspector at the site of the work. Loads that do not carry such information or do not arrive in satisfactory condition shall not be used.

Section 217.07—Proportioning Concrete Mixtures is amended to replace the first paragraph with the following:

The Contractor is responsible for having a Certified Concrete Plant Technician available during batching operations, and a Certified Concrete Field Technician shall be present during placing operations.

Section 217.07 of the Specifications is amended as follows:

In all structural concrete the water/cement ratio shall not exceed 0.40, maximum slump of concrete upon arrival at construction site shall not be less than 3" and shall not exceed 6". All concrete with a 0.40 water/cement ratio shall contain a mid range superplasticizer, such as Master Builder's Polyheed, conforming to ASTM C 494, Type F and added at the concrete plant as part of the batch procedure.

Section 217.07—Proportioning Concrete Mixtures is amended to delete the third paragraph beginning with "**A Certified Concrete Batcher**".

Section 217.08—Acceptance is replaced with the following:

- (a) **Air Consistency Tests:** Air and consistency tests will be performed by the Department prior to discharge of concrete into the forms to ensure that specification requirements are consistently being complied with for each class of concrete. The sample secured for the tests shall be taken after at least two cubic feet of concrete has been discharged from the delivery vehicle. The two cubic feet discharged is not to be used as part of the test sample. Any deviation from sampling and testing procedures must be approved by the Engineer. The Contractor shall provide a receptacle conforming to the requirements of ASTM C31, Section 5.9, for the Department's use in obtaining the sample. If either determination yields a result that is outside of the allowable range for air content or consistence, the following procedure will be used:
1. The Engineer will immediately perform a recheck determination. If the results confirm the original test results, the load will be rejected.
 2. The Contractor's representative will be immediately informed of the test results.
 3. The Contractor's representative shall notify the producer of the test results through a pre-established means of communication.

The Engineer may perform any additional tests deemed necessary and reject all remaining material that fails the tests.

Entrained air content will be determined in accordance with the requirements of ASTM C231 or ASTM C173. Acceptance or rejection will be based on the results obtained from these tests.

In general, a mixture that contains the minimum amount of water consistent with the required workability shall be used. Consistency will be determined in accordance with the requirements of ASTM C143. Adding cement to loads previously rejected for excessive water content or consistency will not be permitted.

Section 217.08 (b) - STRENGTH TESTS is amended with the following:

Strength Tests: The 28-day strengths specified in Table II-17 are the strengths used in the design calculations. The Engineer will verify design strengths by tests made during the progress of the work in accordance with the requirements of ASTM C39, C31, or C42. If the test results do not conform to the strengths specified in Table II-17, immediate steps shall be taken to adjust the design mixture and an investigation will be initiated to determine the acceptability of the concrete.

Before concrete is placed, the Contractor shall provide a storage chamber at his expense for temporary storage of the Department's concrete cylinders. The contractor shall be responsible for maintaining the chamber such that the concrete test cylinders are kept in a continuously moist condition and within a temperature range of 60 degrees F to 80 degrees F. The chamber shall be equipped with a continuously recording thermometer accurate to ± 2 degrees F for the duration of concrete cylinder curing. The chamber shall be located in an area where the test cylinders will not be subject to vibration and shall be of sufficient size or number to store, without crowding or wedging, the required number of test cylinders as determined by the Contractor based on his plan of operations. Location of the chamber is subject to approval by the Engineer.

- (c) **Concrete Temperature** shall be measured in accordance with the requirements of ASTM C1064.
- (d) **Quality Assurance** for Low Permeability Concrete:

General:

At least two trial batches, using job materials, with permissible combination of cementitious materials shall be prepared, and test specimens shall be cast by the Contractor and tested by the Department for permeability and strength at least a month before the field application. The permeability samples shall be cylindrical specimens with a 4-inch diameter and at least 4-inches in length. Cylinders will be tested at 28 days in accordance with VTM 112. The test value shall be the result of the average values of tests on two specimens from each batch. Permeability values obtained from trial batches shall be 500 coulombs below the maximum values specified in Table II-17 of the Specifications to be acceptable.

Acceptance Tests:

For each set of cylinders made for compressive strength tests, two additional cylinders shall be made for the permeability test. The Department will be responsible for making and testing all permeability test specimens.

If the average permeability test result is equal to or less than the value for the specified class of concrete in Table II-17, then full payment will be made for the lot the average permeability test result represents. However, if the average permeability test result exceeds the coulomb value in Table II-17, payment for that lot of concrete shall be reduced by 0.005 percent for each coulomb above the coulomb value in Table II-17 multiplied by the bid item cost of the concrete times the number of cubic yards or cubic meters of concrete in the lot. The reduction in price will not exceed 5 percent of the bid price of the concrete. Any concrete with a coulomb value that exceeds the maximum required in Table II-17 by 1000 coulomb will be rejected. However, bridge deck concrete with any coulomb value exceeding the maximum required by over 1000 coulomb may be accepted by the Engineer at 95 percent of the bid price if the concrete in question has the required strength and meets other specification requirements, and the Contractor applies, at his own expense, an approved epoxy concrete overlay to the top of the entire deck. In such case deck grooving will not be required. Epoxy overlays over latex overlays will not be permitted. The adjustment to the roadway grade shall be made as required by the Engineer at the Contractor's expense.

Similarly, concrete in abutments and pier caps with coulomb value exceeding the maximum required in Table II-17, by more than 1000 coulomb may be accepted at 95 percent of the bid price if it has the required strength and meets other specification requirements, and the Contractor applies at his own expense, one coat of Type EP-3B and one coat of EP-3T in conformance with the requirements of Section 243.02 of the Specifications, on top of the pier cap or abutment seat.

Section 217.09 of the Specifications is amended as follows:

Structural concrete (any concrete used in bridge structures) temperature, at time of placement, shall not exceed 85 degrees F.

The concrete producer shall have on-site at the concrete plant a VDOT certified concrete technician (current) who will test every load of structural concrete (concrete to be used in the bridge structures) prior to its leaving the plant site. All tests required on the form, SAI-1, shall be performed by the technician and the results listed and the form signed by the technician. Each test result shall be within the specification range allowed in order to the project site to be allowed. A ticket showing the actual batch weights of the materials used in concrete shall be delivered to the site with each load of concrete.

This completed and signed form shall be sent to the project site with each load of structural concrete shipped. Failure to provide this completed form and batch ticket for each load shall be cause for rejection of the concrete shipment.

Section 217.09(b) Ready Mixed Concrete is amended to replace the second paragraph with the following:

Each load of transit or shrink-mixed concrete shall be accompanied by Form TL-28 signed by the VDOT Certified Concrete Field Technician or a designated company representative working under the direction of the VDOT Certified Concrete Field Technician. The form shall be delivered to the Inspector at the site of the work. Loads that do not carry such information or that do not arrive in satisfactory condition shall not be used.

Section 217.09(b) Ready-Mixed Concrete is amended to replace the fourth paragraph and the table with the following:

Each batch of concrete shall be delivered to the site of work and discharged within 90 minutes of the time the cement is introduced into the mixture unless approved otherwise by the Engineer.

Section 217.09(b)1. Transit mixing is amended to replace the first paragraph with the following:

1. **Transit mixing:** Concrete shall be mixed in a truck mixer. Mixing shall begin immediately after all ingredients are in the mixer and shall continue for at least 70 revolutions of the drum or blades at the rate of at least 14 but no more than 20 revolutions per minute.

SAI-1
CONCRETE PRODUCER TESTS

Producer _____

Project _____

Date _____

Load No. _____

Truck No. _____

1. Moisture Contents:

Fine Aggregate _____ Date Tested _____

Coarse Aggregate _____ Date Tested _____

2. Temperature at Time of Testing Concrete

Air _____ degrees F

Concrete _____ degrees F

3. Air Content - _____ %

4. Slump - _____ inches

5. Gallons of Water Withheld at Plant _____

6. Actual Water/Cement Ratio _____

Signed: _____
VDOT Certified Concrete Technician

Certification Expiration Date _____

NOTE: Aggregate moisture tests shall be performed daily, prior to batching concrete.

6. **SECTION 223—STEEL REINFORCEMENT** of the Specifications is revised as follows:

223.02—Detail Requirements is amended to add the following

- (e) **Corrosion Resistant Reinforcing Steel, Class I:** Steel shall conform to the requirements of ASTM A1035/A1035M - Standard Specification for Deformed and Plain, Low-carbon, Chromium, Steel Bars for Concrete Reinforcement; or shall conform to the requirements of ASTM A955/A955M - Standard Specification for Deformed and Plain, Solid Stainless Steel Bars for Concrete Reinforcement, UNS* Designation(s): S32101.
- (f) **Corrosion Resistant Reinforcing Steel, Class II:** Steel shall conform to the requirements of AASHTO Designation: MP 13M/MP 13-04, Standard Specification for Stainless Steel Clad Deformed and Plain Round Steel Bars for Concrete Reinforcement; or shall conform to the requirements of ASTM A955/A955M - Standard Specification for Deformed and Plain Solid Stainless Steel Bars for Concrete Reinforcement. UNS* Designations: S24100. Stainless steel clad bars may only be provided if they are domestically produced except for projects designated as experimental in the plans.
- (g) **Corrosion Resistant Reinforcing Steel, Class III:** Steel shall conform to the requirements of ASTM A955/A955M - Standard Specification for Deformed and Plain Solid Stainless Steel Bars for Concrete Reinforcement. UNS* Designations: S24000, S30400, S31603, S31653, S31803, S32304.

* Unified Numbering System for Metals and Alloys

7. SECTION 404.02 is expanded to include the following:

The usage of arch marble for coarse aggregate in Class A3 and A4 structural concrete will not be permitted.

All aggregate used in bridge deck shall be non-polishing. Arch marble is considered to be a polishing aggregate.

8. SECTION 404.03 (h) of the Specifications is expanded to include the following:

Wherever called for on the Drawings, substructure concrete construction joints shall be bonded with a bonding epoxy. This bonding epoxy shall be SIKA ARMATEC 110 (or Engineer approved equivalent) unless otherwise noted on the Drawings.

9. SECTION 404.03 (k) of the Specifications is expanded to include the following:

Cure all structural concrete for a minimum of 7 days using all of the following:

- A. Curing compound.
- B. Wet, well drained burlap and white polyethylene.
- C. Use perforated garden hose to keep burlap wet.

All forms used in placement of substructure concrete shall remain in place, undisturbed, for a minimum of seven (7) full days after concrete placement.

10. SECTION 404.03 (1) 1. WEATHER of the Specifications is amended to replace the last sentence of the fourth paragraph with the following:

The Engineer will perform evaporation rate testing for superstructure concrete or bridge overlay placements. If the maximum evaporation rate, as determined from Figure 1 of Page 04010-14 exceeds 0.1 lb/sqft/hr for A4 concrete superstructure concrete placements or 0.05 lb/sqft/hr for latex modified concrete overlays and other hydraulic cement overlays, the Contractor shall not place the superstructure concrete (for decks, sidewalks, median barriers, or parapets), latex modified concrete overlay or hydraulic cement overlay.

All deck slab placement shall take place between 10:00 pm & 5:00 pm.

In the event plastic shrinkage cracking occurs, the Contractor shall make repairs by epoxy injection, concrete removal and replacement, or other methods satisfactory to the Engineer and at the Contractor's expense.

CONCRETING

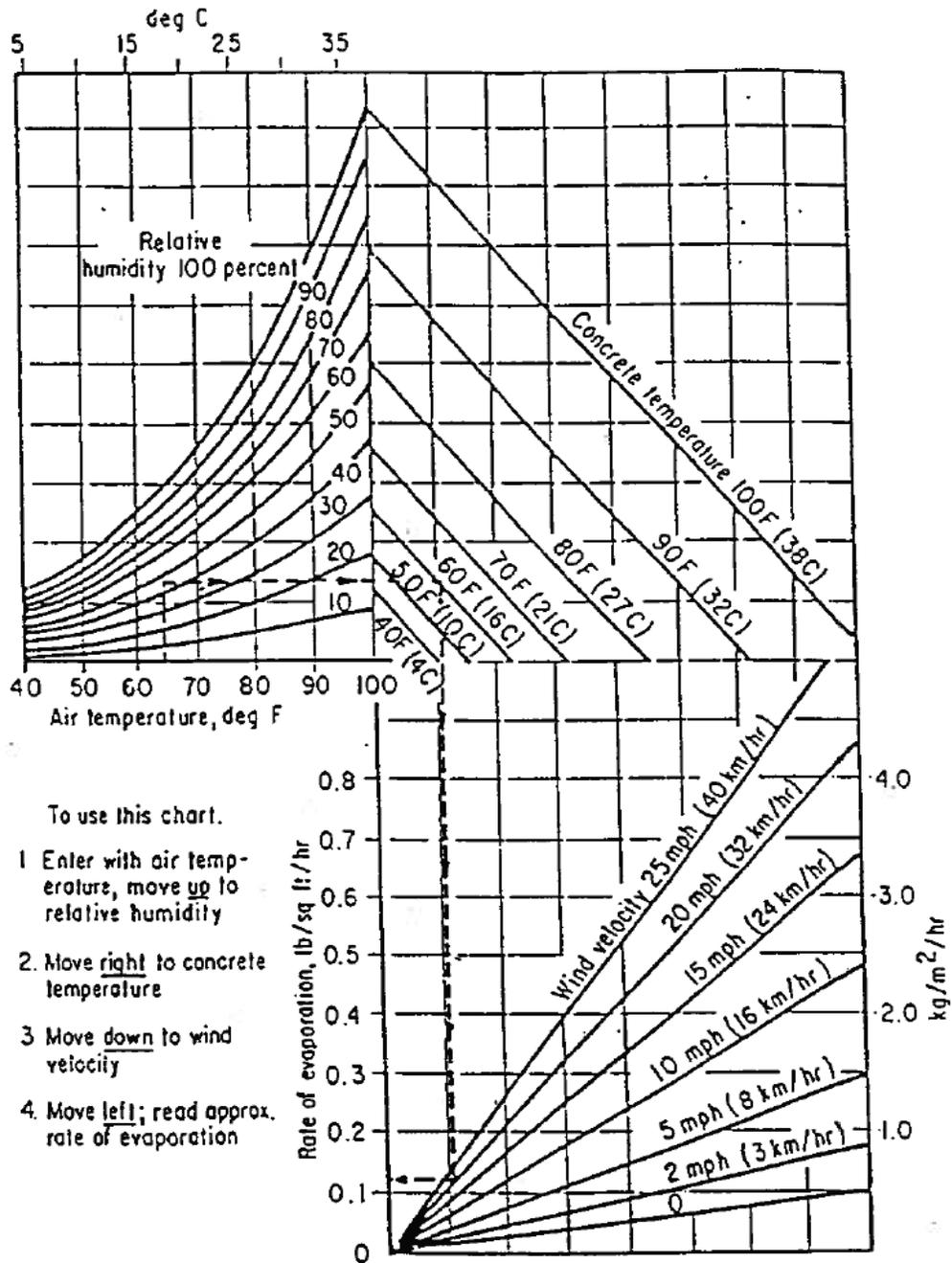


FIGURE 1

EFFECT OF CONCRETE AND AIR TEMPERATURES, RELATIVE HUMIDITY, AND WIND VELOCITY ON THE RATE OF EVAPORATION OF SURFACE MOISTURE FROM CONCRETE. THIS CHART PROVIDES A GRAPHIC METHOD OF ESTIMATING THE LOSS OF SURFACE MOISTURE FOR VARIOUS WEATHER CONDITIONS. TO USE THE CHART, FOLLOW THE FOUR STEP OUTLINED ABOVE.

11. SECTION 404.05(d) WATERSTOPS is completely replaced by the following:

All waterstops detailed in these specifications (and/or as shown on the contract drawings) shall be manufactured from virgin polyvinyl chloride plastic compound that has a tensile strength greater than 2,000 PSI, and shall not contain any scrap or reclaimed material or pigment whatsoever.

Waterstops, when being installed, shall be cut and spliced at changes in direction as may be necessary to avoid buckling or distortion of the web or flange.

To ensure proper placement, all waterstops shall be fastened every 12 inches (both sides) prior to concrete placing. Manufacturer's shop splices shall be fully vulcanized.

All field splices shall be heat fused, and the splices shall be tested for a complete seal by use of a corona discharge unit. Zero water leakage shall be proven through use of the American Concrete Institute (ACI) standard test method for waterstops.

If, after placing concrete, waterstops are out of position or shape, the surrounding concrete shall be removed, the waterstop reset, and the concrete replaced, all at the Contractor's expense.

The properties of the polyvinyl chloride compound used, as well as the physical properties of the waterstops, shall exceed the requirements set forth in the U. S. Army Corps of Engineers waterstop specification (CRD-C572-74).