RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

PROPOSAL DOCUMENTS
CONTRACT AND CONTRACT BOND
SUPPLEMENTAL SPECIFICATIONS
SPECIAL PROVISIONS
REPAIR PLANS
RECORD PLANS

HNTB Corporation

April, 2015

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

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INSTRUCTIONS TO BIDDERS

1. FORM OF BID: Submit bid, on forms furnished by the Authority, without alterations in the form. When completing bid, please notice the unit (Lump Sum, Each, Square Foot, etc…) of the individual line item and enter unit and total bid item prices accordingly.

   If applicable, Contractor shall replace any original bid tab sheets with replacement bid tab sheets issued through an Addendum.

   a. Required Forms: The following list of required forms to be included in bid is provided for Contractors reference only:
      i. Bid (see below)
      ii. Non-Collusion Affidavit
      iii. Statement of Contracts Underway
      iv. Joint Venture Statement (if applicable)
      v. Bidder or Subcontractor Shotcrete Experience
      vi. Bidder or Subcontractor Steel Repairs Experience
      vii. Epoxy Injection Experience – Contractor / Subcontractor
      viii. Epoxy Injection Experience – Contractor / Subcontractor Superintendent
      ix. Bid Bond
      x. Receipt of Addenda (if applicable)
      xi. Railroad Agreement (Schedule I)

2. SUBMISSION OF BID: Make sure the Authority receives bid prior to time and date listed on the Invitation to Bid. Bidder is responsible for delivery of the bid at or before the time set for opening. Bids received after the time set will be rejected.

If mailing, please write "Attention: RMTA MR – 2015 Contract Bid Opening" on outside of envelope or on mailing label.

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INVITATION TO BID

The Richmond Metropolitan Transportation Authority (RMTA), 919 East Main Street, Suite 600, Richmond, Virginia 23219 until 10:00 a.m. local time, will receive sealed Proposals for the above project Thursday, May 21, 2015 at which time and place the bids will be publicly opened and read.

The work under this contract shall be completed no later than March 31, 2016, with the exception of the Underwater repairs that shall be completed no later than November 1, 2015. The principal items of work and approximate quantities are as follows:

Item:	Quantity:	Unit:
Steel Repairs: Boulevard Bridge (6 Locations)	6	L.S.
Steel Repairs: Other Bridges (10 Locations)	10	L.S.
Expansion Joint Repairs (5 Locations)	5	L.S.
Railway Coordination Service	7	L.S.
Shotcrete (Class A), Standard	630	S.F.
Shotcrete (Class A), Elevated	2,543	S.F.
Shotcrete (Class A), Over Water	1,657	S.F.
Underwater Epoxy Injection Crack filling	150	L.F.
Concrete Bridge Deck Sealant	14,900	S.Y.
Parapet Wall Coating	5,882	S.Y.
Replace Existing Impact Attenuator Service (TL-3)	2	EA.
Joint Sealant Replacement	810	L.F.
Repair Asphalt Concrete Pavement Cracks	45,000	L.F.
Pavement Line Marking (Type A, 4")	66,933	L.F.
Pavement Message Markings (Various Legends)	24	EA.
Overhead Sign Panel Replacement (5 Panels)	4	L.S.
Miscellaneous Bridge Coatings	150	S.F.
De-Icing Chemical	4,400	GAL.

A mandatory pre-bid meeting will be held at 919 East Main Street, Suite 600, Richmond, Virginia 23219 at 10:00 a.m. local time, on Tuesday, May 5, 2015. A mandatory site visit shall

immediately follow the office portion of the pre-bid meeting. Only contractors and qualified subcontractors, who meet the requirements to propose, as stated below, should attend the pre-bid meeting.

Bids for this Contract must be submitted on complete bidding forms bound in the Contract Documents. The successful bidder will be notified in writing.

To submit Proposals for this Contract, contractors or qualified subcontractors shall, on Tuesday, May 5, 2015 at 10:00 a.m. local time, meet the following requirements:

- Have prior experience in the jacking and blocking of beams and structural steel repairs. Contractor shall be able to provide written documentation demonstrating the successful completion of at least three bridge superstructure repair projects where one or more steel beams were jacked off the bearing and a portion of the steel beam was replaced with new steel by welding.
- Have prior experience in the repair of bridge substructures using Shotcrete and be able to provide written documentation demonstrating the successful placement of at least three bridge substructure repair projects where the cumulative shotcrete square footage applied is a minimum of 10,000 s.f.
- Have prior experience in the epoxy injection of cracks in submerged concrete members and be able to provide written documentation of successful injection of no less than 900 linear feet of cracks. In addition, prospective contractors / subcontractors must be able to certify that the superintendents available for this work has served in responsible charge over the epoxy injection of cracks in submerged concrete members and be able to provide written documentation of successful injection of no less than 500 linear feet of cracks.
- Be prequalified by the Virginia Department of Transportation for bidding on State projects. The Authority reserves the right to request additional experience information for any bidder that has not been assigned the "**Major Structures**" and/or "**Bridge Repair**", and "**Marine Construction"** work classes by VDOT or for contractors that have a prequalification level of Conditional, Currently Inactive or Probationary.

Note that a bidder must have prior experience and be able to provide written documentation in a minimum of one of the three work experience categories as noted above. A bidder cannot have subcontractors be the documented experience in all categories.

Complete Contract documents will be available on Tuesday, April 28, 2015 after 1:00 p.m. (local time) from www.rmaonline.org or may be purchased for $60.00 per set from the Richmond Metropolitan Transportation Authority at 919 East Main Street, Suite 600, Richmond, Virginia 23219. The documents may also be examined by any party, without purchase, at the Authority's office during normal business hours after such date. Specifications (Virginia Department of Transportation "Road and Bridge Specifications", 2007) and (Virginia Work Area Protection Manual, 2011) which form an integral part of this Contract, are available from the Virginia Department of Transportation website free of charge.

Unsubmitted Contract documents need not be returned and no refunds will be made for any documents.

Each Bidder submitting a Proposal must also complete a statement bound with the Proposal forms, in which each Bidder shall give full information relating to the status of their contracts presently underway.

Each Proposal must be accompanied by a Proposal Guarantee consisting of either a certified check in the amount of at least five (5) percent of the Total Bid Price, made payable to the Richmond Metropolitan Transportation Authority, or a Proposal Bond (on the form provided) in the amount of five (5) percent of the same Total Bid Price.

The Authority strongly encourages the submission of bids by contractors whose principal businesses are located in the Richmond Metropolitan Area and further strongly encourage such contractors to utilize the services of local subcontractors and vendors.

The Authority strongly encourages minority owned and women owned businesses to submit proposals for this contract.

The Authority reserves the right to reject any and all Proposals submitted, and to waive informalities in bidding, as it may deem in its best interests.

Project related inquiries must be submitted in writing to Mr. Matt Foster, P.E. at HNTB Corporation at mfoster@hntb.com or Ms. Theresa Simmons, P.E., RMTA Director of Operations at theresa@the-rma.org. The deadline to submit inquiries and questions is Thursday, May 14, 2015 at 1 P.M. local time.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY
Angela L. Gray, General Manager
Richmond, Virginia

(Note: Bidders shall not remove this Bidding form from attached documents.)

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

_____

RICHMOND EXPRESSWAY SYSTEM

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BID FOR GENERAL CONSTRUCTION CONTRACT

To the Richmond Metropolitan Transportation Authority
919 East Main Street, Suite 600
Richmond, Virginia 23219

Gentlemen:

I/we, the undersigned, declare: that no other person, firm or corporation is interested in this Bid; that I/we have carefully examined the Plans, Standard Specifications, Supplemental Specifications, and all other documents pertaining to this Contract which form a part of this Bid as if set forth at length herein; that I/we understand that the quantities of items shown herein below are approximate only; that I/we have examined the location of the proposed work; that I/we agree to bind myself/ourselves, upon award to me/us by the Richmond Metropolitan Authority under this Bid, to enter into and execute a Contract, with necessary surety bond, for the project named above; that I/we agree to start work not later than the date stated in the written Notice to Proceed (Sec. 105.01 of the Specifications), to furnish all necessary materials, provide all necessary labor, equipment, tools and plant, pay for all required insurance, bonds, permits, fees and service, and do all required work in strict compliance with the terms of all documents comprising said Contract, and to fully complete the entire project by March 31, 2016 and that I/we agree to accept as full compensation for the satisfactory prosecution of this project the following named unit and lump sum prices for the various scheduled items of work.

RMTA
MR-2015 Bid Tab

(_____) (INSERT BIDDER FIRM NAME HERE)

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT	SPECIFICATION
1	MOBILIZATION	LS	1			513
2	TRUCK MOUNTED ATTENUATOR	HR	1,200			512
3	PORTABLE CHANGEABLE MESSAGE SIGN	HR	100			512
4	ELECTRONIC ARROW	HR	1,200			512
5	FLAGGER SERVICE	HR	160			512
6	WARNING LIGHT, TYPE A	DAY	200			512
7	GROUP 2 CHANNELIZING DEVICE	DAY	1,500			512
8	FENCE (FE-CL)	LF	300			ATTD/507
9	FENCE (FE-CL FABRIC ONLY)	LF	300			ATTD/507
10	TYPE A PATCHING	SY	5			ATTD/412
11	TYPE B PATCHING	SY	104			ATTD/412
12	PATCHING HYDRAULIC CEMENT CONCRETE PAVEMENT	SY	20			ATTD/509
13	ASPHALT CONCRETE PATCH	IN * SY	200			ATTD/211/315
14	ASPHALT CONCRETE TY. SM-9.5D	TON	12			ATTD/211/310/315
15	ASPHALT CONCRETE IM-19.0D	TON	19			ATTD/211/310/315
16	AGGREGATE BASE MATERIAL TY. I NO. 21B	TON	68			ATTD/208/305
17	REPAIR ASPHALT CONCRETE PAVEMENT CRACKS	LF	45,000			ATTD/210
18	SHOTCRETE (CLASS A), STANDARD	SF	630			ATTD/412
19	SHOTCRETE (CLASS A), ELEVATED	SF	2,534			ATTD/412
20	SHOTCRETE (CLASS A), ABOVE WATER	SF	1,657			ATTD/412
21	TRIM EXISTING VEGETATION	SF	5,000			ATTD/601

(_____) (INSERT BIDDER FIRM NAME HERE)

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT	SPECIFICATION
22	JOINT SEALANT REPLACEMENT (0" to 1 - 15/16" WIDTH)	LF	210			ATTD
23	JOINT SEALANT REPLACEMENT (2" to 2 - 15/16" WIDTH)	LF	570			ATTD
24	JOINT SEALANT REPLACEMENT (3" AND GREATER WIDTH)	LF	30			ATTD
25	JOINT SEALANT REPAIR	IN*LF	95			ATTD
26	REPLACEMENT BRIDGE RAILING	LF	64			ATTD/410
27	REPLACEMENT RAILING POSTS	EA	5			ATTD/410
28	BOULEVARD BRIDGE TRUSS LATERAL BRACING GUSSET PLATE REPLACEMENT (UNIT 12)	LS	1			PLAN/ATTD
29	BOULEVARD BRIDGE TRUSS LATERAL BRACING REPAIR (UNIT 13)	LS	1			PLAN/ATTD
30	BOULEVARD BRIDGE TRUSS LATERAL BRACING REPAIR (UNIT 15)	LS	1			PLAN/ATTD
31	BOULEVARD BRIDGE GIRDER WEB REPAIR AND STIFFENER REPLACEMENT (UNIT 19)	LS	1			PLAN/ATTD
32	BOULEVARD BRIDGE LACING BAR FABRICATION AND BOLTS	LS	1			PLAN/ATTD
33	BOULEVARD BRIDGE LACING BAR REPLACEMENT (MULTIPLE UNDEFINED LOCATIONS)	EA	28			PLAN/ATTD
34	BOULEVARD BRIDGE RIVET REPLACEMENT (MULTIPLE UNDEFINED LOCATIONS)	EA	50			PLAN/ATTD
35	BRIDGE 8 SB STRINGER WEB REPLACEMENT (SOUTH ABUTMENT)	LS	1			PLAN/ATTD
36	BRIDGE 9 FLOOR BEAM WEB REPAIR (EAST ABUTMENT)	LS	1			PLAN/ATTD
37	BRIDGE 10 EAST ABUT. BEARING TIGHTEN	LS	1			PLAN/ATTD
38	BRIDGE 11 DECK REPAIR AT NORTH EXPANSION JOINT	LS	1			PLAN/ATTD/412
39	BRIDGE 17 DECK CONCRETE REPAIRS (SOUTH ABUTMENT AND PIER 2)	LS	1			PLAN/ATTD/412
40	BRIDGE 60 STRINGER BEARING REALIGNMENT AND STIFFENER ADDITION (NORTH ABUTMENT)	LS	1			PLAN/ATTD
41	BRIDGE 64 FLOOR BEAM STIFFENER REPLACEMENT (PIER 1)	LS	1			PLAN/ATTD
42	BRIDGE 64 (PIER 3) SLIDING PLATE JOINT REPAIR	LS	1			PLAN/ATTD

(_____) (INSERT BIDDER FIRM NAME HERE)

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT	SPECIFICATION
43	BRIDGE 64 FLOOR BEAM STIFFENER REPLACEMENT (PIER 10W) - TWO LOCATIONS	LS	1			PLAN/ATTD
44	BRIDGE 64 FLOOR BEAM STIFFENER REPLACEMENT (PIER 12W)	LS	1			PLAN/ATTD
45	BRIDGE 65 (PIER 12) EXPANSION JOINT REPAIR	LS	1			PLAN/ATTD
46	BRIDGE 66 STRINGER WEB REPLACEMENT (PIER 9)	LS	1			PLAN/ATTD
47	BRIDGE 67 STRINGER WEB REPLACEMENT (PIER 4)	LS	1			PLAN/ATTD
48	BRIDGE 67 STRINGER WEB REPLACEMENT (PIER 9) - TWO LOCATIONS	LS	1			PLAN/ATTD
49	BRIDGE 68 HAMMERHEAD CAP WEB REPLACEMENT (PIER 1)	LS	1			PLAN/ATTD
50	RAILWAY COORDINATION SERVICE (BRIDGE 8)	LS	1			ATTD
51	RAILWAY COORDINATION SERVICE (BRIDGE 64)	LS	1			ATTD
52	RAILWAY COORDINATION SERVICE CSXT (BRIDGE 65)	LS	1			ATTD
53	RAILWAY COORDINATION SERVICE NS CORP. (BRIDGE 65)	LS	1			ATTD
54	RAILWAY COORDINATION SERVICE (BRIDGE 67)	LS	1			ATTD
55	RAILWAY COORDINATION SERVICE (BRIDGE 68)	LS	1			ATTD
56	RAILWAY COORDINATION SERVICE (BRIDGE BB)	LS	1			ATTD
57	TYPE B CLASS VI PAVEMENT LINE MARKING 6"	LF	900			ATTD/704
58	TYPE A PAVEMENT LINE MARKING 4"	LF	66,933			ATTD/704
59	TYPE A PAVEMENT LINE MARKING 6"	LF	7,510			ATTD/704
60	PAVEMENT MESSAGE MARK."ONLY"	EA	2			ATTD/704
61	PAVE. MESSAGE MARKING "STAY"	EA	1			ATTD/704
62	PAVE. MESSAGE MARKING "IN"	EA	1			ATTD/704
63	PAVE. MESSAGE MARKING "LANE"	EA	1			ATTD/704

(_____) (INSERT BIDDER FIRM NAME HERE)

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT	SPECIFICATION
64	PAVE. MESSAGE MARKING"E-ZPass"	EA	18			ATTD/704
65	PAVE. MESSAGE MARKING "CASH"	EA.	1			ATTD/704
66	OVERHEAD SIGN PANEL REPLACEMENT STR. NO. 200550	LS	1			ATTD/229/701
67	OVERHEAD SIGN PANEL REPLACEMENT STR. NO. 200558	LS	1			ATTD/229/701
68	OVERHEAD SIGN PANEL REPLACEMENT BRIDGE 13	LS	1			ATTD/229/701
69	OVERHEAD SIGN PANEL REPLACEMENT BRIDGE 46	LS	1			ATTD/229/701
70	OVERLAY SIGN PANEL	SF	400			ATTD/229/701
71	CONCRETE BRIDGE DECK SEALANT	SY	14,900			ATTD
72	CONCRETE SLAB COATING	SY	1,996			ATTD
73	PARPAPET WALL COATING	SY	5,884			ATTD
74	MISCELLANEOUS COATINGS	SF	150			ATTD/411
75	IMPACT ATTENUATOR SERVICE (TL-3>45MPH)	EA	2			ATTD/512
76	BARRIER DELINEATORS	EA	250			ATTD/702
77	PREPARE EXISTING CRACKS	LF	150			PLAN/ATTD
78	INJECT EXISTING CRACKS	GAL	12			PLAN/ATTD
79	CRUSHER RUN AGGREGATE NO. 25 OR 26	TON	58			ATTD/205
80	COARSE AGGREGATE NO.57	TON	170			ATTD/203
81	AGGREGATE MATERIAL NO.1	TON	1			ATTD/203
82	RIPRAP, CLASS I	TON	30			ATTD/414
83	BORROW EXCAVATION	CY	50			ATTD/303
84	REGULAR EXCAVATION	CY	46			ATTD/106/303

(_____) (INSERT BIDDER FIRM NAME HERE)

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT	SPECIFICATION
85	TOPSOIL CLASS B	CY	120			ATTD/244/602
86	REGULAR SEED	LB	100			ATTD/244/603
87	FERTILIZER (15-30-15)	TON	1			ATTD/244
88	LIME	TON	1			ATTD/244
89	CLEAN MANHOLE	EA	1			ATTD
90	DE-ICING CHEMICAL	GAL	4,400			ATTD
91	ACQUISITION AND DELIVERY OF TRACTOR WITH FRONT LOADER	LS	1			ATTD
92	ACQUISITION AND DELIVERY OF 4 FT ROTARY CUTTER	LS	1			ATTD
93	ACQUISITION AND DELIVERY OF 20 FT UTILITY TRAILER	LS	1			ATTD
94	ACQUISITION AND DELIVERY OF LEAF BLOWER	LS	1			ATTD
95	ACQUISITION AND DELIVERY OF AERATOR	LS	1			ATTD
96	ACQUISITION AND DELIVERY OF TAILGATE SPREADER	LS	1			ATTD

Total $

(SIGN HERE) (INSERT HERE)

Signature of Owner, Partner, or Corporate Officer: **Title:**

The quantities shown in the above schedule of items are considered to be approximate only and are given as the basis for comparison of bids. The Authority may increase or decrease the amount of any item or portion of the work as may be deemed necessary or expedient. The Authority reserves the right to delete, in whole or in part, without prejudice prior to the award of the Contract, any items listed in the Bid. It is understood that payment for unit price items will be made for the actual quantities of such work satisfactorily completed, rather than the estimated quantities given hereinabove, An increase or decrease in the quantity for any unit price item will not be regarded as sufficient ground for an increase or decrease in the unit price, nor in the time allowed for the completion of the work, except as provided for in the Specifications.

The cost of any work performed, materials furnished, services provided or expenses incurred, whether or not specifically delineated in the Contract document but which are incidental to the scope, intent and completion of this Contract, have been included in the price bid for the various items scheduled hereinabove.

Accompanying this Bid is a Bid Guarantee (Sec. 102.07 of the Specifications) consisting of either a certified check in the amount of at least (5) percent of the Total Bid Price for this Contract or a Bid Bond (Elsewhere herein) in the amount of (5) percent of the same Total Bid Price. It is hereby understood and agreed that said check or bond is to be forfeited as liquidated damages in the event that, on the basis of this Bid, the Authority should award this Contract to me/us and that I/we should fail to execute and deliver said Contract and the prescribed Contract Bond, together with the required progress schedule, proof of proper insurance coverage and other necessary documents, all within the prescribed time (Sec. 103.07 of the Specifications); otherwise, said check or bond is to be returned to the undersigned.

Business Name of Bidder _____

Type of Organization Individual ☐
Partnership ☐
Corporation ☐

Virginia Contractor Registration No. _____

Address of Bidder: _____

_____

Signature of Owner, Partner or Corp. Officer: _____

Title: _____

Date: _____

Witness or Attest _____ (Affix Corporate Seal Here)

NOTE: ONLY A PREQUALIFIED BIDDER MAY USE THIS BIDDING FORM. BIDDING FORMS ARE NOT TRANSFERABLE.

RICHMOND EXPRESSWAY SYSTEM

Scale: 0 1000 2000 3000 ft.

48 - Bridge Number
RMA Facilities Shown in Red

APPROXIMATELY 10,500 S.F. AVAILABLE FOR THIS CONTRACT, FOR TEMPORARY FIELD OFFICE, EQUIPMENT, STORAGE, ETC. RMA PROPERTY TO BE SHARED WITH OTHER CONTRACTORS SUBJECT TO AUTHORITY APPROVAL AND REGULATION.

RICHMOND

The Diamond

Downtown Expressway Extension

Beltline Expressway Connection To I-195

Section One

Section Two

Connection to Downtown Expressway

Powhite Parkway

Powhite Parkway Extension

Downtown Expressway State Rte. 195

BRYAN PARK INTERCHANGE

BOULEVARD INTERCHANGE

STADIUM INTERCHANGE

FOREST HILL AVE. INTERCHANGE

CHIPPENHAM PARKWAY INTERCHANGE

DOWNTOWN I-95 INTERCHANGE

JAMES RIVER

Williams Island

UNIVERSITY OF RICHMOND

Toll Booths Exact Change Only

Toll Plaza

Toll Booth

BOULEVARD BRIDGE 8 Ton Load Limit

JAMES RIVER BRIDGE

ROBERT E. LEE BRIDGE

MANCHESTER BRIDGE

MAYOS BRIDGE

RMA

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

_____

RICHMOND EXPRESSWAY SYSTEM

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NON-COLLUSION AFFIDAVIT

STATE OF _____)
_____) ss.
COUNTY OF _____)

I, _____, of the City of _____, County of _____ and State of _____, being of full age and duly sworn according to law on my oath depose and say:

That I am _____(Title) of _____, the Bidder making the Bid submitted to the Richmond Metropolitan Transportation Authority, on the _____ day of _____, 20___, for Contract No. MR -2015 in connection with the Richmond Expressway System; that I executed the said Bid with full authority to do so;

The said Bidder has not, directly or indirectly, entered into any combination or arrangement with any person, firm or corporation or entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding or which would increase the cost of construction or maintenance in connection with the said Contract; that no person or selling agency has been employed or retained to solicit or secure the said Contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide full-time employees;

And that said Bidder is or has been a member of the following highway contractors' association during the preceding twelve months:

Name of Association	Location of Principal Office
_____	_____
_____	_____
_____	_____

I further warrant that all statements contained in said Bid and in this Affidavit are true and correct and made with full knowledge that the said Authority relies upon the truth of the statements contained in said Bid and in this Affidavit in awarding the said Contract.

Sworn to and subscribed
before me this_____
day of _____,
20___.

By:_____(L.S.)
Person Signing Bid

Print Name:_____

_____
Notary Public

My commission expires:

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

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STATEMENT OF CONTRACTS UNDERWAY

The following is a tabulation of all contracts in which I/we am/are engaged as of the date given below, whether as a prime contractor or as a subcontractor. This tabulation includes not only contracts which are under construction, but also those awarded to me/us but not begun, and those on which I/we am/are the lowest bidder awaiting formal award.

Contract Designation	City and State	Owner	Estimated Value of Work Remaining to be Completed	Estimated Completion Date

Total: $_____

NOTE: Contracts in which the remaining work in each amounts to less than $25,000 may be combined into one entry under the fourth column and designated as "Miscellaneous" in the first column.

If more space is needed, attach additional sheet(s).

The undersigned guarantees the accuracy and completeness of all the information given above.

Business Name of Bidder: _____

Address of Bidder: _____

_____

Signature of Owner,
Partner or Corp. Officer: _____

Title: _____

Date: _____

Witness or Attest:

_____

(Affix Corporate Seal Here)

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

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RICHMOND EXPRESSWAY SYSTEM

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JOINT VENTURE STATEMENT

STATE OF _____)
_____) ss.
COUNTY OF _____)

We, the undersigned, being duly sworn according to law, upon our respective oaths depose and say that:

1. The following named contractors have entered into a Joint Venture for the purpose of carrying out all the provisions of Contract No. MR-2015 for the above project:

(a)_____ ☐ An Individual ☐ A Partnership ☐ A Corporation

(b)_____ ☐ An Individual ☐ A Partnership ☐ A Corporation

(c)_____ ☐ An Individual ☐ A Partnership ☐ A Corporation

2. The contractors, under whose names we have affixed our respective signatures, have duly authorized and empowered us to execute this Joint Venture Statement in the name of and on behalf of such contractors for the purpose herein above stated.

3. Under the provisions of such Joint Venture, the assets of each of the contractors named in Paragraph 1 hereof, and in case any contractor so named above is a partnership, the assets of the individual members of such partnership, will be available for the performance of such Joint Venture and liable therefore and for all obligations incurred in connection therewith.

4. The assets and liabilities of the named contractors for whom we respectively execute this Joint Venture Statement are set forth in the statements given to the Virginia Department of Transportation in our prequalification questionnaire(s).

5. This Joint Venture Statement is executed so that the named contractors, as one organization, may, under such Joint Venture, bid upon said Contract, and be awarded the Contract if they should become the successful bidder therefore. Any bid, bond and agreement relating to said Contract shall be executed by any of the undersigned, and when so executed shall bind this Joint Venture and each and every contractor named herein, severally and jointly. Simultaneously with the execution of the Contract, the contractors entering into this Joint Venture shall designate and appoint a Project Supervisor to act as their true and lawful agent with full power and authority to do and perform any and all acts or things necessary to carry out the work set forth in said Contract.

6. We bind the contractors for whom we respectively execute this Joint Venture Statement in firm agreement with the Richmond Metropolitan Transportation Authority that each of the representations herein set forth is true.

Subscribed and sworn to before me, (a)_____
this _____day of Name of Contractor

_____, 20___.

_____

By_____(L.S.)
Notary Public Print Name:

My commission expires_____ Title:
_____ Va. Contractor Reg. No. _____

****

****

Subscribed and sworn to before me,
this _____day of

_____, 20___.

_____
Notary Public

My commission expires_____

(b)_____
Name of Contractor

By_____(L.S.)
Print Name:

Title: _____

Va. Contractor Reg. No. _____

****

Subscribed and sworn to before me,
this _____day of

_____, 20___.

_____
Notary Public

My commission expires_____

(c)_____
Name of Contractor

By_____(L.S.)
Print Name:

Title: _____

Va. Contractor Reg. No. _____

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

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SHOTCRETE EXPERIENCE – BIDDER/SUBCONTRACTOR

In addition to the bidding requirements stated elsewhere in these documents, prospective bidders or their subcontractor must have successfully completed at least three bridge substructure repair projects where the cumulative shotcrete square footage applied is a minimum of 10,000 s.f. This form is provided to bidders for them to demonstrate that experience, and must be completed and submitted by all bidders, bound in this proposal. Note that a bidder must be experienced, and complete the experience forms, in either shotcrete repairs, steel repairs, or epoxy injection of cracks in submerged concrete piers, or all forms. A bidder cannot have a subcontractor be the documented experience in all categories.

****

BRIDGE SUBSTRUCTURE SHOTCRETE REPAIR PROJECT NO. 1

Job Location(s)/Description(s): _____

Total Shotcrete Placement Square Footage: _____

Owner/Contact Information: _____

Owner/Contact Phone Number: _____

Approximate Date(s) of Project: _____

****

BRIDGE SUBSTRUCTURE SHOTCRETE REPAIR PROJECT NO. 2

Job Location(s)/Description(s): _____

Total Shotcrete Placement Square Footage: _____

Owner/Contact Information: _____

Owner/Contact Phone Number: _____

Approximate Date(s) of Project: _____

****

BRIDGE SUBSTRUCTURE SHOTCRETE REPAIR PROJECT NO. 3

Job Location(s)/Description(s): _____

Total Shotcrete Placement Square Footage: _____

Owner/Contact Information: _____

Owner/Contact Phone Number: _____

Approximate Date(s) of Project: _____

****

BRIDGE SUBSTRUCTURE SHOTCRETE REPAIR PROJECT NO. 4

Job Location(s)/Description(s): _____

Total Shotcrete Placement Square Footage: _____

Owner/Contact Information: _____

Owner/Contact Phone Number: _____

Approximate Date(s) of Project: _____

****

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

STEEL SUPERSTRUCTURE REPAIR EXPERIENCE - BIDDER/SUBCONTRACTOR

In addition to the bidding requirements stated elsewhere in these documents, prospective bidders or their subcontractor must have successfully completed at least three bridge superstructure repair projects where one or more steel beams were jacked off the bearing and a portion of the steel beam was replaced with new steel by welding. This form is provided to bidders for them to demonstrate that experience, and must be completed and submitted by all bidders, bound in this proposal. Note that a bidder must be experienced, and complete the experience forms, in either shotcrete repairs, steel repairs, or epoxy injection of cracks in submerged concrete piers, or all forms. A bidder cannot have a subcontractor be the documented experience in all categories.

****

STEEL SUPERSTRUCTURE REPAIR PROJECT NO. 1

Job Location(s)/Description(s): _____

No. of Steel Beams Jacked and Repaired: _____

Owner/Contact Information: _____

Owner/Contact Phone Number: _____

Approximate Date(s) of Project: _____

****

STEEL SUPERSTRUCTURE REPAIR PROJECT NO. 2

Job Location(s)/Description(s): _____

No. of Steel Beams Jacked and Repaired: _____

Owner/Contact Information: _____

Owner/Contact Phone Number: _____

Approximate Date(s) of Project: _____

****

STEEL SUPERSTRUCTURE REPAIR PROJECT NO. 3

Job Location(s)/Description(s): _____

No. of Steel Beams Jacked and Repaired: _____

Owner/Contact Information: _____

Owner/Contact Phone Number: _____

Approximate Date(s) of Project: _____

****

STEEL SUPERSTRUCTURE REPAIR PROJECT NO. 4

Job Location(s)/Description(s): _____

No. of Steel Beams Jacked and Repaired: _____

Owner/Contact Information: _____

Owner/Contact Phone Number: _____

Approximate Date(s) of Project: _____

****

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

EPOXY INJECTION EXPERIENCE– BIDDER/SUBCONTRACTOR

In addition to the bidding requirements stated elsewhere in these documents, qualified marine construction contractors must have successfully completed epoxy injection of cracks in submerged concrete pier element projects in marine environments with a cumulative total of not less than 900 linear feet of cracks injected. This form is provided to bidders for them to demonstrate that experience, and must be completed and submitted by the bidders.

****

EPOXY INJECTION EXPERIENCE– PROJECT #1

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

EPOXY INJECTION EXPERIENCE- PROJECT #2

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

EPOXY INJECTION EXPERIENCE– PROJECT #3

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

EPOXY INJECTION EXPERIENCE– PROJECT #4

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

EPOXY INJECTION EXPERIENCE- PROJECT #5

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

EPOXY INJECTION EXPERIENCE – BIDDER / SUBCONTRACTOR SUPERINTENDENT

In addition to the bidding requirements stated elsewhere in these documents, qualified bidders must have on-staff currently employed Construction Superintendents who have supervised and successfully completed epoxy injection of cracks in submerged concrete pier element projects in marine environments with a cumulative total of not less than 500 linear feet of cracks injected. This form is provided to bidders for them to demonstrate employee/supervisor experience, and must be completed and submitted by all bidders.

****

SUPERINTENDENT EPOXY INJECTION EXPERIENCE – PROJECT #1

Superintendent's Name _____

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

SUPERINTENDENT EPOXY INJECTION EXPERIENCE – PROJECT #2

Superintendent's Name _____

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

SUPERINTENDENT EPOXY INJECTION EXPERIENCE – PROJECT #3

Superintendent's Name _____

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

SUPERINTENDENT EPOXY INJECTION EXPERIENCE – PROJECT #4

Superintendent's Name _____

Job Location(s)/Description(s): _____

Total Linear Feet of Cracks Injected: _____

Owner/Contact Information: _____

Phone Number: _____

Approximate Date(s) of Project: _____

****

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

_____

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that_____ _____, as Principal/Contractor, and _____, as Surety, legally authorized to do business in the Commonwealth of Virginia, are held and firmly bounded unto the Richmond Metropolitan Authority, as Authority, in the amount of FIVE (5) PERCENT OF THE DOLLAR VALUE OF THE TOTAL AMOUNT WRITTEN IN THE BID, on which the Contract is awarded lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally and firmly by these presents:

WHEREAS, the Contractor is herewith submitting its Bid for Contract No. MR-2015 entitled Miscellaneous Repairs, in connection with the Richmond Expressway System; and

NOW, THEREFORE, the condition of this obligation is such, that if the Contractor shall be awarded the Contract upon said Bid and shall, within fifteen (15) calendar days after the date of written notice of such award, enter into and deliver a Contract and the prescribed Contract Bond for the faithful performance of the Contract, together with the required proof of proper insurance coverage and other necessary documents, then this obligation shall be null and void; otherwise, to remain in full force and effect, and the Contractor and Surety will pay unto the Authority the difference in money between the amount of the Total Amount written in the Bid of said Contractor and the amount for which the Authority may legally contract with another party to perform the said work, if the latter amount be in excess of the former; but in no event shall the Surety's liability exceed the penal sum hereof.

SIGNED AND SEALED this _____day of _____. 20____.

PRINCIPAL/CONTRACTOR

_____

Business Name

_____

Address

Witness or Attest:

_____

_____ By:_____(L.S.)

Title:

(Affix Corporate Seal Here)

SURETY:

_____

Business Name

_____

Address

Witness or Attest:

_____

_____ By:_____(L.S.)

Title:

(Attach evidence of Power of Attorney)

(Affix Corporate Seal Here)

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

CONTRACT AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 20 ____, between the Richmond Metropolitan Authority, 919 East Main Street, Suite 600, Richmond, Virginia, 23219, hereinafter called the Authority and _____, or his, its or their successors, executors, administrators and assigns, hereinafter called the Contractor.

WITNESSETH, that the Contractor agrees with the Authority for the consideration herein mentioned, and at his, its or their own proper cost and expense, to do all the work and furnish all the materials, equipment, teams and labor necessary to prosecute and complete and to extinguish all liens therefore, Contract No. MR-2015, entitled Miscellaneous Repairs, in the manner and to the full extent as set forth in the Plans, Standard Specifications, Supplemental Specifications, Bid (for the basis of award stated herein below) and other documents related to said Contract which are on file at the office of the Richmond Metropolitan Authority and which are hereby adopted and made part of this Agreement as completely as if incorporated herein, and to the satisfaction of the Richmond Metropolitan Authority or its duly authorized representative who shall have at all times full opportunity to inspect the materials to be furnished and the work to be done under this Agreement.

This Contract is awarded on the basis of the Total Bid Price (based on Bid quantities)

of_____dollars

and _____Cents ($_____).

In consideration of the foregoing premise, the Authority agrees to pay the Contractor for all items of work performed and materials furnished at the unit and lump sum prices bid therefore in the Bid submitted for this Contract, subject to any percentage reductions in the total Contract amount that may be named in the Bid corresponding to the basis of award stated in the above paragraph, and subject to the conditions set forth in the Specifications.

The Contractor agrees as follows:

a. I/WE will not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin, except where religion, sex or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor.

I/WE agree to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

b. I/WE in any solicitations or advertising for employees placed by or on behalf of itself, will state that it is an equal opportunity employer.

c. Notices and advertisements and solicitations placed in accordance with federal law, rule or regulation, shall be deemed sufficient for the purposes of meeting the requirements of this section.

d. The Contractor does not, and shall not during the performance of the contract for goods and services in the Commonwealth, knowingly employ an unauthorized alien as defined in the Federal Immigration Reform and Control Act of 1986.

To the extent that the Contractor enters into any subcontract or purchase order over Ten Thousand Dollars ($10,000.00), the provisions of (a), (b), (c) and (d) above shall be binding on each subcontractor or vendor.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement the day and year written above.

Sworn to and Subscribed
before me this_____
day of _____, 20 _____.

_____
Notary Public

RICHMOND METROPOLITAN AUTHORITY

By:_____
Angela L. Gray
General Manager
(Authority's Seal)

My commission expires:

_____

CONTRACTOR:

_____

Business Name

_____

Address

_____

by:_____(L.S.)

Title

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

_____

Notary Public

My commission expires:
_____

(Affix Corporate Seal Here)

EVIDENCE OF CORPORATE AUTHORITY

I, _____, hereby certify that I am Secretary of _____, a Corporation existing under the laws of the State of _____, and that the following resolution was adopted at a meeting of the Board of Directors of the said Corporation duly called and held on the _____day of _____, 20____, and that the same remains in full force and effect:

(Here insert resolution)

IN WITNESS WHEREOF, I have hereto appended my signature and the seal of the said Corporation on this the _____day of _____, 20_____.

_____

Secretary

(SEAL)

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

CONTRACT BOND

KNOW ALL MEN BY THESE PRESENTS, that_____ _____, as Principal/Contractor, and _____, as Surety, legally authorized to do business in the Commonwealth of Virginia, are held and firmly bounded unto the Richmond Metropolitan Transportation Authority (Authority), in the amount of _____Dollars and _____Cents ($_____), lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally and firmly by these presents:

WHEREAS, the Contractor has entered into a Contract with the Authority for the faithful prosecution and completion of a project designated as Contract No. MR-2015, entitled Miscellaneous Repairs, in connection with the Richmond Expressway System; and

WHEREAS, it was one of the conditions of the Contract award by the Authority pursuant to which said Contract was entered into, that these presents shall be executed;

NOW, THEREFORE, the condition of this obligation is such, that if the Contractor shall faithfully prosecute and complete the entire work prescribed for this project in full compliance with the terms and conditions of said Contract, including the Plans, Standard Specifications, Supplemental Specifications, Bid and all other documents pertaining to this Contract, and such alterations as may be made in said Plans and Specifications as therein provided for, shall indemnify and save harmless the Authority against or from all costs, expenses; damages injury or loss to which the Authority may be subjected by reason of any wrongdoing, misconduct, want of care or skill, negligence or default, including patent infringement, on the part of the Contractor, his agents or employees, in the execution or performance of said Contract, including errors in drawings furnished by the Contractor, and shall promptly pay all just claims for damages, for injury to property, and for labor, materials, equipment rentals, services and other charges incurred by the

Contractor in or about the work contracted for, and extinguish all liens therefore, then this obligation shall be null and void; otherwise, to remain in full force and effect.

SIGNED AND SEALED THIS _____day of _____, 20____.

PRINCIPAL/CONTRACTOR:

_____

Business Name

_____

Address

Witness or Attest:

_____

By:_____(L.S.)

Title:

(Affix Corporate Seal Here)

SURETY:

_____

Business Name

_____

Address

_____

Witness or Attest:

_____

By:_____(L.S.)

Title:

(Attach evidence of Power of Attorney)

Countersigned by
Resident Virginia Agent:

_____

(Affix Corporate Seal Here)

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

_____

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

FINAL RELEASE OF LIABILITY

I/We, _____, hereby certify that all bills, charges and salaries for labor, services, materials and rental of equipment, arising out of the prosecution of the work under Contract/Project No. MR-2015 have been paid, or satisfactory arrangements for payment have been made. I/We further certify that all other just demands and liens relating to this project have been fully satisfied or provided for. I/We hereby release the Richmond Metropolitan Transportation Authority, its Engineers and representatives from all claims demands and liability of whatsoever nature arising from anything done or furnished under this contract except to the extent only as to the following matters for which unresolved claims have been submitted by the Contractor in accordance with Section 105.19 of the Supplemental Specifications of the Contract:

SIGNED AND SEALED THIS _____ day of _____, 20____.

_____
Business Name

_____
Address

_____

By: _____(L.S.)

Title: _____

(Affix Corporate Seal Here)

STATE OF VIRGINIA AT LARGE: }
}
CITY/COUNTY OF } to-wit:

The foregoing instrument was acknowledged before me this _____ day of _____, 20 , by _____, _____ of
[name] [title]

_____,
[business name]

a _____ corporation/partnership, on behalf of said corporation/partnership,
[state]

_____
Notary Public

My Commission expires: _____.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

Miscellaneous Repairs

****

SWaM Participation

The Authority strongly encourages the submission of bids by qualified contractors whose principal businesses are located in the Richmond Metropolitan Area and further encourage such contractors to utilize the services of local subcontractors and vendors.

In addition the Authority strongly encourages the submission of bids by qualified contractors certified as Small, Women, and Minority Owned (SWaM) businesses and/or Disadvantaged Business Enterprises (DBE).

Furthermore, the Authority encourages the use of certified Small, Women, and Minority Owned (SWaM) businesses and Disadvantaged Business Enterprises (DBE) as subcontractors or vendors to the fullest extent reasonably possible.

Certification:

The Virginia Department of Small Business and Supplier Diversity is responsible for the certification of eligible small, women, and minority-owned businesses to participate in the SWaM Procurement Initiative. They also certify Disadvantaged Business Enterprises (DBEs) for participation under the Virginia Unified Certification Program (as part of the federal DBE Program). Service Disabled Veterans are also able to obtain SWaM certification upon receipt of their certification by the Department of Veterans Services and by meeting the eligibility requirements of the SWaM Program.
http://www.dmbe.virginia.gov/SWaMSearchSub.html

SWaM Category Type:
(As certified by the Virginia Department of Small Business and Supplier Diversity)

Minority Owned (M)
Small Business (S)
Women Owned (W)
Minority Owned with Small Business Certification (MS)
Women Owned with Small Business Certification (WS)

Other SWaM, DBE, WBE and MBE Programs:

Any contractors, subcontractors or vendors whose principal businesses are located outside the Commonwealth of Virginia must submit information on any business that is qualified as a Small, Women-Owned, Minority Owned and/or Disadvantaged Business Enterprises (DBE) by their home state or any federal program .

SwaM Summary:

As a part of the project closeout process and a prerequisite to final payment, the prime contractor shall submit fully executed pages DBE-3 and DBE-4, along with any additional sheets as needed, to document the actual amounts paid to each SWaM and/or DBE businesses that provided service or products during this execution of the contract.

****

Firm Name: _____

Firm Address: _____

Owner/Contact Name: _____

Owner/Contact Phone Number: _____

SWaM Category Type: _____ SWaM Certification Number: _____

Amount Paid: $ _____

****

Firm Name: _____

Firm Address: _____

Owner/Contact Name: _____

Owner/Contact Phone Number: _____

SWaM Category Type: _____ SWaM Certification Number: _____

Amount Paid: $ _____

****

Firm Name: _____

Firm Address: _____

Owner/Contact Name: _____

Owner/Contact Phone Number: _____

SWaM Category Type: _____ SWaM Certification Number: _____

Amount Paid: $ _____

Contractor shall attach additional sheets if needed.

SIGNED AND SEALED THIS _____ day of _____, 20____.

_____
Business Name

_____
Address

_____

By: _____(L.S.)

Title: _____

STATE OF VIRGINIA AT LARGE: }
}
CITY/COUNTY OF } to-wit:

The foregoing instrument was acknowledged before me this _____day of _____, 20 , by _____, _____of
[name] [title]

_____,
[business name]

a _____ corporation/partnership, on behalf of said Corporation/partnership,
_____[state]

_____
Notary Public

My Commission expires:_____.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015

MISCELLANEOUS REPAIRS

****

RECEIPT OF ADDENDA

I/We hereby acknowledge receipt of the following addenda and have made the necessary revisions to the Contractor's Proposal, plans, and specifications, etc., and agree that these addenda are included in the Contractor's Proposal.

Addenda #	Signature	Date
1.		
2.		
3.		
4.		
5.		
6.		

I understand that failure to confirm receipt of addenda may cause the bid to be irregular.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY
SUPPLEMENTAL SPECIFICATIONS

To

VIRGINIA DEPARTMENT OF TRANSPORTATION
ROAD AND BRIDGE SPECIFICATIONS
2007

FOR
RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015
MISCELLANEOUS REPAIRS

INDEX

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

****

SUPPLEMENTAL SPECIFICATIONS

PREFACE:

The "Road and Bridge Specifications" of the Virginia Department of Transportation, 2007, copies of which are issued separately, as amended and augmented by the Supplemental Specifications following, shall govern the construction of this Project and the performance of the Contract. These specifications are hereby made a part of the Contract as fully and with the same effect as if set forth at length herein.

Attention is directed to the fact that any other documents printed by the Virginia Department of Transportation modifying or supplementing said "Road and Bridge Specifications", such as Standard Supplemental Specifications, Special Provisions (by the Department), Notice to Bidders, etc., do not form a part of this Contract nor govern its performance, unless specifically so stated in the Supplemental Specifications herein contained. The 2008 edition of the VDOT "Road and Bridge Standards" are hereby made a part of this contract. The Virginia Erosion and Sediment Control Handbook, Third Edition 1992 Standards and Specifications are hereby made a part of this Contract.

References to “Proposal” have been changed to “Bid” in the Authority’s documents for this contract, including many standard VDOT terms such as “Examination of Site of Work and Bid [Proposal]”. This shall be accounted for when working contract documents prepared by the Authority with those standards prepared by VDOT.

References made to specific section numbers in these Supplemental Specifications, or in any of the various documents which constitute the complete Contract Documents, shall, unless otherwise denoted, be construed as referenced to the corresponding section of the "Road and Bridge Specifications" issued by the Virginia Department of Transportation, 2007.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

SUPPLEMENTAL SPECIFICATIONS

TO

VIRGINIA DEPARTMENT OF TRANSPORTATION
ROAD AND BRIDGE SPECIFICATIONS
2007

The following provisions represent modifications to the corresponding sections of the Virginia Department of Transportation Specifications, described above, and relate exclusively to the Richmond Metropolitan Transportation Authority Contracts. In case of conflicting requirements between the Virginia Department of Transportation Specifications and these modifications, the modifications shall govern. Any applicable provision in the Virginia Department of Transportation Specifications not amended by and not in conflict with any Supplemental Specifications or Special Provision shall be in full effect.

All modifications contained herein are additions to the provisions of the designated sections of the Virginia Department of Transportation Specifications unless the text specifically identifies a requirement to be an amendment to, deletion of or substitution for a provision in the Virginia Department of Transportation Specifications.

SECTION 101 - DEFINITION OF ABBREVIATIONS, ACRONYMS AND TERMS

101.02 Terms

The following new definitions are added to this section:

ADDENDUM - - A written, fax or e-mail revision or addition to any of the Contract Documents, transmitted in advance of the opening of Bids to all parties who have been recorded by the Authority as having secured full sets of Contract Documents directly from the Authority or their designee.

AUTHORITY - - The Richmond Metropolitan Transportation Authority, a political subdivision and public body corporate and politic of the Commonwealth of Virginia, organized and existing under Virginia Code §§ 33.2-2900 et seq. The Authority's principal office is presently located at 919 East Main Street, Suite 600, Richmond, Virginia, 23219.

AFFILIATE - - Any business entity which is closely associated to another business entity so that one has the power to control the other either directly or indirectly; or, where one business entity systematically shares resources, officers and/or other management with another business entity to the extent that a business relationship legally exists or is publicly perceived to exist; or, when a third party has the power to control both; or, where one business entity has been so closely allied with another through an established course of dealings, including but not limited to the lending of financial wherewithal or engaging in joint ventures, so as to cause a public perception that the two firms are one entity.

AVERAGE ANTICIPATED OPERATING SPEED - - The posted speed of the work zone plus 5 miles per hour as defined in Appendix A of the Virginia Work Area Protection Manual.

MOT - - Maintenance of Traffic

BID BOND - - One of the two permissible means of security offered as the Bid Guaranty, in the form of a surety bond executed by the Bidder and the Contractor's Surety, guaranteeing that if the Authority should award the Contract to the Contractor, the Bidder will execute and deliver the Contract Agreement and Contract Bond, together with other required documents (see Sec. 103.06), all within the prescribed time (see Sec. 103.07).

STANDARD DRAWINGS - - Whenever the Plans and/or Specifications refer to "Standards" or "Standard Drawings" such reference shall be construed to mean the set of drawings issued by the Location and Design Division, Virginia Department of Transportation, 2008, and entitled "Road and Bridge Standards", Volumes I and II. Only those standards or standard drawings specifically referred to by number on the Plans or in the various Contract Documents are applicable to work on this Contract.

FULL COMPLETION OF ALL WORK (OR TO FULLY COMPLETE ALL WORK) - - The completion of all work specified under this Contract as evidenced by the formal acceptance thereof by the Authority.

WORK AREA PROTECTION MANUAL - - The Virginia Work Area Protection Manual, 2011 and all subsequent revisions when revised.

Whenever in the various Contract Documents the term, "Commission" or "State" appears it shall be replaced by the term, "Richmond Metropolitan Transportation Authority." Similarly, the term, "Commissioner" shall be replaced by the term, "General Manager of the Richmond Metropolitan Transportation Authority," and the term, "Deputy Commissioner" replaced by the term, "Director of Operations of the Richmond Metropolitan Transportation Authority."

Whenever in the Virginia Department of Transportation Specifications and Standard Drawings the term, "Department" or "Virginia Department of Transportation" appears, it shall be replaced by the term, "Richmond Metropolitan Transportation Authority," except in references to said Virginia Department of Transportation as being the author of certain Specifications and Standard Drawings, and in reference to said Department as the agency prequalifying prospective Bidders.

Whenever in the Virginia Department of Transportation Specifications and Standard Drawings the term, "District Engineer" appears, it shall be replaced by the term, "Engineer."

The definitions for the following terms as they appear in this section are deleted and the following definitions substituted therefore:

CONTRACT TIME - - Each calendar date indicated in the Specifications or Special Provisions as the time allowed for the completion of any designated portion or for all of the work under the Contract, including any extensions thereto that may subsequently be authorized.

ENGINEER - - The authorized representative(s) of the firm of the General Consultant, HNTB Corporation, who have been duly appointed by the Authority to prepare Plans and Specifications for the Contract and to monitor the construction work performed in connection therewith.

The headquarters office of HNTB Corporation for this project is located at 2900 S. Quincy St, Suite 200, Arlington, Virginia 22206, telephone (703) 824-5100.

SPECIFICATIONS (SPEC) - - The general term comprising all the directions, provisions and requirements contained in the Virginia Department of Transportation, "Road and Bridge Specifications," 2007, Edition, the Authority's Supplemental Specifications and Special Provisions, and in any Addenda and Change Orders or Supplemental Agreements that may be issued, all of which are necessary for the proper performance of the Contract.

SECTION 102 - BIDDING REQUIREMENTS AND CONDITIONS

102.01 Prequalification of Bidders

This Section is amended to add the following:

Only contractors who have been prequalified by the Virginia Department of Transportation for bidding on State projects will be permitted to submit Bids for Contracts for Construction of this Project. The foregoing notwithstanding, the Authority reserves the right to reject the bid of any bidder because of reason of unsatisfactory performance or progress on other or prior Authority contracts, as determined by the Authority in its sole discretion.

Contractor shall also see Prequalification requirements in the "Invitation to Bid" (Sheet IB-1 of the Contract Documents). If a Subcontractor is listed in one of the experience forms, that Subcontractor or a different Subcontractor which meets the experience requirements must complete at least 90% of the work in that category.

In order to bid on this project, prospective Bidders must meet the Prequalification requirements at the time specified in the "Invitation to Bid" (Sheet IB-1 of the Contract Documents). The Authority cannot be held liable in the event a party is unable to submit a valid bid due to a delay in the prequalification procedure. Securing prequalification and the timing thereof, shall at all times be the sole responsibility of the Contractor.

If a group of contractors should desire to submit a single bid for a contract or group of contracts, acting under the terms of a joint venture, each such contractor must be prequalified in the proper classification of work and must be registered with the Virginia Department of Transportation. The total of the estimated dollar values of this type of work for all the contractors involved will be considered as the maximum capacity of the joint venture.

102.02 Contents of Proposal

This section is amended as follows:

The following documents are bound with and are also a part of the Bid Form:

Non-Collusion Affidavit
Statement of Contracts Underway
Joint Venture Statement
Shotcrete Experience – Bidder/Subcontractor
Steel Repairs Experience – Bidder/Subcontractor
Epoxy Injection Experience – Bidder / Subcontractor
Epoxy Injection Experience – Bidder / Subcontractor Superintendent
Bid Bond
Receipt of Addenda
Railroad Agreement (Schedule I)

102.04 Examination of Site of Work and Proposal

The Section is amended to add the following:

In addition to the mandatory site visit, the Bidders are allowed to visit the Project site to form their own conclusions regarding access requirements, effort required to perform the tasks and

other information needed to prepare their bid. Prior to visiting the site, a Bidder shall notify the Authority of the time and date of the Bidder's visit.

Any Addenda that may be issued will be posted on the RMTA website. http://www.rmaonline.org/ All bidders are required to download any and all addenda from the website. The Authority shall not be responsible for individually delivering addenda to all proposers. The return to the Authority of a prospective Bidder's receipt of such Addenda will also be prima facie evidence that the Bidder has received and acknowledged the Addenda and has taken the contents thereof into consideration in preparing the Bidder's Bid.

102.05 Preparation of Bid

Sub-Section (a) is amended to add the following:

No electronic bids shall be accepted. All bids shall be submitted on forms furnished by the Authority.

As part of the execution of the Bid, each Bidder shall execute the Statement of Contracts Underway, and the Non-Collusion Affidavit and, in the case of Joint Venture Bidders, the Joint Venture Statement.

The Statement of Contracts Underway shall list the stipulated status information of all other work in which the Bidder is presently engaged, whether as a prime contractor or a subcontractor. Such listings shall include not only contracts which are under construction, but also those awarded to the Contractor but not begun and those on which the contractor is the lowest bidder awaiting formal award. In the case of Joint Venture Bidders, each party involved shall complete, execute and submit a separate Statement of Contracts Underway, as well as the Bidder's portion of the Joint Venture Statement. Additional Statements of Contracts Underway forms are available at the office of the General Manager of the Authority.

The Non-Collusion Affidavit must be executed by the person signing the Bid. In the case of Joint Venture Bidders, only the person signing the Bid on behalf of the Contractors involved need execute the Non-Collusion Affidavit.

The Richmond Metropolitan Transportation Authority may elect to receive bids on more than one construction contract on the same date. When this event occurs, the Authority will award the various contracts after all of the bids for the various contracts are received and analyzed.

Sub-Section (f) is amended as follows:

In the event of a joint venture of a group of Contractors submitting a single Bid, the Bid shall be signed by an individual owner, partner or officer of any one of the Contractors bound in the joint venture, and the official business address of the joint venture shall be given. In addition, a Joint Venture Statement must be executed by all Contractors involved.

102.06 Irregular Bids

This section is amended as follows:

The following section is deleted:
Section (m)

The following is added:

(n). If the bidder fails to submit the executed Statement of Contracts Underway; in the case of Joint Venture Bidders, failure to submit an executed Statement of Contracts Underway for each Contractor in the joint venture and the Joint Venture Statement.

(o). If the signed bid form is received from a party whose name is not recorded by the Authority as attending both the mandatory pre-bid meeting and site visit.

(p). If the bidder is not pre-qualified by the Virginia Department of Transportation at the time of the mandatory pre-bid meeting.

(q). If the bidder fails to attach required Shotcrete, Steel Repair and Epoxy Injection Experience forms.

(r). If the bidder fails to properly acknowledge receipt of addenda/addendum in the Receipt of Addenda form.

(s). If the bidder fails to submit the executed Railroad Agreement (Schedule I).

102.07 Bid Guaranty

Add the following:

If a certified check is submitted as the Bid Guaranty, the check is to be made payable to the Richmond Metropolitan Transportation Authority, and the project name and Contract number shall also appear on the face of the check, as well as the business name of the bidder.

A bid bond will be accepted only if executed on a form which contains the exact wording as the Bid Bond included in these contract documents form. Any bid accompanied by a bond having wording which differs in any respect from the Bid Bond form may be rejected.

102.09 Submission of Bid

This section of the Specifications is completely replaced by the following:

Bids will be accepted at the Authority's office at 919 East Main Street, Suite 600, Richmond, Virginia until scheduled bid opening time and shall be submitted in a sealed envelope. Bids shall be filed prior to the time specified in the Invitation to Bid. Bids received after that time will be returned to the bidder unopened. The date for opening of bids may be deferred by the Authority, in which case the bidders will be notified.

102.12 Public Opening of Bids

This section of the Specifications is completely replaced by the following:

Bids will be opened and read publicly at the time and place specified in the Invitation to Bid. Interested parties are invited to be present.

SECTION 103 - AWARD AND EXECUTION OF CONTRACTS

103.01 Consideration of Bids

Add the following:

In reviewing bids received, the Authority will give full consideration to a Bidder's capacity for undertaking and handling the work included in the bid. The difference in amounts between the maximum capacity stated in the prequalification certification for this classification of work, and the total estimated value of work remaining to be completed by the Bidder's organization as given in the Bidder's Statement of Contract Underway, shall constitute the Bidder's net capacity for handling additional work. Such net capacity will be considered by the Authority in determining the successful Bidders for Contracts on this Project.

103.02 Award of Contract

This section of the Specifications is completely replaced by the following:

The Authority will award a contract within sixty (60) calendar days of the bid opening for said Contract. If a Contract is not awarded within this time period, the Bidder shall have the right to withdraw the Bidder's Bid for the Contract without penalty or prejudice, unless the award date is extended by mutual consent.

The Authority agrees that Award of Contract, if made, will be determined without discrimination on the ground of race, creed, color, sex or national origin.

Basis for Contract Award: The Contract, if awarded, will be awarded to the lowest responsive and responsible bidder, if any, provided his bid is reasonable and it is in the best interest of the Authority to accept it and subject to the Authority's right to reject any and all bids and to waive informality in the bids and in the bidding. Determination of the lowest responsible bidder, if any, will be based on the Total Bid Amount entered on the Bid Tab Form including any properly submitted bid modifications taken in sequence as the Authority in its discretion chooses to Award. **Where the sum of the values entered in the multiple parts do not agree with the Total Bid Amount, the Total Bid Amount entered on the Bid Tab Form, including** any **properly submitted bid modifications, shall take precedence.**

In the event that the Total Bid Amount from the lowest responsible bidder exceeds available funds, the Authority may negotiate the Total Bid Amount with the apparent low bidder to obtain a contract price within available funds, pursuant to §2.24318 of the Code of Virginia, as amended, and Section 12(c) herein.

Informalities: The Authority reserves the right to waive any informality in the bids when such waiver is in the interest of the Authority.

Negotiation with Lowest Responsible Bidder: If award of a contract to the lowest responsive and responsible bidder is precluded because of limitations on available funds, under the provisions of §2.2-4318 of the Code of Virginia (the Public Procurement Act), the Authority reserves the right to negotiate the Total Bid Amount with the lowest responsive, responsible bidder to obtain a contract price within the available funds. This may involve changes in either the features or scope of the work included in the Contract Documents. Such negotiations with the apparent low bidder may include reducing the quantity, quality, or other cost saving mechanisms involving items in the Total Bid Amount. The Authority shall notify the lowest responsive and responsible bidder that such a situation exists and the Authority and bidder shall then conduct their negotiations in person, by mail, by telephone or by any means they find convenient. If an acceptable contract can be negotiated, the changes to the Invitation for Bid

documents agreed upon in the negotiations shall be summarized in a "Post Bid Modification" and included in the contract. If an acceptable contract cannot be negotiated, the Authority reserves the right to terminate negotiations and begin negotiations with the second lowest responsive and responsible bidder or terminate negotiations with all bidders and reject all bids.

Notice of Award: The Notice of Award, the Notice of Intent to Award, or the Notice of Decision to Award will be posted at the Authority's Construction Engineering Inspection Office.

103.06 Contract Documents

Subsection (d) of this section of the Specifications is amended to include:

- All insurance certificates as required in Sec. 103.06 (d), as prescribed in Sec. 107 and as may be required in other sections.

Subsection (e) of this subsection of the Specifications is amended to include the following:

The Contractor shall submit a progress schedule using the Critical Path Method (CPM) format. As a minimum, the schedule shall include:

- The duration of activities.
- The interrelationship of critical activities.
- Maintenance of traffic changes.
- Any temporary work necessary to complete project.
- An easily distinguishable critical path.
- Final completion by the date specified.

SECTION 104 - SCOPE OF WORK

104.02 Alterations of Quantities or Character of Work

Subsection (d) of this section of the Specifications is amended to include:

1. Major Items: There are no major items under this contract.

2. Minor Items: All items under this Contract are considered minor items. No adjustment of contract unit prices will be made for overruns or underruns of the original contract quantities, regardless of the extent of such overruns or underruns.

SECTION 105 - CONTROL OF WORK

105.01 Notice to Proceed

Add the following:

Notice to Proceed will be issued within seven (7) calendar days after the execution of the Contract by the Authority.

Contractor shall submit CPM schedule as detailed in Section 103.06 within fourteen (14) days of issuance of Notice to Proceed by the Authority.

105.06 Subcontracting

Add the following:

Except as noted below, the consent to sublet any part of the work, or obtain supplies, shall not be construed to be an approval of the said subcontract, supply contract or any of its terms, but shall operate only as an approval of the making of a subcontract or supply contract between the Contractor and Subcontractor or Supplier. The Subcontractor agrees, as a condition of entering into a subcontract on the project, that the Contractor shall make no claim whatsoever against the Authority, the Engineer, or any of their officers, servants, agents or employees for any work performed or thing done by reason of said subcontract, or for any other cause whatsoever that may arise by reason of the relationship created between the Contractor and Subcontractor unless the proposed Subcontractor furnishes a statement to the effect that said Subcontractor is acquainted with all provisions of the Contract and agrees thereto.

In the case of extra work to be performed on a force-account basis, if any portion of such work is proposed to be sublet on the basis of negotiated unit and/or lump-sum prices instead of on a force-account basis, then such negotiated unit and/or lump-sum prices shall first meet with the approval of the Engineer before consent will be given to sublet the work.

Sublet work shall not begin until approval thereof has been secured from the Engineer. It is understood, however, that any consent by the Engineer for the subletting of any of the work under the Contract in no way relieves the Contractor from the Contractor's full obligations under the Contract. The Contractor shall be responsible for all acts of omissions of any Subcontractor or Supplier.

105.13 State Force Construction Surveying

This Section is deleted in its entirety. All construction surveying shall be the responsibility of the Contractor.

105.15 Removing and Disposing of Structures and Obstructions

This section is amended as follows:

All materials removed by the Contractor as specified therein, shall become the property of the Contractor, except as may be otherwise specifically required, and shall be legally disposed of by the Contractor off of RMTA property.

105.19 Submission and Disposition of Claims

This section of the Specifications is completely replaced by the following:

(a) Alleged Damages and Exceptions. Early or prior knowledge by the Authority of an existing or impending claim for damages might alter the plans, scheduling and other actions of the Authority or result in mitigation or elimination of the effect of the act objected to by the Contractor. Therefore, a written statement describing (1) the act of omission or commission by the Authority or its agents that allegedly caused or will likely cause damage to the Contractor and (2) the nature of the claimed damage must be submitted to the Engineer at the time of occurrence or beginning of the work upon which the claim and subsequent action is based. If such damage is reasonable likely to result from the Contractor's acting upon an order emanating from the Engineer, the Contractor shall take written exception, delivered to the Authority, to such order immediately. Submission of such written statement or exception, as specified, shall be mandatory. Failure to submit such written statement or exception shall be a conclusive waiver of such damages or exception by the Contractor. Mere oral notice or statement will not be sufficient, nor will notice or statement after the event.

(b) Additional Compensation. At the time of occurrence or prior to beginning the work the Contractor shall furnish the Engineer, in writing, an itemized list of materials, equipment, and labor for which additional compensation will be claimed. The contractor shall afford the Engineer every facility for keeping an actual cost record of the work. The Contractor and the Engineer shall compare records and bring them into agreement at the end of each day. Failure on the part of the Contractor to afford the Engineer proper facilities for keeping a record of actual costs will constitute a conclusive waiver of a claim for such extra compensation except to the extent that it is substantiated by the Authority's records. The filing of such notice by the Contractor and the keeping of cost records by the Engineer shall in no way establish the validity of a claim. Failure to submit such written itemized list shall be a conclusive waiver of such claim for additional compensation. Mere oral notice or statement will not be sufficient, nor will notice or statement after the fact.

(c) Verification. If the Contractor's claim contains data furnished by the Contractor that cannot be verified by the Authority's records, the data shall be subject to complete audit by the Authority or its authorized representative if they are to be used as a basis for claim settlement.

(d) Claims Procedure. Upon completion of the Contract, the Contractor may, within 60 calendar days from expiration of the period for review of the Final Estimate by the Contractor as provided in Section 109.09, submit to the Authority a written claim (original plus three legible copies) for such amount as the Contractor deems it is entitled to under the said contract setting forth the facts upon which said claim is based and including all pertinent data and correspondence which may substantiate the claim, provided that written notice of intention to file such claim shall have been given to the Authority at the time of occurrence or beginning of the work upon which claim and subsequent action is based. Failure of the Contractor to furnish any of the items required by Section 109.09 as prerequisite to the issuance of final payment shall not extend the time period in which the Contractor may submit a claim under this or any other section of the Contract. If the claim is not disposed of by agreement, then within 90 calendar days from receipt of said claim, the Authority will make an investigation and notify the Contractor by registered or certified mail, return receipt requested, of its decision; however, the Authority and Contractor may, by mutual agreement, extend such 90 calendar day period for another 30 calendar days. The decision of the General Manager of the Authority shall be final, and failure of the Contractor to comply with the provisions of this section shall constitute a conclusive waiver of any such claim hereunder.

SECTION 106 - CONTROL OF MATERIAL

106.01 Source of Supply and Quality Requirements

This section is amended to add the following:

The Contractor shall not use in preparation of the bid nor on construction of this project any supplier or material person, hereinafter referred to simply as supplier, debarred by the Virginia Department of Transportation as of the date of advertisement.

It shall be the responsibility of the Bidder to determine from the Department's listings which suppliers are debarred as of the date of advertisement of this project. Such listings will be posted in the office of the Contract Engineer, 1401 E. Broad Street, Richmond, Virginia and in each District Office.

The Engineer will not approve for use any material furnished by a supplier debarred by the Department.

If subsequent to award of this contract, a previously debarred supplier is reinstated to eligibility, the Engineer may approve the use of that supplier on this project when requested by the Contractor and after consideration of all relevant factors.

106.02 Material Delivery

This section is amended as follows:

Contractor's invoices for materials delivered to the site shall show actual prices for such materials.

106.04 Disposal Areas.

The last sentence of the first paragraph and the entire third paragraph under this section of the Specifications are deleted.

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

107.12 Responsibility for Damage Claims

Delete the first line of the first paragraph and substitute:

"The Contractor shall indemnify and save harmless the Authority, the Engineer and its…"

Add the following statement to the end of the second paragraph:

". . . the contract provided, however, that the Authority and, where applicable, the Engineer are intended beneficiaries of this Contract and shall have standing to enforce the provisions of this Contract including the right to indemnification and the right to ascertain claims for damages.

Add the following after the last paragraph of this section:

In connection with the indemnification assumed by the Contractor by virtue of this section, but without limitation or release of the Contractor's responsibility for such indemnification or any other liability hereunder, the Contractor shall provide the following types and minimum amounts of insurance coverage for this project:

(a) Contractor's Comprehensive General Bodily Injury and Property Damage Liability Insurance, including Contractor's Protective Liability Insurance and Contractual Liability Insurance:

(1) One (1) person in any one (1) occurrence, amount One Million Dollars ($1,000,000).

(2) Two (2) or more persons in any one (1) occurrence, amount One Million Dollars ($1,000,000).

(3) Property Damage in any one (1) occurrence, amount One Million Dollars ($1,000,000), with aggregate property damage policy limit of One Million Dollars ($1,000,000).

The portion of the policy dealing with property damage liability shall contain a provision of endorsement providing insurance protection against property damage, including loss of use, caused by explosion and/or collapse, and against damage to existing underground and overhead pipes, cables, ducts and other such facilities, whether or not such facilities appear on available plans and whether or not accurately located on such plans.

The Contractual Liability Insurance policy shall contain an endorsement attesting to the Contractor's responsibilities for indemnification set forth in this section. Insurance certificates shall specifically indicate the inclusion of such an endorsement with particular reference to the Contract number and to "Compliance with Sec. 107.13 of the Specifications."

(b) Comprehensive Automobile and Truck Liability Insurance including coverage for Contractor's automotive equipment (and including non-owned and hired vehicles):

(1) One (1) person in any (1) occurrence, amount One Million Dollars ($1,000,000).

(2) Two (2) or more persons in any one (1) occurrence, amount One Million Dollars ($1,000,000).

(3) Property damage in any one (1) occurrence, amount One Million Dollars ($1,000,000).

(c) Workmen's Compensation Insurance - Statutory. Employer's Liability Insurance in the amount of Five-Hundred Thousand Dollars ($500,000).

If any part of the work is sublet, similar insurance shall be obtained by or on behalf of the Subcontractor to cover the Subcontractor's operation.

The insurance specified shall be with an insurance company acceptable to the parties hereto and licensed to do business in the State of Virginia. All insurance must be obtained before any work is commenced and kept in effect until its completion.

In compliance with Sec. 103.06, satisfactory evidence, in triplicate, of all required insurance coverage, including special endorsements, shall be forwarded to the Authority for approval within fourteen (14) Calendar Days after the date of written notice of Award of Contract. All insurance coverage must be approved by the Authority before the Contract will be executed by the Authority.

The Authority's approval of insurance furnished by the Contractor, or its failure to disapprove such insurance shall not relieve the Contractor of full responsibility for liability, damages and accidents as set forth elsewhere herein.

All policies required above shall include an endorsement requiring thirty (30) calendar days prior written notice to the Authority before any change or cancellation is made effective.

All policies required shall be maintained until completion and acceptance of all work under this Contract.

No separate payment will be made for the cost of the insurance herein specified but the Contractor shall include the cost of such insurance in the prices bid for the various items scheduled in the Bid.

107.19 Railway - Highway Provisions

This section is amended as follows:

CSX Transportation

When performing work on, over or adjacent to CSX Transportation (CSXT) right-of-way or operations, the Contractor must abide by the current CSXT Special Provisions, CSXT Construction Submission Criteria, Construction Requirements, and Insurance Requirements.

All construction related correspondence and submittals will be directed to HNTB, acting as Engineer on behalf of the Richmond Metropolitan Transportation Authority. The Authority and the Engineer will have the sole responsibility and authority for submitting the Contractor's construction submissions and coordinating all reviews with CSX Transportation.

The Contractor shall submit complete Construction Submission packages for all areas that may require a construction agreement within 15 calendar days of Notice to Proceed. The Authority shall have up to 7 calendar days to review all submittals. The Contractor shall address any comments and submit revised Construction Submission packages for all areas that may require a construction agreement within 30 calendar days of Notice to Proceed.

If any submissions are returned not approved by CSX Transportation, the Contractor shall have 7 calendar days after receipt of comments to address any comments and submit revised Construction Submission package(s).

Failure of the Contractor to meet the time schedules listed above in Section 107.19 shall be considered a Failure to Complete on Time subject to the Liquidated Damages as described in Section 108.06. All construction related correspondence shall be considered "submitted" on the date that it is received by the Authority.

Contractor shall coordinate all work activities in the areas described below with the Richmond Metropolitan Authority or its authorized representative.

Bridge:	Location	Repairs:	Railroad Owner:
8S	Pier 14	Shotcrete	CSX
64	Pier 8	Bearing	CSX
65	Pier 12	Steel	CSX
67	Pier 6	Shotcrete	CSX
68	Pier 1	Steel	CSX
BB	Pier 25, Pier 26	Shotcrete	CSX
BB	Unit 19	Steel	CSX

Contractor hereby agrees to fully execute Schedule I – Contractor's Acceptance and to abide by and perform all applicable terms of the Construction Agreement between CSXT and the Richmond Metropolitan Transportation Authority, including, but not limited to Exhibits C and F to the Agreement, and Sections 3, 9 and 11 of the Agreement. A copy of this agreement, construction requirements and submission criteria are included in the contract documents.

The cost for flagger or watchperson services near CSXT tracks for work performed under this Miscellaneous Repairs – 2015 Contract will be paid by the Richmond Metropolitan Transportation Authority.

Norfolk Southern Corporation

When performing work on, over or adjacent to Norfolk Southern Corporation. (NS Corp.) right-of-way or operations, the Contractor must abide by the current NS Corp. Special Provisions, Construction Submission Criteria, Construction Requirements, and Insurance Requirements.

All construction related correspondence and submittals will be directed to NS Corp. with a copy to HNTB acting as Engineer on behalf of the Richmond Metropolitan Transportation Authority. The Contractor will have the sole responsibility and authority for submitting and coordinating all reviews with NS Corp.

The Contractor shall submit complete Construction Submission packages for all areas that may require a construction agreement within 15 calendar days of Notice to Proceed.
The Contractor shall address any comments and submit revised Construction Submission packages for all areas that may require a construction agreement within 30 calendar days of Notice to Proceed.

If any submissions are returned not approved by NS Corp. the Contractor shall have 7 calendar days after receipt of comments to address any comments and submit revised Construction Submission package(s).

Failure of the Contractor to meet the time schedules listed above in Section 107.19 shall be considered a Failure to Complete on Time subject to the Liquidated Damages as described in Section 108.06. All construction related correspondence shall be considered "submitted" on the date that it is sent to NS Corp.

Contractor shall coordinate all work activities in the areas described below with the Richmond Metropolitan Authority or its authorized representative.

Bridge:	Location	Repairs:	Railroad Owner:
65	Pier 10	Shotcrete	NS Corp.

The cost right of entry permits, and for flagger or watchperson services near NS Corp. tracks for work performed under this Miscellaneous Repairs – 2015 Contract will be paid by the Contractor.

MEASUREMENT AND PAYMENT

The Pay Item Railway Coordination Service (Bridge 8) will be paid for at the contract lump sum price. The Contract Lump Sum price shall include the preparation of all plans, drawings,

schedules, and narratives necessary for describing the contractor's means and methods required to perform the work. This pay item shall include any and all insurance costs incurred by the contractor to work in the railroad easement or right-of-way for work at Bridge 8.

The Pay Item Railway Coordination Service (Bridge 64) will be paid for at the contract lump sum price. The Contract Lump Sum Price shall include the preparation of all plans, drawings, schedules, and narratives necessary for describing the contractor's means and methods required to perform the work. This pay item includes any and all insurance costs incurred by the contractor to work in the railroad easement or right-of-way for work at Bridge 64.

The Pay Item Railway Coordination Service CSX (Bridge 65) will be paid for at the contract lump sum price. The Contract Unit Price shall include the preparation of all plans, drawings, schedules, and narratives necessary for describing the contractor's means and methods required to perform the work. This pay item includes any and all insurance costs incurred by the contractor to work in the railroad easement or right-of-way for work at Bridge 65.

The Pay Item Railway Coordination Service NS Corp. (Bridge 65) will be paid for at the contract lump sum price. The Contract Unit Price shall include the preparation of all plans, drawings, schedules, and narratives necessary for describing the contractor's means and methods required to perform the work. This pay item includes any and all permit, flagging and insurance costs incurred by the contractor to work in the railroad easement or right-of-way for work at Bridge 65.

The Pay Item Railway Coordination Service (Bridge 67) will be paid for at the contract lump sum price. The Contract Unit Price shall include the preparation of all plans, drawings, schedules, and narratives necessary for describing the contractor's means and methods required to perform the work. This pay item includes any and all insurance costs incurred by the contractor to work in the railroad easement or right-of-way for work at Bridge 67.

The Pay Item Railway Coordination Service (Bridge 68) will be paid for at the contract lump sum price. The Contract Lump Sum Price shall include the preparation of all plans, drawings, schedules, and narratives necessary for describing the contractor's means and methods required to perform the work. This pay item includes any and all insurance costs incurred by the contractor to work in the railroad easement or right-of-way for work at Bridge 68.

The Pay Item Railway Coordination Service (Bridge BB) will be paid for at the contract lump sum price. The Contract Unit Price shall include the preparation of all plans, drawings, schedules, and narratives necessary for describing the contractor's means and methods required to perform the work. This pay item includes any and all insurance costs incurred by the contractor to work in the railroad easement or right-of-way for work at Bridge BB.

Pay Item:	Pay Unit
Railway Coordination Service (Bridge 8)	Lump Sum
Railway Coordination Service (Bridge 64)	Lump Sum
Railway Coordination Service CSX (Bridge 65)	Lump Sum
Railway Coordination Service NS Corp. (Bridge 65)	Lump Sum
Railway Coordination Service (Bridge 67)	Lump Sum
Railway Coordination Service (Bridge 68)	Lump Sum
Railway Coordination Service (Bridge BB)	Lump Sum

SECTION 108 - PROSECUTION AND PROGRESS OF WORK

108.04 Determination and Extension of Contract Time Limit

In the second paragraph of this section, substitute the number "75" for the number "60" wherever it appears.

108.06 Failure To Complete on Time

Sub-section (B) is completely replaced by the following:

CONTRACTOR WAIVES ANY DEFENSE AS TO THE VALIDITY OF ANY LIQUIDATED DAMAGES STATED IN THIS CONTRACT ON THE GROUNDS THAT SUCH LIQUIDATED DAMAGES ARE VOID AS PENALTIES OR ARE NOT REASONABLY RELATED TO ACTUAL DAMAGES.

SECTION 109 - MEASUREMENT AND PAYMENT

109.06 Common Carrier Rates.

This Section of the Specifications is deleted in its entirety.

109.08 Partial Payments

This section is completely replaced by the following:

Partial payments will be made once each month covering work performed and materials complete-in-place in accordance with the contract and for materials delivered in accordance with Sec. 109.08 on and between the 5th day of a month and the 4th day of the succeeding month as the work progresses. Partial payments will be made on the value of work performed based on approximate estimates prepared by the Engineer, provided, however, that no estimate shall be certified or payment made where the net amount receivable by the Contractor is less than

Five-hundred Dollars ($500.00). The value of work done on items measured on a unit basis will be determined on a pro rata basis. If the Engineer determines that the Contractor has been overpaid, all further partial payments may be credited against such overpayment.

The Engineer will review the partial payment estimate with the Contractor's representative prior to each partial payment.

From the total of the amounts so determined will be deducted an amount equivalent to five (5) percent of the whole, which will be retained by the Authority until completion of the entire Contract in an acceptable manner and the balance, less all previous payments, shall be certified for payment.

Total Contract value shall be considered to mean the original amount of the Contract, except when the Contract is increased or decreased by a supplemental agreement in which case the adjusted total shall be used.

The Authority reserves the right to withhold the payment of any partial or final estimate voucher or any sum or sums thereof from such vouchers in the event of the failure of the Contractor to promptly make payment to all persons supplying equipment, tools or materials, or for any labor used by the Contractor in the prosecution of the work provided for in the Contract, and for any other cause as determined by the Authority in its sole discretion, including overpayment on previous partial payments.

109.10 Final Payment

This section of the Specifications is completely replaced by the following:

After final inspection and final acceptance of the project has been made by the Engineer, as provided in Sec. 108.09, the Engineer will prepare the final estimate of item quantities and amounts for the completed work. The Contractor will be afforded a period of fifteen (15) calendar days from the date of the final estimate to review the final estimate at the Authority's office.

As a prerequisite to the issuance of final payment, the Contractor will be required to furnish the following items to the Engineer:

(a) An executed SWaM Participation form (on the Authority's standard form) attesting to actual amounts fully paid to each Small, Women, and Minority Owned (SWaM) businesses and/or Disadvantaged Business Enterprises (DBE).

(b) An executed Final Release of Liability (on the Authority's standard form) attesting to the fact that all bills, charges and salaries for labor, services, materials and rental

of equipment, arising out of the prosecution of work under this Contract have been fully paid or arrangements satisfactory to the Engineer therefore have been made and all other just demands and liens relating to this project fully satisfied or arrangements to the Engineer therefore have been made, and releasing the Authority and their representatives from all claims, demands and liability of whatsoever nature from anything done or furnished under this Contract, except to the extent only as to such matters for which unresolved claims have been submitted by the Contractor in accordance with Section 105.16 hereof;

(c) Sworn statements of any property owners or other parties who may have had any claims against the Contractor or liens against the project, evidencing that all their claims and liens are fully satisfied or provided for and the Contractor and Authority are released there from;

(d) Any other documents, invoices, releases or objects which the Engineer may request in finalizing the Contract.

After the above items have been forwarded to the Engineer, and the final estimate and certificate for final payment sent to the Authority with the Engineer's recommendation for acceptance, the Contractor will be paid the total Contract amount less the amounts of all previous partial payments and less any imposed liquidated damages. This net amount will be subject to any increase or decrease resulting from corrections to any errors in previous partial payments that may be detected at this time and to deductions for unacceptable work not corrected by the Contractor as required hereunder.

This final payment will become due and payable to the Contractor within ninety (90) calendar days after the date when all the above listed documents and tracings have been received by the Engineer and acknowledged in writing by the Contractor. The Contractor will be entitled to interest on the final payment amount at the rate of four (4) percent per annum for the length of time beyond said 90 calendar days period that the final payment should remain unpaid.

SECTION 303 – EARTHWORK

303.02 Materials

Sub-Section (e) – The section is added as follows:

(e) **Seed** shall conform to Section 244.02(c) of the Specifications

SECTION 509 - PATCHING HYDRAULIC CEMENT CONCRETE PAVEMENT

509.02 Materials

The first sentence of paragraph (a) is replaced with the following:

> **Hydraulic cement concrete** shall conform to the requirements of Section 217 for Class A4 concrete except that the compressive strength shall achieve at least 3,000 psi in eight (8) hours. If the method prescribed herein fails to produce these results, the Engineer will furnish a mix design that will.

SECTION 512 - MAINTAINING TRAFFIC

512.01 Description

The following is added to this section:

The Contractor shall schedule the Contractor's operations in a manner as to not adversely affect traffic conditions. At all locations the Contractor shall schedule the Contractor's operations in such a manner that all available traffic lanes are open to traffic on holidays, the day preceding holidays and the day after holidays. Ramp traffic (unless otherwise noted) shall be maintained at all times.

The Engineer reserves the right to require the Contractor to provide a proposed maintenance of traffic plan for all lane closures 7 calendar days prior to closure. The Engineer shall coordinate the maintenance of traffic plan with the RMTA and provide any changes and additions required prior to the lane closure. In the event that a detour route is detailed in the contract drawings, the Contractor shall be required to provide a traffic plan for installing and removing the proposed detour route.

The Contractor shall not utilize shoulders, median or similar areas for storage of equipment or material including vehicles used by Contractor's personnel to access the site. Any stored equipment shall be placed behind guardrail or barriers.

The Contractor shall provide continuous monitoring of traffic control devices as part of the effort required to maintain them. Additionally, the Contractor shall possess a minimum of one spare operable electronic arrow on site only when directed by the Engineer.

When night work is in progress, the Contractor shall provide sufficient lighting of the work site(s) to enable the satisfactory completion of the work. Lighting shall be arranged so as not to

interfere with or impede traffic approaching the worksite(s). Payment for lighting of the work site shall be covered in other pay items and will not be measured for payment.

512.04 Measurement and Payment

Section 512.04 Measurement and Payment, Truck Mounted Attenuator, the following is to be inserted after the fourth sentence:

The RMTA reserves the right to substitute their TMA in lieu of contractor's TMA at the RMTA's direction. Contractor shall not submit or be paid for TMA hourly pay units for when the RMTA's TMA is in service. When Contractor's TMA is used, TMA will be measured and paid for in hours of use.

Section 512.04 Measurement and Payment, Portable Changeable Message Sign, the following is to be inserted after the second sentence:

The RMTA reserves the right to substitute their Portable Changeable Message Sign (PCMS) in lieu of contractor's PCMS at the RMTA's direction. Contractor shall not submit or be paid for PCMS hourly pay units for when the RMTA's PCMS is in service. When Contractor's PCMS is used, PCMS will be measured and paid for in hours of use.

Section 512.04 Measurement and Payment, Construction pavement markings, the following is to be inserted after the second sentence:

Pavement striping contractor shall submit quantity of construction pavement markings placed to Engineer within 24 hours of placement. Failure to provide quantity to Engineer in the timely manner prescribed herein may result in a conflict in quantities between contractor and Engineer. Should a conflict in quantity of construction pavement markings occur, Engineer's quantity shall be used for calculating payment.

SECTION 514 - FIELD OFFICE

This section of the Specifications is completely replaced by the following:

A field office is not required for this project.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

SPECIAL PROVISIONS

To

VIRGINIA DEPARTMENT OF TRANSPORTATION

ROAD AND BRIDGE SPECIFICATIONS 2007

FOR

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. MR-2015
MISCELLANEOUS REPAIRS

CONTENTS

CONTENTS

SPECIAL PROVISION
TOLL COLLECTION PASS CARDS

DESCRIPTION

This provision details the disbursement and return of Toll Collection Pass Cards (Cards).

PROCEDURES

The Contractor shall provide the Engineer and the RMTA with a written request for Cards within 7 calendar days prior to work start. The written request shall contain, but not be limited to, the number of Cards requested, names and addresses of the individuals to whom the Cards shall be assigned, a brief but thorough explanation why each individual requires a Card, and the anticipated time frame for each individual to require the Card.

The Engineer shall review the Request for Cards within 7 calendar days of receipt of Request. The RMTA, via the Engineer, may provide between zero and the total number of Cards requested.

Cards cannot be used in the Open Road Tolling (ORT), or "Express", lanes located on northbound and southbound Powhite Parkway and on the westbound Downtown Expressway (DTE). At these Toll Plazas, Contractors' vehicles must go through a "Full Service" lane to use Toll Pass Cards.

For the Type B Class VI pavement marking installation, special arrangements will be made to permit designated vehicles to use the ORT lanes with compensation. In addition, in the event that the Contractor is required to use the ORT lanes to perform Maintenance of Traffic operations, and with the approval of the Engineer, will arrangements be made to permit designated vehicles to use the ORT lanes with compensation. Other than said designated vehicles, additional Contractor's vehicles using the ORT lanes will not be compensated and are required to purchase an EZ-Pass Transponder.

Prior to the distribution of a Card, the individual designated to receive a Card shall be required to provide a picture ID (driver's license preferred) of him- or herself, their home phone number, the name of their employer, their employer's address, and their employer's phone number. In addition, each person receiving a Card is required to sign a statement of fact that the Card shall be used only for and during the execution of RMTA contract obligations. Misuse of any Card by an individual shall result in the immediate revocation of Card privileges. Engineer shall notify individual's company and the Contractor of the assumed Card misuse. The Contractor is responsible for returning the misused Card to the Engineer within 48 hours of notification.

In addition, all Cards issued in accordance to this contract shall be returned to the Engineer within 48 hours after completion of work. Failure to return all Cards may result in delays in processing of the final payment.

SPECIAL PROVISION
MAINTENANCE OF TRAFFIC

MAINTENANCE OF TRAFFIC

All maintenance of traffic operations shall be conducted in accordance with the most current versions of the Manual on Uniform Traffic Control Devices (MUTCD), the Virginia Work Area Protection Manual, VDOT Road and Bridge Specification 512.04, and subject to the approval of the Engineer, VDOT, City of Richmond, and the RMTA. The Contractor's signing and MOT shall consider the efforts of adjacent contractors, motorists and pedestrian traffic.

The Contractor shall provide the Engineer no less than 7 calendar days notice before closing any ramp or bridge. A minimum of 10 calendar days notice is required if the request is to close Boulevard Bridge. Approval to close ramp or bridge is subject to review and consideration of event traffic in vicinity.

The Contractor shall be aware that no traffic control devices (such as Group II channeling devices, cones, Arrow Boards, etc.), with the exception of advance warning signs shall be placed on any median, roadway or shoulder prior to the time shown. Advance warning signs may be placed not more than thirty (30) minutes prior to the begin time in this special provision. All traffic control devices including advance warning signs shall be removed, the roadway free of debris, and the lane open to traffic by the end time in this special provision. The Contractor shall be aware that failure to comply with the times set forth in this special provision could result in liquidated damages.

DOWNTOWN EXPRESSWAY & BELTLINE EXPWY. CONNECTOR TO DTE

Eastbound DTE/Northbound Connector: The road is to be clear by 6:00 a.m.
Westbound DTE/Southbound Connector: The road is to be clear by 3:00 p.m.

TIMES OF ALLOWABLE SINGLE LANE CLOSURES:

(1) E.B. DTE / N.B. Connector:
   A. Weekdays – 10:00 a.m. to 6:00 a.m.
   B. Weekends – 10:00 a.m. Friday – 6:00 a.m. Monday

(2) W.B. DTE / S.B. Connector:
   A. Weekdays – 6:00 a.m. to 3:00 p.m. & 7:00 p.m. to 6:00 a.m.
   B. Weekends – 7:00 p.m. Friday – 3:00 p.m. Monday

TIMES OF ALLOWABLE MULTIPLE LANE CLOSURES: Multiple lane closures which restrict open lanes to (1) one in a single direction.

(1) E.B. DTE / N.B. Connector:
   A. Weekdays – 7:00 p.m. to 6:00 a.m.
   B. Weekends – RMTA shall decide allowable times based on individual weekend request by Contractor

(2) W.B. DTE / S.B. Connector:

A. Weekdays – 9:00 p.m. to 6:00 a.m.
B. Weekends – RMTA shall decide allowable times based on individual weekend request by Contractor

NUMBER OF LANES CLOSED (ANY DIRECTION)

- All roadways must have minimum of (1) one lane open at all times. If a full roadway closure is required, the Contractor, the Authority and the Engineer shall schedule a mutually agreeable time. The length of the full closure shall be minimized by the Contractor.

- Where three (3) or more roadway lanes exist, the number of lanes which the Contractor may close is at the Engineer's discretion, based on the geometry of the area where lane/shoulder closures are desired.

NUMBER OF LANES CLOSED W.B DTE TOLL PLAZA

- No more than one lane closure will be permitted at any time for the cash lanes 43- 46.
  Failure to comply will result in liquidation damages as described in the LANE CLOSURE AND MOT VIOLATIONS sections below.

NUMBER OF LANES CLOSED E.B DTE TOLL PLAZA

- There shall be at least three toll lanes open in a single direction at all times.
  Failure to comply will result in liquidation damages as described in the LANE CLOSURE AND MOT VIOLATIONS sections below.

POWHITE PARKWAY

Northbound/Eastbound: The road is to be clear by 6:00 am.
Southbound/Westbound: The road is to be clear by 3:00 pm.

TIMES OF ALLOWABLE SINGLE LANE CLOSURES:

(1) Northbound/Eastbound:

A. Weekdays – 10:00 a.m. to 6:00 a.m.
B. Weekends – 10:00 a.m. Friday – 6:00 a.m. Monday

(2) Southbound/Westbound:

A. Weekdays – 6:00 a.m. to 3:00 p.m. & 7:00 p.m. to 6:00 a.m.
B. Weekends – 7:00 p.m. Friday – 3:00 p.m. Monday

TIMES OF ALLOWABLE MULTIPLE LANE CLOSURES: Lane closures which restrict open lanes to (1) one in a single direction.

(1) Northbound/Eastbound:

A. Weekdays – 9:00 p.m. to 6:00 a.m.

B. Weekends – RMTA shall decide allowable times based on individual weekend request by Contractor

(2) Southbound/Westbound:

A. Weekdays – 11:00 p.m. to 6:00 a.m.
B. Weekends – RMTA shall decide allowable times based on individual weekend request by Contractor

LANE RESTRICTIONS (ANY DIRECTION)

- All of roadway must have minimum of (1) one lane open at all times.
- Where three (3) or more roadway lanes exist, the number of lanes which the Contractor may close is at the Engineer's discretion, based on the geometry of the area where lane/shoulder closures are desired.

BRIDGE RAMP CONNECTIONS TO I-95

Lane closures on Bridges 63 and 66 shall only be permitted at nights between 9 P.M. and 6 A.M. and on weekends between 9 P.M. Friday and 6 A.M. Monday. Closures of Ramp Bridges 64, 65, 67 and 68 shall only be permitted at nights between 10 P.M. and 5 A.M weekdays, and on weekends between 5 A.M. Saturday and 5 A.M. Monday.

There shall be no total closures of the either the eastbound Downtown Expressway (DTE) or westbound DTE permitted; One lane shall be maintained on Bridge 63 and Bridge 66 at all times. In addition, Contractor shall maintain at least one ramp entering and at least one ramp exiting the city at all times; Bridge 64 shall not be permitted to be closed while Bridge 65 is closed and Bridge 67 shall not be permitted to be closed while Bridge 68 is closed.

The Contractor shall provide the Engineer a minimum of 7 calendar days notice before any lane or ramp closures. The Engineer and the Authority reserve the right to restrict dates and times of proposed lane or ramp closures. Contractor shall not be permitted to close any ramps or lanes during events in Downtown Richmond when high traffic volume is expected to enter or exit Downtown.

All lane closures must be coordinated with VDOT, RMTA and the Engineer for final approval of dates and times. Contractor shall notify VDOT Smart Traffic Center at 804-796-4520 to advice of the lane closure status of these bridges.

POWHITE PARKWAY TOLL PLAZAS

TIMES AND NUMBERS OF TOLL LANE CLOSURES (ANY DIRECTION)

No toll lane closures shall be permitted during peak hours. Peak hours are 6:00 a.m. to 10:00 a.m. northbound / eastbound and 3:00 p.m. to 7:00 p.m. weekdays southbound / westbound.

Single toll lane closures shall be permitted as follows:

(1) Northbound/Eastbound:

A. Weekdays – 10:00 a.m. to 5:00 a.m.

(2) Southbound/Westbound:

A. Weekdays – 7:00 p.m. to 3:00 p.m.

Multiple toll lane closures shall be permitted during the hours of 11:00 p.m. to 6:00 a.m. weekdays and throughout weekends, 11 p.m. Friday – 6:00 a.m. Monday. There shall be at least three toll lanes open in a single direction at all times.

The approved hours of single toll lane closures at the Powhite North and Powhite South Toll Plazas may be extended by the Engineer and the Authority based on traffic flow and the operation of the Express Lanes. However, there shall be no extension or modification of the hours at the Downtown Expressway Toll Plaza.

The Contractor shall provide the Engineer no less than 7 calendar days notice before closing any toll lane.

Pick up operation shall commence no later than 30 minutes prior to closing period(s) referenced above.

EXIT AND ENTRANCE RAMP TOLL PLAZAS

TIMES AND NUMBERS OF TOLL LANE CLOSURES (ANY DIRECTION)

No toll lane closures shall be permitted during peak hours. Peak hours are 6:00 a.m. to 10:00 a.m. and 3:00 p.m. to 7:00 p.m. weekdays.

Single toll lane closures shall be permitted during the hours of 10:00 a.m. to 3:00 p.m. and 7:00 p.m. to 11:00 p.m. weekdays.

Multiple toll lane closures shall be permitted during the hours of 11:00 p.m. to 6:00 a.m. weekdays and throughout weekends. There shall be at least one open lane at all Toll Plazas at all times.

If required, any complete ramp closures will be done on weekends only. Closures shall only be permitted between the hours of 7:00 a.m. Saturday and 5:00 a.m. Monday, when all work must be completed and the ramp re-opened to traffic. Use of appropriate maintenance of traffic devices at each closed ramp and a detour plan to redirect traffic is required.

The Contractor shall provide the Engineer no less than 4 calendar days notice before closing any given toll lane. The Contractor shall provide the Engineer no less than 7 calendar days notice before closing any exit or entrance ramp.

Pick up operation shall commence no later than 30 minutes prior to closing period(s) referenced above.

BOULEVARD BRIDGE

Boulevard Bridge is a two-lane bridge carrying traffic in two opposing directions. Traffic in both directions must be maintained at all times. Typically only single lane closures are permitted at any time. A full bridge closure may be permitted under rare circumstances with the approval of the Engineer and the Authority. The Contractor shall submit plans no less than 10 calendar days notice prior for approval. Consideration to traffic volumes and event traffic in the vicinity will be given.

Lane closures shall not be permitted Monday – Friday between the hours of 6:30 am to 9:30 am and 3:00 pm to 7:00 pm, or as directed by the Engineer.

Traffic control shall utilize flaggers and be in accordance with MUTCD and the Virginia Work Area Protection Manual standards. Truck mounted attenuators are prohibited on Boulevard Bridge.

LANE CLOSURE AND MOT VIOLATIONS

The Authority reserves the right to charge liquidated damages for the Contractor's failure to remove a lane or ramp closure by the prescribed time each day. The liquidated damages shall be established as One Thousand Dollars ($1,000) per each fifteen (15) minutes, or a portion of 15 minutes, per lane or ramp, for any closure beyond the limits established above. Assessment of liquidated damages will stop when all maintenance of traffic devices are removed from the roadway and lanes or ramps have been safely reopened. Any liquidated damages assessed in this Special Provision will be in addition to those listed in Section 108.

Active work shall be pursued by the Contractor within one (1) hour from the time a lane or ramp closure is placed. The Authority reserves the right to charge liquidated damages, as determined above, after one (1) hour of non-active work from the time the lane or ramp closure placement is completed. If active work has not started within two (2) hours from the time that the lane closure placement is completed, the Engineer shall require the lane closure to be immediately removed. Assessment of liquidated damages will end when lanes or ramps have been safely reopened or active work is pursued. Active work will be on-site activity as determined by the Engineer and the Authority.

In addition, active work must be on-going at all times while a closure is in place. If active work is stopped for one (1) hour while a closure is in place or a closure is not removed

within one (1) hour of the completion of active work, the Authority reserves the right to charge liquidated damages as stated above.

CERTIFICATION OF PERSONNEL

FHWA regulations provided in 23 CFR Subpart J state "States shall require that personnel involved in the development, design, implementation, operation, inspection, and enforcement of work zone related transportation management and traffic control be trained, appropriate to the job decisions each individual is required to make." In accordance with the FHWA regulation and VDOT regulations, the Contractors foreman, or employee who is directly responsible for placing maintenance of traffic devices, shall be properly trained. The minimum training required for this Contract is the "Basic Work Zone Traffic Control Training" course. This is a one-day course designed by VDOT. For more information on the course, see the following: http://www.vdot.virginia.gov/business/trafficeng-WZS.asp

A trained employee must be on-site at all times during the setting up and removal of traffic control devices. In addition, a trained employee must be on-site at all times when any work inside a work zone requiring traffic control is on-going. If the inspector or engineer observes the Contractor without a trained employee on-site during the setting up, maintenance or removal of the work zone traffic control, the Authority reserves the right to charge liquidated damages at the rate of One Thousand Dollars ($1,000) per day.

RESTRICTED TIME OF WORK AREAS

Portions of the Downtown Expressway and the Beltline Expressway Connection to the Downtown Expressway are adjacent to residential areas. These areas are identified as, but not limited to, the area delineated by 2nd Street to Meadow Street on the Downtown Expressway and the entire Beltline Expressway Connection to the Downtown Expressway. Work in these areas after 11:00 PM shall be restricted. Activities permitted after this time shall include saw-cutting, placement of concrete, and asphalt paving. Any activities that produce unacceptable decibel levels, as determined by the Engineer and the Authority shall not be permitted. Typical activities not permitted after 11:00 PM include, but are not limited to, jack hammering or roto-hammering.

PROTECTION OF PROPERTY

The Contractor shall provide for the Engineer's review and approval the method intended to protect the motoring public from any activity which poses a potential threat to another's property or person (i.e. cars, motorcycles, pedestrians, businesses, etc.).

HOLIDAYS AND SPECIAL EVENTS

The project will be officially shut down for the following holidays during the periods noted:

- Memorial Day: 5/22/15 (Friday) – 5:00 a.m. through 5/26/15 (Tuesday) – 10:00 a.m.
- Independence Day: 7/3/15 (Friday) - 5:00 a.m. through 7/6/15 (Monday) – 5:00 p.m.
- Labor Day: 9/4/15 - 3:30 p.m. through 9/8/15 - 7:00 a.m.
- Thanksgiving: 11/25/15 – 3:30 p.m. through 12/1/15 – 7:00 a.m.
- Christmas: 12/24/15 – 12:00 p.m. through 12/28/15 – 7:00 a.m.
- New Years: 12/30/15 – 12:00 p.m. through 1/4/15 – 7:00 a.m.

The project schedule will be modified to accommodate the following special events:

- UCI Road World Championships Bike Race
  09/18/15 (Friday) – 12:00 p.m. through 09/28/15 (Monday) 12:00 p.m.
- Richmond Folk Festival (tentative schedule)
  10/9/15 (Friday) - 2:00 p.m. through 10/12/15 (Monday) - 7:00 a.m.
- Richmond Marathon (tentative schedule)
  11/14/15 (Saturday) - 7:00 a.m. through 11/15/15 (Sunday) – 7:00 p.m.

The Contractor shall prepare and submit a Maintenance of Traffic (MOT) Plan for review and approval by the Engineer a minimum of 7 calendar days in advance for any lane closure during a special event.

No allowance shall be made for these periods in determining the contract end date.

MEASUREMENT AND PAYMENT

Standard Maintenance of Traffic pay items will be measured and paid as per VDOT Road and Bridge Specification 2007 Section 512.04.

SPECIAL PROVISION
TRIM EXISTING VEGETATION

DESCRIPTION AND LOCATION

This work includes the cutting back of vegetation at specific locations adjacent to the roadway that include, but are not limited to, signs, guardrails, bridges, abutments, junction boxes, electrical services and access paths. This work is to include pruning existing branches, and clearing of vegetation as close to the ground as possible to allow access to structures. It is not anticipated that herbicide spraying will be required for this item.

Work locations shall be as determined by the Engineer.

PROCEDURES

All work shall be in accordance with Section 601 and this Special Provision.

Contractor shall cut back or remove vegetation in areas where vegetation is encroaching structures or obstructing access to structures. Cut back shall be considered as a 10' clearance of foliage from structure as measured in all directions from the structure. For roadways, Contractor shall cut back vegetation where it is encroaching over the existing guardrails. Cut back shall provide a 4' clearance from the foliage to the guardrail or barrier face

All trimmings, dead wood, windfalls, stumps, and rubbish in the trimming areas shall be removed as directed by the Engineer and legally disposed of by the Contractor off site. Contractor will not be permitted under any circumstance to burn debris on RMTA property.

MEASUREMENT AND PAYMENT

Trim Existing Vegetation will be measured in square feet of surface area and will be paid for at the contract unit price per square foot. This price shall include all labor, equipment, materials, incidentals and proper disposal of material off-site for vegetation removal throughout the RMTA Expressway System.

PAY ITEM	PAY UNIT
Trim Existing Vegetation	Square Foot

SPECIAL PROVISION
RIGHT-OF-WAY FENCE

DESCRIPTION

This work shall consist of furnishing, removing, replacing and installing sections of right-of-way fence.

MATERIALS

ITEM	VDOT STANDARD	VDOT SECTION
Right-of-way fence	FE-CL	507
Right-of-way fence (fabric only)	FE-CL	507

MEASUREMENT AND PAYMENT

Right-of-way fence will be measured and paid for in accordance with the **Fence (FE-CL)** item as described in VDOT Section 507.

The Pay Item **Fence (FE-CL Fabric Only)** will be measured in linear feet of installed fence fabric, complete in place, along the top of the fence and will be paid for at the contract unit price per linear foot of fence fabric.

Pay Item	Pay Unit
Fence FE-CL	Linear Foot
Fence FE-CL (Fabric Only)	Linear Foot

SPECIAL PROVISION
HYDRAULIC CEMENT CONCRETE REPAIR

DESCRIPTION

This work shall consist of the repair of deteriorated sections of hydraulic cement concrete on Bridge Decks or other areas as identified by the Engineer. These repairs shall be in accordance with VDOT Spec. 412 for Bridge Decks and VDOT Spec. 509 for Hydraulic Cement Concrete Pavement unless otherwise noted herein.

MATERIALS

Patching repairs will be made using a rapid-cure cement-based patching product, matching the requirements of VDOT Class A4 concrete, modified as necessary to achieve a compressive strength of at least 3,000 psi in a maximum of 8 hours. The product recommended for bridge deck and pavement repairs is Heartland High Performance Volumetric Concrete. Substitute products may be used as approved by the Engineer. All products used must be listed on the most current VDOT Approved Products List. Contractor shall submit proposed product data sheet to Engineer for approval prior to use.

LOCATIONS

Deck spalls and areas of delamination on several bridges have been identified as shown on the following table. An additional table shows approximate bridge joint repair areas. The RMTA reserves the right to delete or add structures and repair locations to the scope of work. The Contractor is responsible to inspect the structure locations prior to bidding. No adjustments shall be made in unit price due to deletion of structure locations from the scope of work.

Deck Spalls / Delaminations	
Bridge #	**Area (sf)**
6	100
11	10
48	56
49	50
51	26
66	50
67	50
68	50
8 SB (Bearing Seat @G5 North Abut.)	6
Miscellaneous	300

Patching at Bridge Joints		
Bridge #	**Location**	**Approximate Repair Area (sf)**
11	N. Abut	24
49	N. Abut	3
	Pier 1	6
	S. Abut	10
50	N. Abut	2
	Pier 1	2
	Pier 2	2
	S. Abut	13
56	Pier 1	15
57	N. Abut	24
	Pier 1	24
	S. Abut	24
58	S. Abut - main	8
	S. Abut - ramp	6
60	S. Abut	12
	Pier 1	24
	N. Abut	12

PROCEDURES

It is the Contractor's responsibility to dispose of the displaced concrete off site according to all applicable federal, state, and local laws.

The Contractor may not utilize the grassy areas adjacent to the Expressway System for construction purposes. If the use of these areas becomes absolutely necessary, the Contractor is to request, in writing, permission to conduct operations in said areas and also accept responsibility for any damage to said areas. Repair to any damaged areas will be prescribed solely by the Engineer.

At locations where bridge deck expansion joint sealant is being repaired or replaced, Contractor shall sound bridge deck two feet from each side of the joint opening. All delaminated concrete shall be removed to a minimum depth of at least ½" or as directed by the Engineer. At locations

where joint sealant will be attached to repair product, Contractor shall certify that joint sealant primer will fully bond to concrete repair product. If any joint sealant does not bond to areas where concrete was repaired, as determined by the Engineer, Contractor shall fully remove sealant and concrete repair product and replace same with comparable product at Contractor's expense and without extension of contract time.

Vehicular traffic will not be permitted on repaired areas until patching compound has attained a compressive strength of 3,000 pounds per square inch.

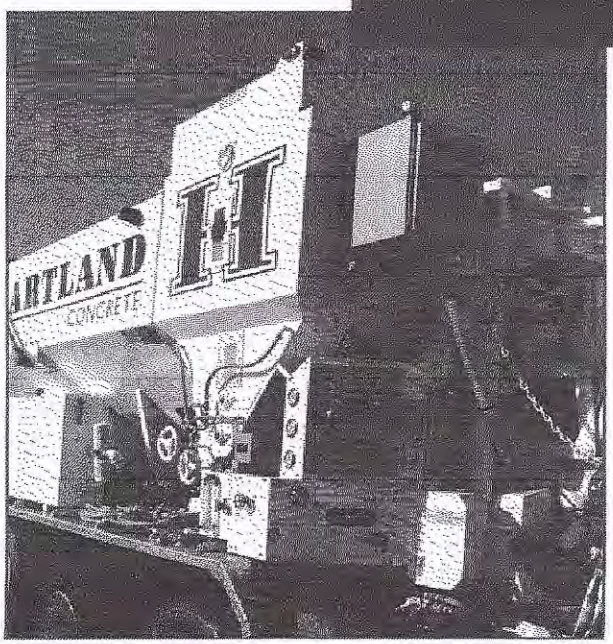
MEASUREMENT AND PAYMENT

The concrete repairs will be measured and paid for in accordance with the items as described in VDOT Spec 412 or 509 with the following exceptions:

Concrete removal and surface preparation shall be incidental to all repair items.

Heartland High Performance Volumetric Concrete

The Heartland High Performance Volumetric Concrete Solution is designed for the ultimate in construction quality, efficiency, flexibility and ease of operation. Heartland High Performance Concrete is friendly to the environment by eliminating waste, mixing the exact amount required for the project at the time it is needed. Heartland High Performance Volumetric Certified operators have ultimate control of the mix design on your project site, allowing us to provide the freshest, highest quality concrete, slurry, flowable fill, grout and shotcrete available for your project.



- Eliminate concrete waste
- Cost effective on–site concrete production
- Minimize crew production costs
- Control delivery schedule
- On–Demand production
- Eliminate "Hot" Loads
- Instantaneous mix design changes
- Integrate Rapid Return to Service Solutions
- Exceeds industry standards
- Independent certified testing

HEARTLAND
CONCRETE

23220 Airpark Drive, Petersburg, VA 23803
Office. 804.518.0361 Fax. 804.518.0363
www.heartlandconcrete.us

Why High Performance Volumetric?

The Heartland High Performance Volumetric Concrete system, provides many unique advantages to projects, owners, contractors and engineers.

First off, the mix design is calculated for a specific strength or certain desirable finishes. The mix is proportioned using known volumes of the component materials in the mix design. All of the ingredients are stored in separate compartments on the unit, as opposed to the traditional method of mixing sand, stone, water and cement at a central batch plant. Other admixtures can be added to produce a specified concrete mix design, on a continuous or intermittent basis, on site where the mix is to be poured.

Once the Heartland High Performance Volumetric Mixer arrives at the project, the ingredients are conveyed into the mixing auger which will continuously meter and combine the correct proportions using a volumetrically calibrated state of the art computer control system. This method of mixing the materials needed on site allows for a much easier clean up and wash out as the only component that needs to be cleaned is the mixing auger. Heartland High Performance Volumetric Mixers eliminate waste by allowing us to provide the exact amount of concrete the customer needs–nothing more. All mix designs can be made from the same High Performance Volumetric Mixer , on-the-fly, as desired saving you time and money.

- Long Distance and Remote Deliveries
- High Security Facilities
- Critical Production and Manufacturing Facilities
- Meet Around the Clock Demand
- No strength loss because of in truck hydration
- Low slump mixes are easily produced
- Meet Requirements of Virtually Any Mix Design
- Adjustable Discharge Rates

HEARTLAND CONCRETE
23220 Airpark Drive, Petersburg, VA 23803
Office. 804.518.0361 Fax. 804.518.0363
www.heartlandconcrete.us

Form TL-27MC (Revised 12/07)

VIRGINIA DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION

STATEMENT OF HYDRAULIC CEMENT CONCRETE MIX DESIGN

Submit one copy to the District Administrator, Virginia Department of Transportation. Approval must be received by the contractor from the Materials Division before work is begun. This mix design is approved for all projects of the Department for the class of concrete shown: Calendar Year 2011 Mix Design No. 4-5206-11

Producer *Heartland Concrete* Plant Location Petersburg Phone (804) 518-0361

Type of Mix: Volumetric X Job Mix _____ Date 7/6/2011

Mix Design - One Cubic Yard (Meter) Based on SSD Condition

Class of Concrete Rapid 658 (E) Slump/(M) Flow 4 - 8 In. _____ mm Air Content 4 - 8 %

Material	Quantities				Source Code	Source Name	Plant/Quarry Location
Cement Type Rapid	658	lbs.		kg.	CTS	CTS	Logansport, In
Min.Admix.) FlyAsh	0	lbs.		kg.			
Min.Admix.2		lbs.		kg.			
Sand (1)	1235	lbs.		kg.	6014	Luck	Carolina Quarry
No. 57 Stone (1)	1774	lbs.		kg.	7007	Luck	Fairfax Quarry
Gr./No. Aggr. (1)		lbs.		kg.			
Water (2) 275 lbs.	33.0	gal.		L.		City	Arlington, VA
Admixture (AE) (3)	Dosage varies	oz.		ml.	66	Sika	Lyndhurst, NJ
Admixture (Retarder) (3)		oz.		ml.			
Admixture (Other) (3)	26.3	oz.		ml.	191	Sika	Lyndhurst, NJ

NOTES: Mix based on CTS Rapid Set manufactures recommendations

(1) The quantities of fine and coarse aggregates necessary to conform to specifications in regard to consistency and workability shall be determined by the method described in "Recommended Practice for Selecting Proportions for Normal Weight Concrete" (ACI-211.1) and the actual quantities used shall not deviate more than plus or minus 5 percent from such quantities.

(2) To provide minimum slump permissible in Table II-17 while satisfying placement and finishing requirements. A separate design shall be submitted for each slump desired.

(3) The quantity of admixture will not be approved or disapproved since it varies considerably and must be initially established by trial and error by the producer or contractor with subsequent adjustment during batching to maintain the desired results within the range specified

Mineral Admixture #1 - sp.gr.	2.09
Mineral Admixture # 2 - sp.gr.	
Sand - Abs.	0.38
Sand - F.M.	2.80
Sand - sp.gr.	2.64
C.A. #1 - Abs.	0.75
C.A. #1 - sp.gr.	2.86
C.A. #1 Unit mass 104 Lbs/C.F. / _____ kg/C.M.	
Aggr. #2 - Abs.	
Aggr. #2 - sp.gr.	
2nd F.A./C.A.-F.M./u.wt. _____ E / _____ M	
Design W/C Ratio	0.42

Contractor _____ (Name of Company) By Mitch Upton (Certified Technician Preparing Form)

Producer Technician's Expiration Date 12/31/2012 (Do Not Use Social Security Number)

FOR DEPARTMENT USE ONLY

Remarks: _____

Copies: District Materials Engineer
Project Inspector
Plant Inspector
Sub- Contractor and / or R.M. Producer

Checked by Trey Simpson

Approved by Harold Dyson PE
District Materials Engineer
7/14/11

Approved tentatively subject to the production of material meeting the requirements of the Specifications and Special Provisions.

SPECIAL PROVISION
SHOTCRETE

DESCRIPTION

This work shall consist of detecting delaminated sections of concrete substructure members, removing delaminating concrete, preparing surfaces in concrete spalls, preparing exposed rebar within spalls and repairing surfaces with pneumatically applied concrete.

MATERIALS

VDOT Specification Section 412 shall apply. Contractor shall provide shotcrete mix design and performance data at least 7 calendar days prior to scheduled work start date to Engineer for approval. Shotcrete shall be Class A with silica fume. Shotcrete mixtures submitted for approval by the Engineer shall be on the VDOT Approved Products List.

PROCEDURE

Contractor shall visually inspect exposed concrete substructure surfaces for suspected delamination. Contractor shall sound out with a hammer or similar implement all surfaces where delamination is suspected. Delaminated sections shall be removed and as directed by the Engineer.

Contractor shall notify the Engineer a minimum of 24 hours prior to the removal of any concrete to allow a proper inspection. Concrete removal shall not commence without an inspection and approval by the Engineer. The Contractor shall provide access to the Engineer to inspect work areas. The Authority reserves the right to restrict payment on any areas where concrete was removed prior to an inspection and approval by the Engineer. If the Engineer does not complete an inspection within 24 hours of notice by the Contractor, the Contractor is permitted to proceed with concrete removal without penalty.

The surface of all Shotcrete repairs shall receive "neat lines", acceptability subject to approval of the Engineer.

LOCATIONS

A table of currently identified spalls, areas of delamination and cracks on a particular element of the referenced structure is presented below. This table is provided for informational purposes only. The estimated quantities below are provided for planning purposes only and are in no way a guarantee of actual quantities. The RMTA reserves the right to delete or add structures and repair locations to the scope of work. The Contractor is responsible to inspect the structure locations prior to bidding. No adjustments shall be made in unit price due to deletion of structure locations from the scope of work. Any work performed at the Diamond shall be paid under standard or elevated rates.

Shotcrete work locations are broken down into three categories:

1. "Standard" - Locations on land less than 30 feet above grade.
2. "Elevated" - Locations on land greater than 30 feet above grade.
3. "Above Water" - Locations above the James River or Kanawha Canal.

Shotcrete (Class A) Standard - Possible Locations

RMTA Bridge #	Element	Estimated Shotcrete Qty. (S.F.)
6	Pier 1	70
	Pier 2	60
9N	E.Abut	70
9S	W.Abut. Wing wall	50
10N	W Abut	35
12	Pier 1	40
	Pier 3	50
51	Pier 2	50
	S. Abut	50
61	W. Abut	105
	E. Abut	50

Shotcrete (Class A) Over Water - Possible Locations

RMTA Bridge #	Element	Estimated Shotcrete Qty. (S.F.)
8S	Pier 1	21
	Pier 2	29
	Pier 3	25
	Pier 4	55
	Pier 5	110
	Pier 6	83
	Pier 7	121
	Pier 8	108
	Pier 9	44
	Pier 12	70
	Pier 13	22

Shotcrete (Class A) Over Water - Possible Locations

RMTA Bridge #	Element	Estimated Shotcrete Qty. (S.F.)
8S	Pier 14	55
	Pier 15	23
	Pier 16	36
	Pier 17	36
68	Pier 12	43
	Pier 13	21
B65	Pier 10	28
	Pier 11	54
BB	Pier 11	51
	Pier 12	21
	Pier 13	56
	Pier 14	22
	Pier 15	32
	Pier 16	47
	Pier 17	37
	Pier 18	22
	Pier 19	53
	Pier 20	35
	Pier 21	33
	Pier 22	32
	Pier 23	90
	Pier 24	29
	Pier 25	30
	Pier 26	60
	Pier 28	23

Shotcrete (Class A) Elevated - Possible Locations		
RMTA Bridge #	Element	Estimated Shotcrete Qty. (S.F.)
63	Pier 17	80
	Pier 18	43
	Pier 19	50
	Pier 20	49
	Pier 21	70
	Pier 22	42
	Pier 17 bearing seat @ G3	42
64	Pier 3	49
	Pier 4	40
	Pier 5	55
	Pier 6	47
	Pier 7	40
	Pier 8 bearing seat @ G1	10
	Pier 9	141
	Pier 10W	26
	Pier 12W	26
	Pier 13W	35
	Pier 14W	32
65	Pier 5	38
	Pier 7	38
	Pier 8	27
	Pier 9	140
	Pier 13	21
	Pier 14	23
	Pier 15	25
	Pier 16	67
	Pier 17	22
	Pier 18	25
	Pier 19	30
	Pier 20	22

Shotcrete (Class A) Elevated - Possible Locations		
RMTA Bridge #	Element	Estimated Shotcrete Qty. (S.F.)
66	Pier 1	38
	Pier 6	28
	Pier 8	28
	Pier 9	25
	Pier 11	23
	Pier 12	32
	Pier 13	27
	Pier 17	72
	Pier 18	28
	Pier 19	34
	Pier 21	38
67	Pier 1	29
	Pier 2	31
	Pier 3	24
	Pier 4	53
	Pier 5	63
	Pier 6	31
	Pier 7	27
	Pier 8	35
	Pier 9	36
	Pier 11	21
	Pier 12E	46
68	Pier 1	35
	Pier 3	34
	Pier 4	23
	Pier 6	21
	Pier 7	130
	Pier 9	24
	Pier 10	25
	Pier 12	43
	Pier 13	21
	Pier 19	25
	Pier 20	29

COORDINATION AND SCHEDULING

Contractor shall coordinate and schedule all Shotcrete Repair activities with the Engineer.

RMTA structures to be repaired may require access from property owned or managed by others (e.g. VDOT or City of Richmond). Contractor shall coordinate and schedule with appropriate owner, party or agency work activities on non-RMTA property. In addition, Contractor shall secure all necessary permits required for site access to perform work. Contractor shall abide by all permits regulations and guidelines issued by the governing agency. Contractor shall provide name and phone number of contact person at each governing agency where a RMTA structure scheduled to be repaired is located (excluding RMTA property) at least five days prior to scheduled work start to the Engineer.

MEASUREMENT AND PAYMENT

Potential Shotcrete work locations are hereby delineated by means of access. Access to "Elevated" shotcrete work locations may require the use of a manlift or significant staging. Access to "Standard" shotcrete work locations may require incidental staging. Access to "Above Water" shotcrete work locations may require a float, staging built up from the River and attached to the bridge, or the use of an under bridge access platform truck. Shotcrete Unit Costs shall be measured and paid for according to the defined Pay Items below:

The Pay Item **Shotcrete (Class A), Elevated** will be measured in square feet of surface to which it is applied and will be paid for at the contract unit price per square foot where the work location is equal to or greater than 30' above grade. This Unit Price shall include all cutting, drilling, hammering, and all other work involved in the complete removal and disposal of concrete and other materials necessary to provide for joining new and old portions of the structure according to this Special Provision or as directed by the Engineer. This Unit Cost shall include all access requirements to perform Shotcrete repairs where the work is at elevations of 30' or more above grade. The Contract Unit Price shall also include dowels or other approved anchor devices, disposing of surplus material, cleaning and repairing reinforcing steel, welded wire fabric and steel and synthetic fibers.

The Pay Item **Shotcrete (Class A), Standard** will be measured in square feet of surface to which it is applied and will be paid for at the contract unit price per square foot. This Unit Price shall include all cutting, drilling, hammering, and all other work involved in the complete removal and disposal of concrete and other materials necessary to provide for joining new and old portions of the structure according to this Special Provision or as directed by the Engineer. This Unit Cost shall include all access requirements to perform Shotcrete repairs at grade and up to 30' above grade. The Contract Unit Price shall also include dowels or other approved anchor devices, disposing of surplus material, cleaning and repairing reinforcing steel, welded wire fabric and steel and synthetic fibers.

The Pay Item **Shotcrete (Class A), Above Water** will be measured in square feet of surface to which it is applied and will be paid for at the contract unit price per square foot. This Unit Price shall include all cutting, drilling, hammering, and all other work involved in the complete removal and disposal of concrete and other materials necessary to provide for joining new and old portions of the structure according to this Special Provision or as directed by the Engineer. This Unit Cost shall include all access requirements to perform Shotcrete repairs above the James River or Kanawha Canal. The Contract Unit Price shall also include dowels or other approved anchor devices, disposing of surplus material, cleaning and repairing reinforcing steel, welded wire fabric and steel and synthetic fibers.

Pay Item	Pay Unit
Shotcrete, Class A, Standard	Square foot
Shotcrete, Class A, Elevated	Square foot
Shotcrete, Class A, Above Water	Square foot

SPECIAL PROVISION
PATCHING ASPHALT PAVEMENT

DESCRIPTION

This work shall consist of repairing sections of cracked and deteriorated SMA or SM asphalt concrete pavement on the RMTA system.

LOCATIONS

Asphalt pavement patch locations shall be determined by the Engineer. Asphalt pavement on the entire RMTA system is subject to asphalt patching.

Asphalt Patching		
Locations	**Pavement Type**	**Area (IN * SY)**
EB DTE (Meadow Bridge to Plaza)	HMA	15
EB DTE (Plaza to Randolph Bridge)	HMA	1
WB DTE (Bridge 63)	HMA	2
WB DTE (Bridge 61)	HMA	1
WB DTE (9th St)	HMA	2
Forrest Hill Ramp (Lanes 18-22)	HMA	2
NB Powhite (Btwn Bridge 9 and 10	HMA	2
NB DTE (Connector to Maplewood)	HMA	12
Storage Yard	HMA	30

MATERIALS

Patching material shall be **SuperPave Mix SM 9.5E** with performance grade binder (76-22 or PG 64E-22) subject to Engineer's approval. The mix design shall be submitted to the Engineer for approval at least 7 calendar days prior to starting work.

PROCEDURES

Patching consists of sawcutting an area designated by the Engineer, then removing the contents inside the area with pneumatic hammers. Once the contents have been removed, the hole is to be compacted and blown out with compressed air. Then the entire surface area, including sides, shall be covered with a tack coat. Surface course asphalt concrete is then to be placed in the hole and then rolled. All holes are to be a minimum 2" deep unless otherwise directed by the Engineer. The asphalt will be placed, in 2" lifts, with each 2" lift being tamped by gasoline-

powered, piston-driven hand tamper with a compacting area of not less than 1 square foot. After the final or only lift of asphalt has been placed, the asphalt is to be rolled with a steel-drum, vibratory roller that has been approved by the Engineer.

MEASUREMENT AND PAYMENT

Asphalt Concrete Patch shall be measured in square yards per inch of depth and will be paid for at the contract unit price per square yard per inch. This price shall include all equipment, labor, material, removal and disposal of materials, and incidentals required to complete the work.

Pay Item	Pay Unit
Asphalt Concrete Patch	Inch x Square Yard

SPECIAL PROVISION
CLEANING DRAINAGE MANHOLE

DESCRIPTION

This work shall consist of cleaning out built up trash and debris from the interior of a drainage manhole. Work shall be performed by manual labor, the use of a vacuum truck or any other method chosen by the Contractor and approved by the Engineer.

The manhole is approximately 50 feet west of the centerline of Portland Place, approximately 900' south of its intersection with Queen Charlotte Road. Approximate Google Maps coordinates are 37.548545,-77.491843. In 2008, the RMTA installed a steel trash separator device inside the manhole. The device is bolted to the sides and bottom of the manhole. The bottom of the device is approximately 23 feet below the top of manhole. The base of the manhole is a 4' x 4' square and the circular riser is 48" diameter. Steps are attached to the side of the manhole spaced approximately 16" on center.

There is a stone access road to the manhole from Portland Place Road.

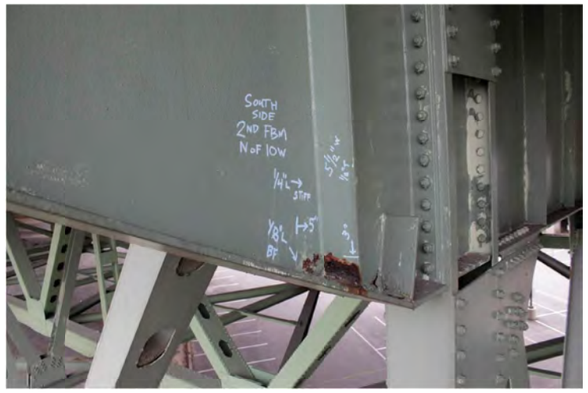
Work shall be performed in accordance with all OSHA confined space and other applicable regulations pertaining to this type.

The Contractor shall clean the manhole twice during this Contract. The first shall be within one month after the Notice To Proceed is issued. The second shall be within one month of the contract completion date. The RMTA reserves the right to delete one of the cleaning occurrences. If only one cleaning is chosen, the cleaning date shall be as agreed upon by the Engineer and the Contractor.

MEASUREMENT AND PAYMENT

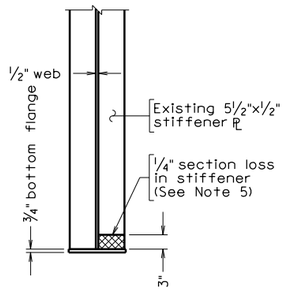
Clean Manhole will be measured in units of each occurrence of cleaning the manhole, and will be paid for at the contract price per each. This price shall include all equipment, labor, incidentals and the proper disposal of trash and debris offsite per each cleaning.

Pay Item	Pay Unit
Clean Manhole	Each

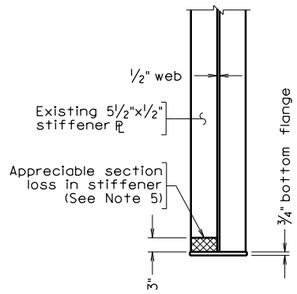


2ND CANTILEVER FLOORBEAM NORTH OF PIER 10W
Looking North

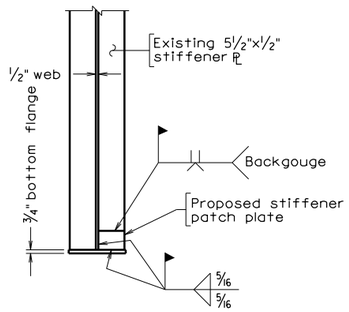
3RD CANTILEVER FLOORBEAM NORTH OF PIER 10W
Looking Southeast



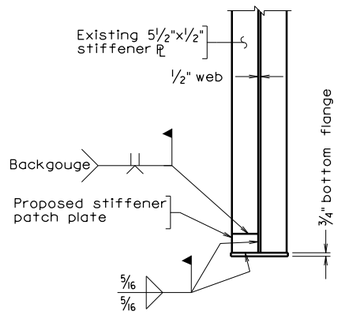
2ND CANTILEVER FLOORBEAM
NORTH OF PIER 10W
EXISTING SECTION
Looking EAST



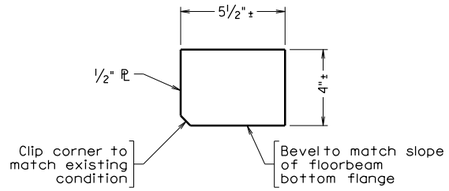
3RD CANTILEVER FLOORBEAM
NORTH OF PIER 10W
EXISTING SECTION
Looking EAST



2ND CANTILEVER FLOORBEAM
NORTH OF PIER 10W
PROPOSED SECTION
Looking EAST



3RD CANTILEVER FLOORBEAM
NORTH OF PIER 10W
PROPOSED SECTION
Looking EAST



PROPOSED STIFFENER PATCH PLATE
Scale: 3" = 1'-0"

Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specifications, current supplemental specifications, contract special provisions and contract.
2. Contractor shall field verify all dimensions and existing plate sizes prior to fabrication.
3. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
4. All existing structural steel is ASTM A36. All new structural steel shall be AASHTO M270, Grade 36.
5. Contractor shall provide temporary bracing for web near the proposed repair prior to cutting stiffener
6. All existing structural steel in the stiffener that is to be removed shall be cut by the air carbon arc process. All weld metal that remains shall be ground flush. Contractor to take special care not to damage the floorbeam flange.
7. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition. The Contractor is required to perform 100% ultrasonic testing for the length of the full penetration welds in the stiffener and the stiffener patch plate to web and flange fillet welds. All full penetration welds in stiffener shall be ground smooth.
8. Details shown are based on As-Built drawings for bridge B64 and B67.
9. This structure resides on a portion of structural elements constructed as part of RMTA Bridge 67. These elements include Piers 10W, 12W and the truss between them.

Suggested Sequence of Construction:

The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

1. Install temporary bracing for the web near the proposed repair.
2. Remove the existing area of stiffener plate called out in the plans by air carbon arc process.
3. Install and weld the stiffener patch plate.
4. Perform all required weld testing.
5. Remove temporary bracing.
6. Clean and paint the repair and adjacent corroded area.

Legend:

- Section loss

Scale: 3/4" = 1'-0" unless otherwise noted

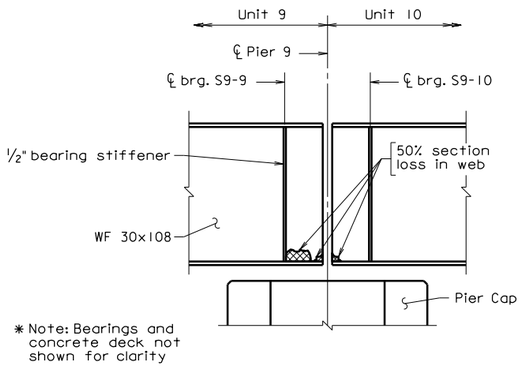
RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE 64
TRUSS SPAN FLOORBEAM
STIFFENER REPAIRS

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	
AS NOTED	April, 2015	1	OF 1

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	MR 2015		SP-1-12

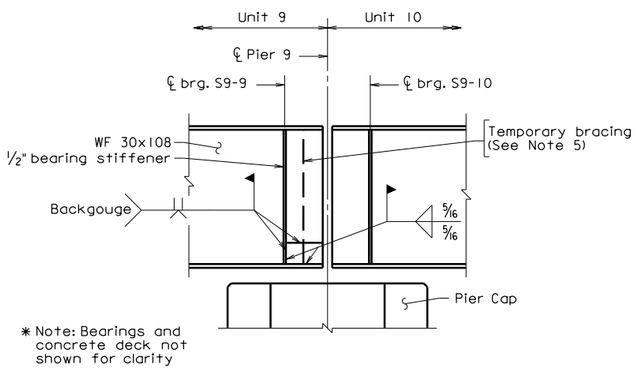


EXISTING PIER 9 ELEVATION
Looking North

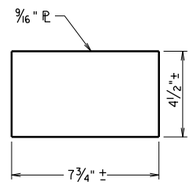
Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specifications, current supplemental specifications, contract special provisions and contract.
2. Contractor shall field verify all dimensions and existing plate sizes prior to fabrication.
3. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
4. All existing structural steel is ASTM A36. All new structural steel shall be AASHTO M270, Grade 36.
5. Contractor shall provide temporary bracing for bottom flange near the proposed repair prior to cutting web.
6. All existing structural steel in the girder web that is to be removed shall be cut by the air carbon arc process. All weld metal that remains shall be ground flush. Contractor to take special care not to damage the stringer flange.
7. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition. The Contractor is required to perform 100% ultrasonic testing for the length of the full penetration welds in the web patch plate to web and the web patch plate to flange fillet welds. All full penetration welds in web shall be ground smooth.

Reference: Bridge B-66 As-built Plans.



PROPOSED PIER 9 ELEVATION
Looking North



PROPOSED WEB PATCH PLATE
Scale: 3" = 1'-0"

Legend:

- Section loss

Suggested Sequence of Construction:

In general, the sequence of construction is as indicated below. Deviations from the sequence of construction shown are acceptable upon review and approval by the Engineer. Live load over the subject stringer shall be removed during repair.

1. Install temporary bracing for the bottom flange near the repair.
2. Remove the existing area of web called out in the plans by the air carbon arc process.
3. Install and weld web patch plate.
4. Perform all required weld testing.
5. Remove temporary bracing.
6. Clean and paint repair area and adjacent corroded portion of flange, web and bearing.

Scale: 3/4" = 1'-0" unless otherwise noted

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

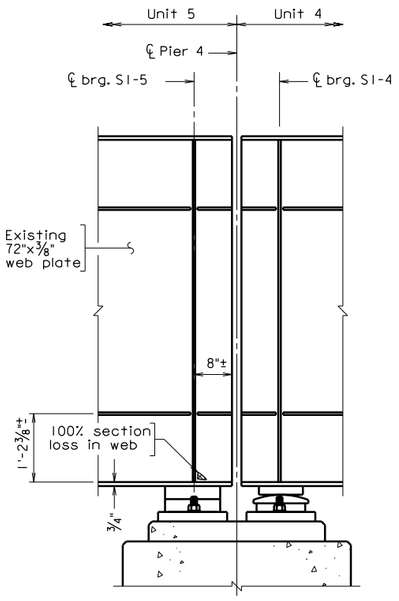
BRIDGE 66
PIER 9
WEB PLATE REPLACEMENT

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

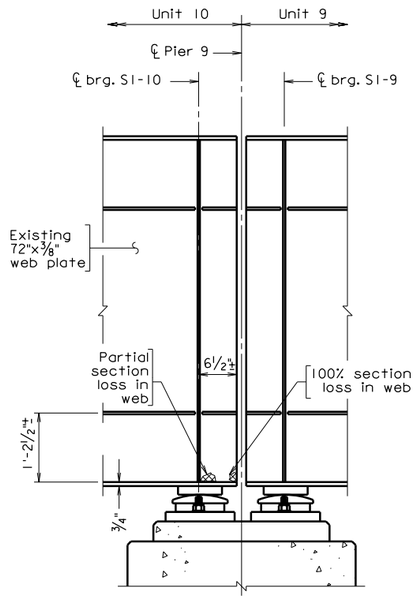
SCALE	DATE	SHEET	OF
AS NOTED	April, 2015	1	1

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	MR 2015		SP-1-13

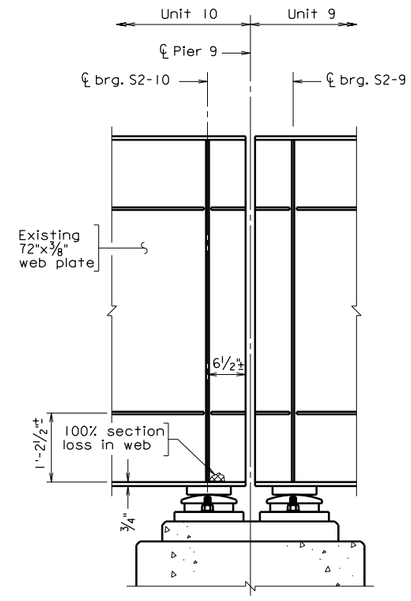
Note: Deck concrete not shown for clarity.



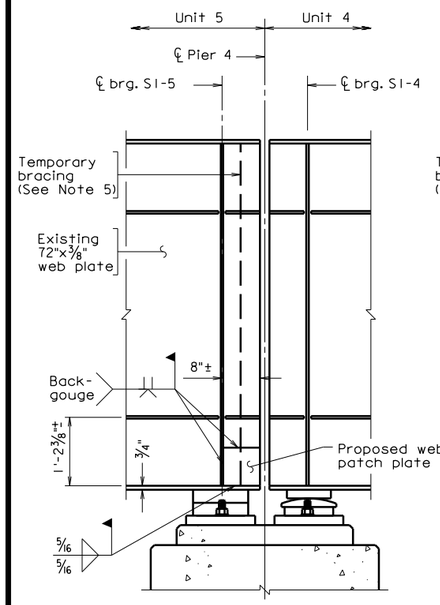
EXISTING PIER 4 ELEVATION
Looking East - See Photo #1



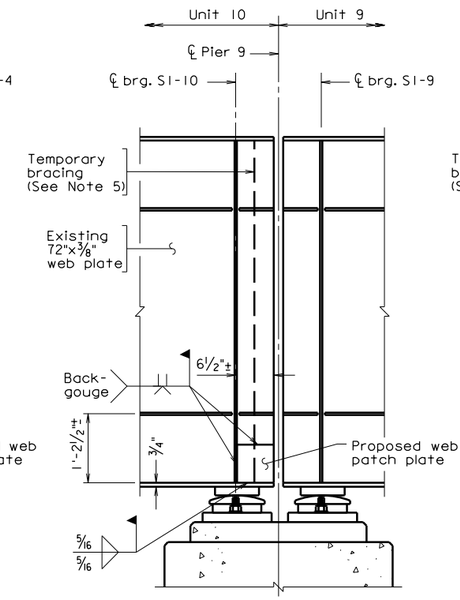
EXISTING PIER 9 ELEVATION
Looking East - See Photo #2



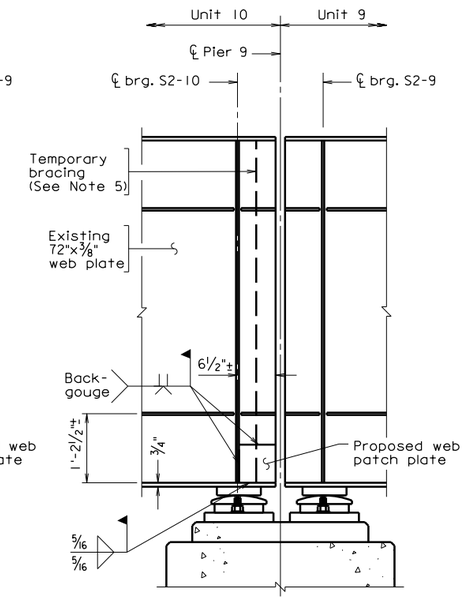
EXISTING PIER 9 ELEVATION
Looking East - See Photo #3



PROPOSED PIER 4 ELEVATION
Looking East



PROPOSED PIER 9 ELEVATION
Looking East

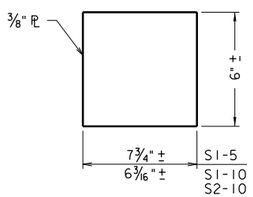


PROPOSED PIER 9 ELEVATION
Looking East

Photo #1

Photo #2

Photo #3



PROPOSED WEB PATCH PLATE FOR S1-5, S1-10 AND S2-10
Scale: 3" = 1'-0"

Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specifications, current supplemental specifications, contract special provisions and contract.
2. Contractor shall field verify all dimensions and existing plate sizes prior to fabrication.
3. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
4. All existing structural steel is ASTM A36. All new structural steel shall be AASHTO M270, Grade 36.
5. Contractor shall provide temporary bracing for bottom flange near the proposed repair prior to cutting web.
6. All existing structural steel in the girder web that is to be removed shall be cut by the air carbon arc process. All weld metal that remains shall be ground flush. Contractor to take special care not to damage the stringer flange.
7. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition. The Contractor is required to perform 100% ultrasonic testing for the length of the full penetration welds in the web patch plate to web and the web patch plate to flange fillet welds. All full penetration welds in web shall be ground smooth.
8. Contractor to take special care not to damage the grounding wires.

Reference: Bridge B-67 As-Built Plans.

Legend:

▨ - Section loss

Suggested Sequence of Construction:

In general, the sequence of construction is as indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer. Live load over subject stringer shall be removed during repair.

1. Install temporary bracing for the bottom flange near the proposed repair.
2. Remove the existing area of web called out in the plans by the air carbon arc process.
3. Install and weld web patch plate.
4. Perform all required weld testing.
5. Remove temporary bracing.
6. Clean and paint repair area.

Scale: ¾" = 1'-0" unless otherwise noted

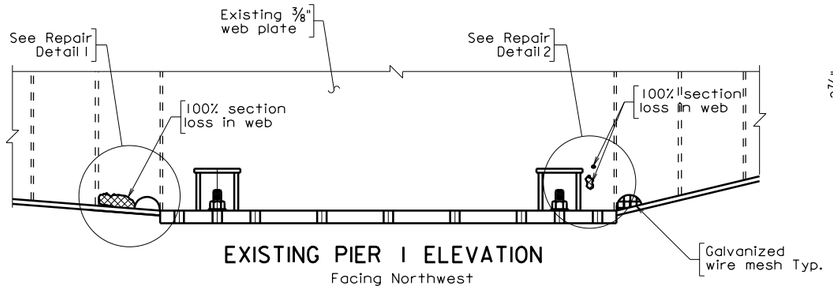
RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE B-67 REPAIR DETAILS
S1 OF UNIT 5 AT PIER 4
S1 AND S2 OF UNIT 10 AT PIER 9

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	
AS NOTED	April, 2015	1	OF 1

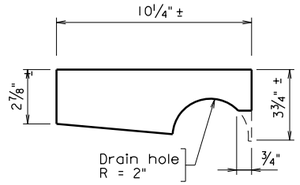
PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	MR 2015		SP-1-14



EXISTING PIER 1 ELEVATION

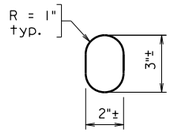
Facing Northwest

Scale 1" = 1'-0"



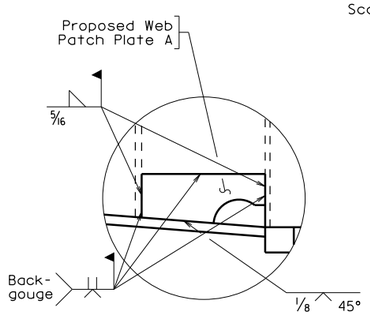
PROPOSED WEB PATCH PLATE A

Scale: 3" = 1'-0"



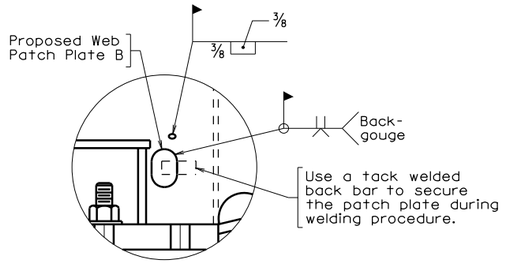
PROPOSED WEB PATCH PLATE B

Scale: 3" = 1'-0"



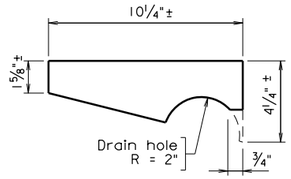
REPAIR DETAIL 1

Not to scale



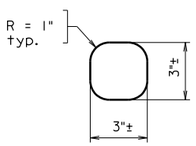
REPAIR DETAIL 2

Not to scale



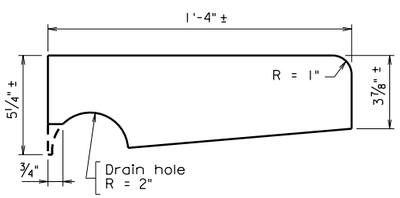
PROPOSED WEB PATCH PLATE C

Scale: 3" = 1'-0"



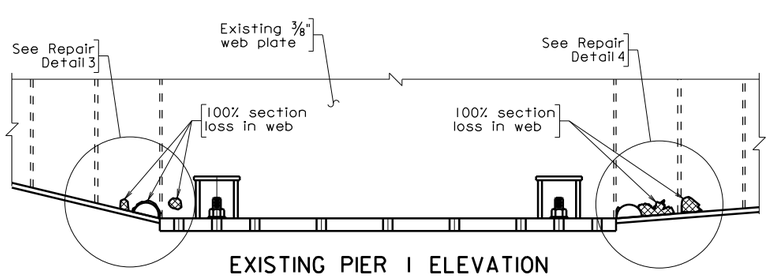
PROPOSED WEB PATCH PLATE D

Scale: 3" = 1'-0"



PROPOSED WEB PATCH PLATE E

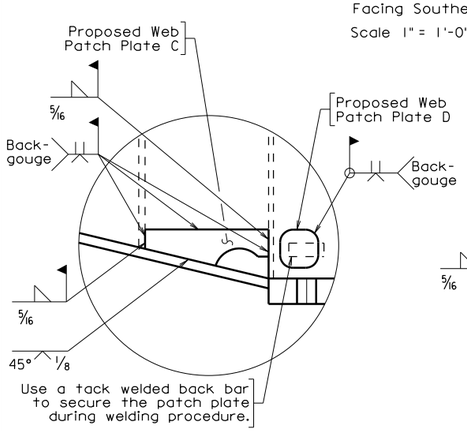
Scale: 3" = 1'-0"



EXISTING PIER 1 ELEVATION

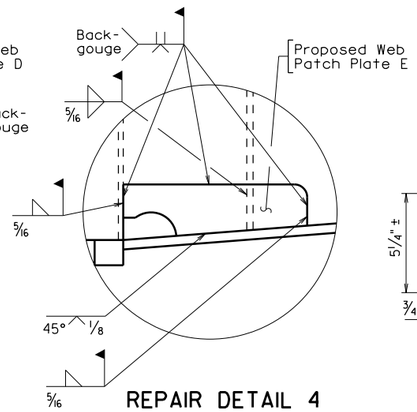
Facing Southeast

Scale 1" = 1'-0"



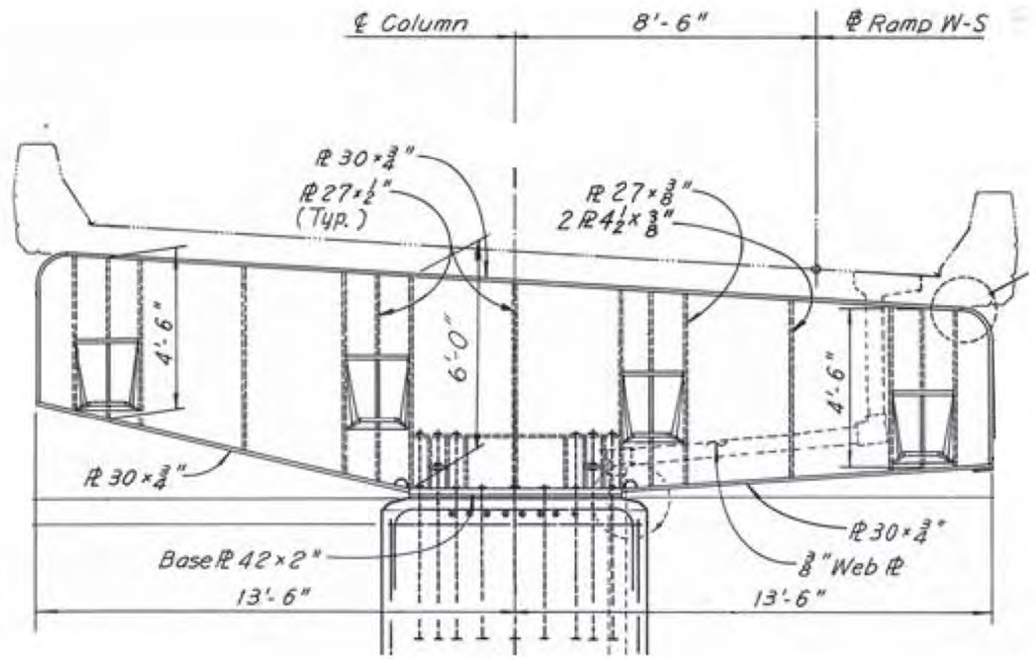
REPAIR DETAIL 3

Not to scale



REPAIR DETAIL 4

Not to scale



TRANSVERSE SECTION FROM AS-BUILT PLANS

Legend:

- Section loss

Suggested Sequence of Construction:

In general, the sequence of construction is as indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

1. Obtain all approvals from CSX Transportation and Engineer
2. Schedule railroad flagger.
3. Remove debris at top of column (northwest side)
4. Remove the existing area of web called out in the plans by the air carbon arc process.
5. Install and weld web patch plate and wire mesh at drain holes.
6. Perform all required weld testing.
7. Clean and paint repair area.

Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specifications, current supplemental specifications, contract special provisions and contract.
2. All work shall be completed in accordance with the construction agreement between CSX Transportation and the Richmond Metropolitan Transportation Authority. Contractor shall abide by and perform all work in accordance with Schedule 1.
3. Contractor shall field verify all dimensions and existing plate sizes prior to fabrication.
4. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
5. All existing structural steel is ASTM A36. All new structural steel shall be AASHTO M270, Grade 36.
6. All existing structural steel in the web that is to be removed shall be cut by the air carbon arc process. All weld metal that remains shall be ground flush. Contractor to take special care not to damage the flange and stiffener plates.
7. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition. The Contractor is required to perform 100% ultrasonic testing for the length of the full penetration welds in the web patch plate to web and the web patch plate to flange fillet welds. All full penetration welds in web shall be ground smooth.

Reference: Bridge B-68 As-Built Plans.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE 68
PIER 1 FULL SECTION LOSS CAP REPAIRS

HNTB

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	OF
AS NOTED	April, 2015	1	1

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	MR 2015		SP-1-15

SPECIAL PROVISION
BRIDGE REPAIRS

DESCRIPTION

This work shall consist of repairing specific steel surfaces of bridge structural steel members. Repair plans for specific bridge rehabilitation details are provided in the Appendix.

All repairs shall be completed in accordance with the plan sheets, the requirements herein, and the 2007 VDOT Road and Bridge Specifications. All welding and testing shall be in accordance with AASHTO/AWS D1.5 Specifications. For each welder, welding operator, or tacker, the Contractor shall submit a copy of the certificate of qualification to the Engineer. The qualification certification shall state the name of the welder, operator, or tacker; name and title of the person who conducted the examination; type of specimens; position of welds; results of tests; and date of the examination. The qualification certification shall be made by an approved agency. Testing shall be in accordance with AASHTO/AWS D1.5 Specifications with a Flaw Severity Class A.

For the Contractor's reference, sheets from the as-built plans for Boulevard Bridge as well as Bridges 8, 9, 60, 64, 66, 67, and 68 are included in the Appendix.

All new structural steel plate(s) shall be shop primed. Subsequent coatings shall be field applied following plate installation. In addition to the repair plate(s), steel surfaces within one foot of repaired area and any other steel surface where the coating system was damaged during these repairs shall be cleaned and coated under this contract. All prime and paint coat application costs shall be the responsibility of the Contractor and shall be incidental to the bridge repair item.

All structural steel shall first be solvent cleaned as per SSPC SP-1 specification to remove contamination. Then the Contractor shall use hand tools to clean surfaces removing loose rust, soot, or other remaining contamination using specification SSPC-2. Lastly, the Contractor shall apply a primer and intermediate coat of Carboline Carbomastic 15 Surface Tolerant Aluminum Mastic Epoxy and a finish Coat of Carboline Carbothane 133 LH as per the recommendation of the manufacturer. Specifications for SSPC-1, SSPC-2, Carbomastic 15, and Carbothane 133 LH are attached to this Special Provision.

The Contractor shall perform 100% ultrasonic testing for the entire length of the full penetration welds used for web repairs at the locations noted on the plans. All testing costs shall be the responsibility of the Contractor and shall be incidental to the bridge repair item.

Prior to any steel fabrication, the Contractor shall field verify all dimensions and assess the working conditions to determine any constructability issues. Should the Contractor have any

issues or questions, they shall be submitted to the Engineer prior to steel fabrication and start of work.

The Kanawha Canal discharges into the James River which is in the Chesapeake Bay Watershed and all work may be subject to the provisions in the Chesapeake Bay Preservation Act; therefore, no debris or wastewater of any type shall be discharged into the canal or river. Furthermore, the Contractor shall be responsible for compliance with all environmental laws and regulations regarding this type of work. All environmental permits as well as submittals, if required, shall be incidental to this work.

The Contractor is advised that the area under the Boulevard Bridge and Bridges 8, 64, 66, 67, and 68 is not owned by RMTA and may require work permits from the City of Richmond.

For lane closures on and underneath these bridges and associated measurement and payment items, the Contractor shall refer to the special provisions for Maintenance of Traffic.

BRIDGE DESCRIPTIONS

Boulevard Bridge

The Boulevard Bridge is a two lane bridge that carries State Route 161 (Westover Hills Boulevard) over the James River as well as Norfolk Southern and CSX Railroads. The superstructure consists of 13 spans of a semi-continuous steel girder floor beam system and 11 spans of a semi-continuous steel deck truss. The bridge is a weight limited structure; the maximum weight of a vehicle is 7500 pounds. The repairs are to be made in the web and vertical stiffener of the west girder in Unit 19, on the west truss lower lateral bracing gusset plate in Unit 12, at the cracked cross brace member in Unit 13, on the east truss PP3 (panel point three) lateral bracing in Unit 15, and shall include replacement of miscellaneous lacing bars and rivets. Lacing bars and other repair locations are difficult to access and include mid-span lower chord and truss member connections.

All steel repairs require that traffic be removed from the lane over the repair area. In addition, if these repairs impact the operation of the railroad, the Contractor must receive construction approval from the appropriate railroad and schedule a railroad flagger before beginning work. The Contractor shall utilize roadway flaggers to control traffic when one lane of the bridge is closed in accordance with the Special Provision for Maintenance of Traffic.

Bridge 8

The southbound structure of the dual bridges carries five lanes of State Route 76 (Powhite Parkway) over the James River, Kanawha Canal, and CSX Railroad. The superstructure is composed of 18 simple spans of multiple steel girders. The repair is to be made at the bottom of the web of Stringer S4 at the south abutment.

Bridge 9

The southbound structure of the dual bridges carries CSX Railroad over NB State Route 76 (Powhite Parkway). The superstructure consists of a single span through steel girder and floor beam system. The repair is to be made in the floor beam web at the east abutment.

Bridge 60

This bridge carries four lanes of 10th Street over EB and WB State Route 195 (Downtown Expressway). The superstructure is composed of two simple spans of multiple steel girders. The repair is to be made at the bearing of the east fascia stringer at the north abutment.

Bridge 64

Bridge 64 is a single lane ramp carrying traffic from SB I-95 to WB State Route 195 (Downtown Expressway); the bridge spans E Cary Street, Dock Street, and CSX Railroad. The superstructure is composed of ten simple spans of multiple steel girders. The repair is to be made at the floor beam stiffener at Pier 1, the floor beam stiffener at Pier 12W, and the second and third cantilever floor beam stiffeners north of Pier 10W. It is noted the portion of the structure between Piers 10W and 12W is included with the plans for Bridge 67.

Bridge 66

This bridge carries two lanes of EB State Route 195 (Downtown Expressway) to the ramp connections to NB and SB I-95 and crosses over S 12th Street, Virginia Street, and S 14th Street. The superstructure consists of 22 simple spans of multiple steel girders. The repair is to be made at the bottom of the web and along the bottom flange of the south fascia at Pier 9.

Bridge 67

Bridge 67 is a single lane bridge ramp carrying traffic from EB State Route 195 (Downtown Expressway) to NB I-95 that crosses Dock Street, E Cary Street, E Main Street, and CSX Railroad. The superstructure is composed of 12 simple spans and three continuous spans of multiple steel girders. The repair is to be made at multiple stringers at Piers 4 and 9.

Bridge 68

This bridge is a single lane ramp carrying traffic from EB State Route 195 (Downtown Expressway) to SB I-95 that crosses the James River and Kanawha Canal as well as CSX and Norfolk Southern Railroads. The superstructure consists of 17 simple spans of multiple steel girders. The repair is to be made at the steel hammerhead cap at Pier 1.

Measurement and Payment

The Pay Items for Bridge Repairs will be paid for at the contract lump sum bid price at each location of bridge steel repairs. This price shall include all materials, labor, tools, equipment, and incidentals necessary to complete the repairs including access to the site, jacking and shoring procedures, removal of existing steel, steel fabrication, cutting, grinding, steel

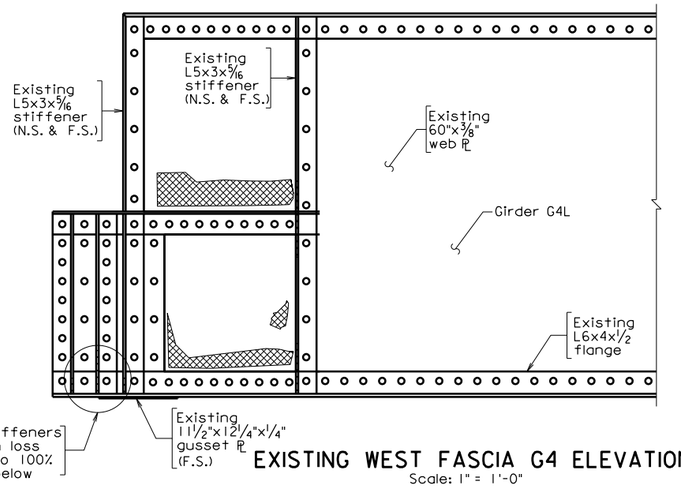
installation, welding, labor, shop and field cleaning, priming and painting, ultrasonic testing (where noted on plans), and shop coating of steel plates.

This price shall also include review fees; submittals; and preparation of all plans, drawings, schedules, and narratives necessary for describing the Contractor's means and methods required to perform the work. This price shall include any requirements to remain in compliance with all environmental laws and regulations for work near or in the James River and Kanawha Canal. Legal offsite disposal of all waste materials shall be incidental to this item.

Any repairs which may require coordination with railroads shall be performed in accordance with the Supplemental Specifications, Section 107.19 Railway-Highway Provisions.

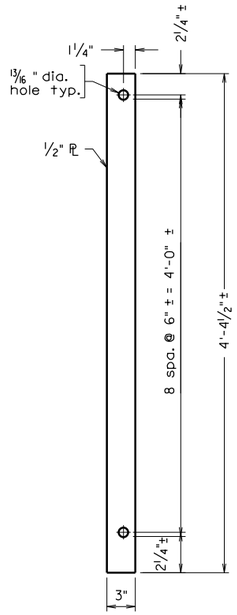
Payment will be made under:

Designation	Description and Location	Pay Unit
Boulevard Bridge	Girder Web Repair and Stiffener Replacement, Unit 19 (Plan Sheet SP-I-5)	Lump Sum
Boulevard Bridge	Truss Lateral Bracing Gusset Plate Replacement, Unit 12 (Plan Sheet SP-I-6)	Lump Sum
Boulevard Bridge	Truss Lateral Bracing Repair, Unit 13 (Plan Sheet SP-I-6)	Lump Sum
Boulevard Bridge	Truss Lateral Bracing Repair, Unit 15 (Plan Sheet SP-I-6)	Lump Sum
Boulevard Bridge	Lacing Bar Fabrication (Plan Sheet SP-I-7)	Lump Sum
Boulevard Bridge	Lacing Bar Replacement Including Bolts, Multiple Undefined Locations (Plan Sheet SP-I-7)	Each
Boulevard Bridge	Rivet Replacement, Multiple Undefined Locations (Plan Sheet SP-I-7)	Lump Sum
Bridge 8	Stringer Web Replacement, South Abutment (Plan Sheet SP-I-8)	Lump Sum
Bridge 9	Floor Beam Web Repair, East Abutment (Plan Sheet SP-I-9)	Lump Sum
Bridge 60	Stringer Bearing Realignment and Stiffener Addition , North Abutment (Plan Sheet SP-I-10)	Lump Sum
Bridge 64	Floor Beam Stiffener Replacement , Pier 1 (Plan Sheet SP-I-11)	Lump Sum
Bridge 64	Floor Beam Stiffener Replacement, Two Repairs at Pier 10W (Plan Sheet SP-I-12)	Lump Sum
Bridge 64	Floor Beam Stiffener Replacement , Pier 12W(Plan Sheet SP-I-11)	Lump Sum
Bridge 66	Stringer Web Replacement, Pier 9 (Plan Sheet SP-I-13)	Lump Sum
Bridge 67	Stringer Web Replacement, Pier 4 (Plan Sheet SP-I-14)	Lump Sum
Bridge 67	Stringer Web Replacement , Two Repairs at Pier 9 (Plan Sheet SP-I-14)	Lump Sum
Bridge 68	Hammerhead Cap Web Replacement, Multiple Locations at Pier 1 (Plan Sheet SP-I-15)	Lump Sum



EXISTING WEST FASCIA G4 ELEVATION

Scale: 1" = 1'-0"



PROPOSED FILL PLATE (X2)

Scale: 1 1/2" = 1'-0"

Notes:

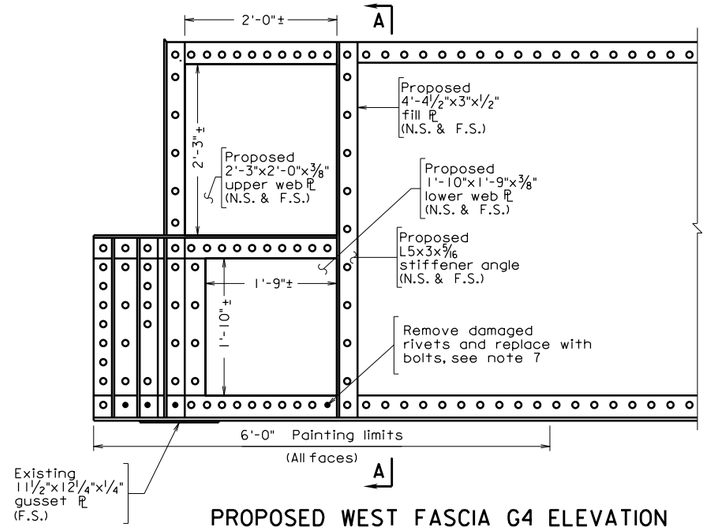
1. Work shall be completed in accordance with the Virginia Department of Transportation Road and Bridge Specification, issued 2007, current supplemental specifications, contract special provisions, and contract.
2. All work shall be completed in accordance with the Construction Agreement between CSX Transportation and RMTA. The Contractor shall abide and perform all work in accordance with Schedule 1.
3. Contractor shall field verify all dimensions and existing plate sizes prior to fabrication.
4. All existing structural steel is Fy = 30 ksi, Fu = 60 ksi. All new structural steel shall be AASHTO M270, grade 36 and shop primed.
5. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition. Only 60 or 70 series electrodes shall be used.
6. The existing plate to be removed shall be cut by the carbon arc process or other method approved. All rough plate edges and weld metal that remain shall be ground smooth.
7. 3/4" diameter A325 high strength bolts shall be used. Threads are to be excluded from plates.
8. Paint primer shall be applied to all areas to be covered by retrofit plates and angles.
9. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
10. Rivets at location of existing vertical stiffener angle shall be removed as shown and replaced with new A325 bolts. The location and spacing of these bolts in the proposed fill plates and stiffener angles shall be to ensure their alignment with existing holes in the girder web.
11. Traffic shall be removed from the girder location during the time of retrofit work.
12. Caulk shall be added around the perimeter of all repairs to ensure no water will infiltrate the area.

Reference: Boulevard Bridge as built plans.

Legend:
N.S. - Near side
F.S. - Far side
- Section loss

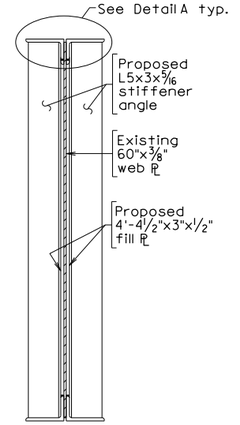
Suggested Sequence of Construction:
In general, the sequence of construction is as indicated below. Deviation from the sequence of construction shown is acceptable upon review and approval by the Engineer.

1. Obtain all approvals from CSX Transporation and Engineer.
2. Schedule Railroad flagger.
3. Remove traffic from girder.
4. Clean and prime repair area of existing web.
5. Drill 13/16 "ø holes in existing web for proposed lower web plates.
6. Install proposed lower web plates. Bolt in place.
7. Drill 13/16 "ø holes in existing web for proposed upper web plates.
8. Install proposed upper web plates. Bolt in place.
9. Remove rivets in existing stiffener angles. Remove stiffener angle.
10. Clean and prime repair area under existing stiffener angles.
11. Install proposed fill plates and stiffener angles. Bolt in place.
12. Remove damaged rivets, prepare faying surfaces and replace with A325 bolts.
13. Remove and replace portions of damaged stiffeners.
14. Prepare, paint and caulk repair area.



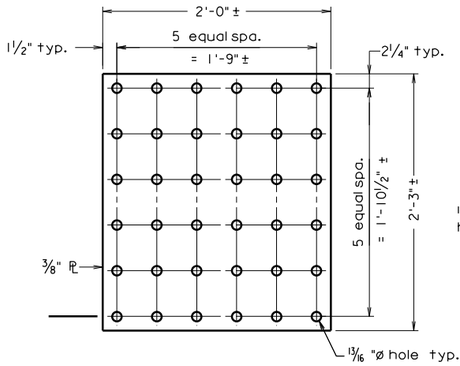
PROPOSED WEST FASCIA G4 ELEVATION

Scale: 1" = 1'-0"



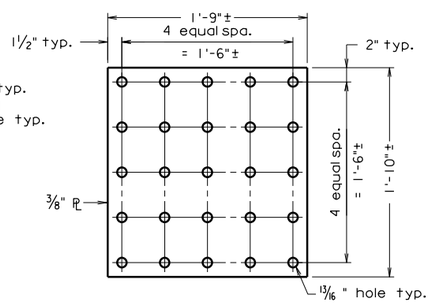
SECTION A-A

Scale: 1" = 1'-0"



PROPOSED UPPER WEB PLATE (X2)

Scale: 1 1/2" = 1'-0"



PROPOSED LOWER WEB PLATE (X2)

Scale: 1 1/2" = 1'-0"

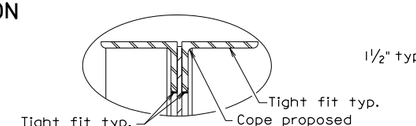
S2 100% section loss
S1 S3 1/8" section loss

Replacement sequence: S2 → S1 → S3

FASCIA STIFFENERS EXISTING CONDITION

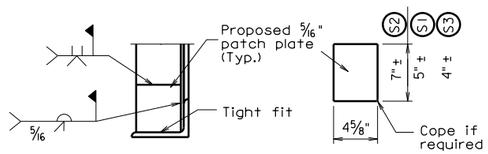
Partial sections shown. Rivets omitted for clarity

Scale: 1 1/2" = 1'-0"



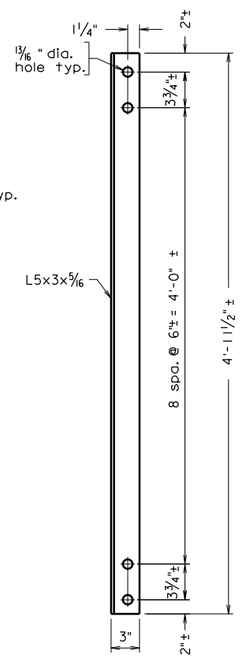
DETAIL A

Not to scale



PROPOSED STIFFENER PATCH REPAIR DETAILS

Scale: 1 1/2" = 1'-0"



PROPOSED STIFFENER ANGLE (X2)

Scale: 1 1/2" = 1'-0"

Richmond Metropolitan Transportation Authority

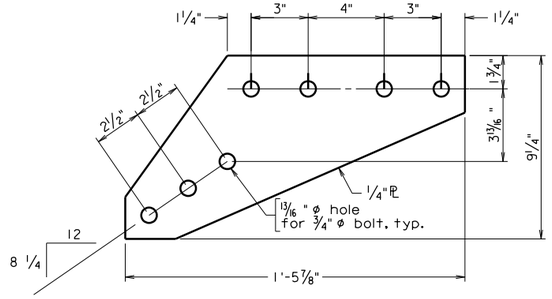
BOULEVARD BRIDGE
WEST FASCIA G4 NORTH OF PIER 25, UNIT 19
SECTION LOSS RETROFIT

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	OF
AS NOTED	2015	1	1

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	MR 2015		SP-1-5

Scale: As shown



UNIT 12
PROPOSED REPLACEMENT GUSSET PLATE

Scale: 3" = 1'-0"
(See note 2)

Suggested Sequence of Construction:

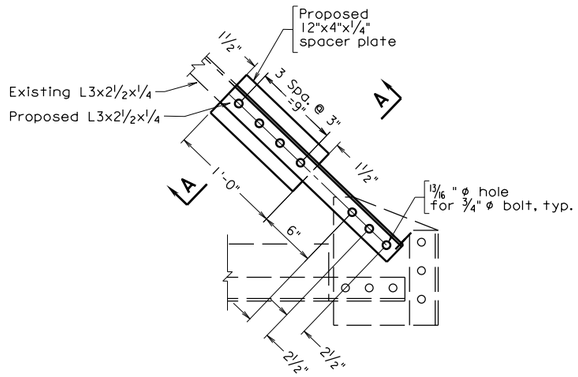
In general, the sequence of construction is as indicated below. Deviation from the sequence of construction shown is acceptable upon review and approval by the Engineer.

1. Temporarily support/tie-off bracing angle end.
2. Remove rivets and existing plate.
3. Clean and prime repair area under existing plate.
4. Install Proposed Replacement Gusset Plate and bolt in place.
5. Remove temporary support/tie-off.
6. Clean and paint repair area.

UNIT 12 WEST TRUSS LOWER LATERAL BRACING GUSSET PLATE

Notes:

1. Work shall be completed in accordance with the Virginia Department of Transportation Road and Bridge Specification, issued 2007, current supplemental specifications, contract special provisions and contract.
2. Contractor shall verify all dimensions of the existing plate, channel and angle, paying particular attention to the geometry, angles and alignment of the member and (if applicable) bolts to be replaced. Field verified dimensions are to be used to determine the final geometry prior to fabrication.
3. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
4. All existing structural steel is Fy=30 ksi, Fu=60 ksi. All new structural steel shall be AASHTO M270, grade 36.
5. All bolts used in the repairs shall be A325 bolts.
6. Contractor shall temporarily support the end of angle affected by the gusset plate replacement.
7. Bolts/rivets may not be removed if forecast wind speeds during the course of the repair are expected to exceed 30mph.
8. Reference: Boulevard Bridge Over James River As-built plans.



UNIT 13
PROPOSED ANGLE REPAIR

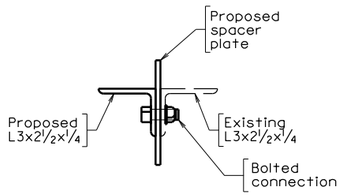
Scale: 1½" = 1'-0"
(opposite face shown in photo)
(See note 2)

Suggested Sequence of Construction:

In general, the sequence of construction is as indicated below. Deviation from the sequence of construction shown is acceptable upon review and approval by the Engineer.

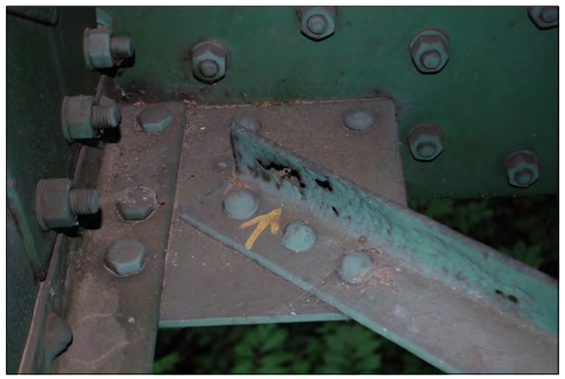
1. Weld repair the crack with a 3/16" single bevel groove weld.
2. Clean and prime repair area.
3. Field drill holes in proposed angle to match gusset plate connection spacing.
4. Remove nuts from bolts but do not remove bolts from connection.
5. Remove and replace one of the three bolts with a longer bolt for the new connection.
6. Repeat Step 5 for the remaining two bolts, removing and replacing one at a time.
7. Fit the proposed angle onto new bolts, install washers and tighten nuts snug.
8. Clamp proposed angle and spacer plate to existing angle.
9. Field drill holes, install and torque bolts.
10. Clean and paint repair area.

UNIT 13 CRACKED ANGLE



SECTION A-A

Scale: 3" = 1'-0"



UNIT 15
LATERAL BRACING ANGLE IN EAST TRUSS PANEL POINT 3

(Repair procedure similar to replacement of cracked angle in Unit 13.)

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BOULEVARD BRIDGE
UNITS 12, 13 AND 15
REPAIRS

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	OF
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PLAN NO.	PROJECT	FILE NO.	SHEET NO.
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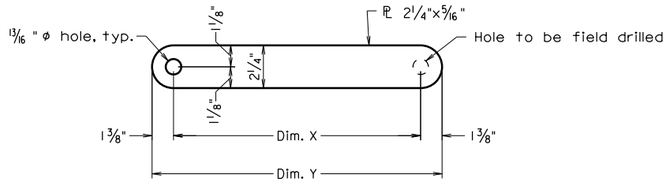

PROPOSED LACING BAR REPLACEMENT

Scale: 3" = 1'-0"

LACING BAR	Dim. X*	Dim. Y*	Fabrication Qty. **	Installation Qty. **	Bolts Qty. **/***
Type "A"	10 3/8"	1'-1 1/8"	15	8	30
Type "B"	1'-1 3/16"	1'-3 15/16"	15	8	30
Type "C"	1'-1"	1'-3 3/4"	15	8	30

* Dimension may vary, field verification required.

** In addition to Lacing Bar Types "A", "B", and "C", Contractor shall provide replacement lacing bars as shown in the photo to the right. Field measurement is necessary before fabrication of lacing bars. Fabrication Qty: 10 bars; Installation Qty: 4 bars; Bolts Qty: 30 bolts

*** In addition to lacing bar replacement the Contractor shall supply and install 50 additional bolts, nuts and washers to replace missing rivets.

TYPICAL PACK RUST BETWEEN LACING BARS AND TRUSS MEMBERS

Notes:

1. Work shall be completed in accordance with the Virginia Department of Transportation Road and Bridge Specification, issued 2007, current supplemental specifications, contract special provisions and contract.
2. Contractor shall verify all dimensions of the existing lacing bars to be replaced, paying particular attention to the alignment of the member and bolts to be replaced. Field verified dimensions are to be used to determine the final geometry prior to fabrication.
3. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
4. All existing structural steel is Fy=30ksi, Fu=60ksi. All new structural steel shall be AASHTO M270, grade 36 and shop primed.
5. 3/4" diameter A325 high strength bolts shall be used in the repairs. Threads are to be excluded from planes.
6. Rivets at location of existing lacing bars to be replaced shall be removed and replaced with new A325 bolts.
7. Contractor shall provide number of bolts shown + 20% spare. (204 bolts)
8. Following completion of installation, all unused lacing bars and bolts shall be transferred to RMTA possession at no additional cost.
9. Reference: Boulevard Bridge Over James River As-built plans.

TYPICAL 100% SECTION LOSS OF LACING BARS AND BATTEN PLATES

TYPICAL SECTION LOSS OF LACING BARS AND MISSING RIVETS ON TRUSS LOWER CHORD

Suggested Sequence of Construction:

In general, the sequence of construction is as indicated below. Deviation from the sequence of construction shown is acceptable upon review and approval by the Engineer.

1. Locate and size lacing bars for replacement.
2. Remove corroded lacing bar and clean the truss member behind it. Note any section loss and report findings to Engineer.
3. Install proposed lacing bar replacment. Bolt in place.
4. Locate missing rivets and replace with A325 bolts.
5. Paint repair area.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BOULEVARD BRIDGE
LACING BAR AND BOLT
REPLACEMENT

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

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AS NOTED	April, 2015	1	1

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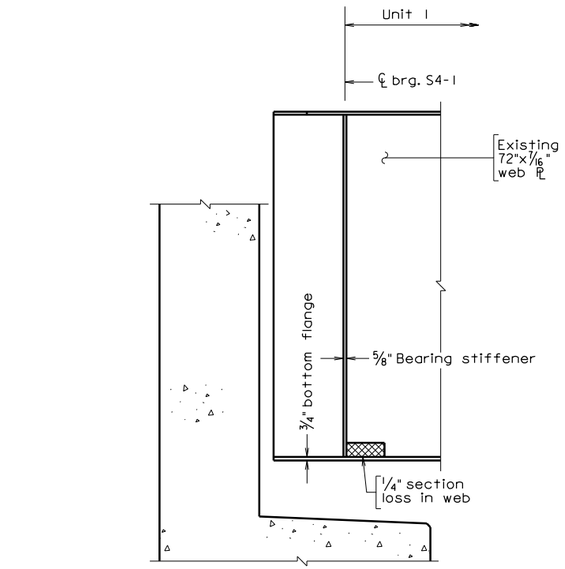
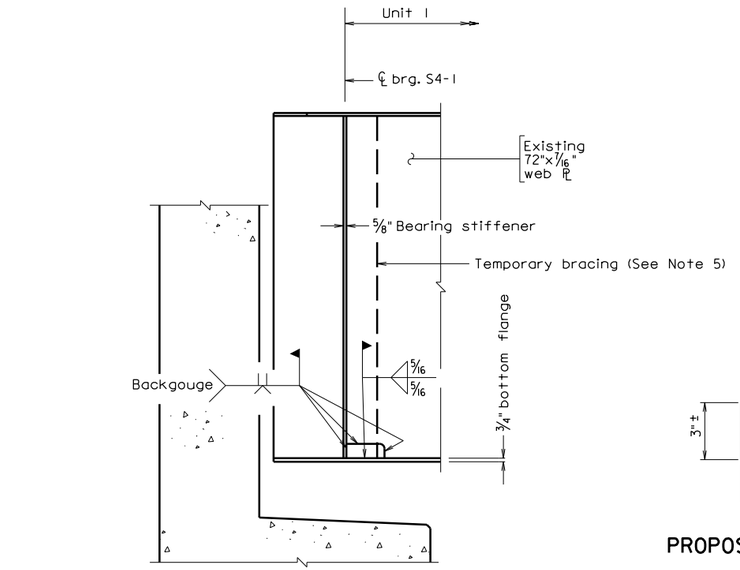


* Note: Bearing, concrete deck and gusset plate not shown for clarity

EXISTING STRINGER S4 AT SOUTH ABUTMENT ELEVATION

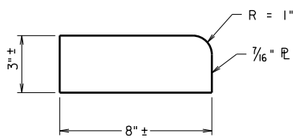
Looking West



* Note: Bearing, concrete deck and gusset plate not shown for clarity

PROPOSED STRINGER S4 AT SOUTH ABUTMENT ELEVATION

Looking West



PROPOSED WEB PATCH PLATE

Scale: 3" = 1'-0"

See Sequence of Construction note 2.

Scale: 3/4" = 1'-0" unless otherwise noted

Notes:

1. Work shall be completed in accordance with the Virginia Department of Transportation Road and Bridge Specification, Issued 2007, current supplemental specifications, contract special provisions and contract.
2. Contractor shall field verify all dimensions and existing plate sizes prior to fabrication.
3. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
4. All existing structural steel is ASTM-A36. All new structural steel shall be AASHTO M270, grade 36.
5. Contractor shall provide temporary bracing for bottom flange near the proposed repair prior to cutting web.
6. All existing structural steel in the girder web that is to be removed shall be cut by the air carbon arc process. All weld metal that remains shall be ground flush. Contractor to take special care not to damage the stringer flange.
7. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition. The Contractor is required to perform 100% ultrasonic testing for the length of the full penetration welds in the web patch plates to web and the web patch plates to flange fillet welds. All full penetration welds in web shall be ground smooth.
8. Bolts as noted may not be removed if forecast wind speeds during the course of the repair are expected to exceed 30 mph.

Reference: Bridge B-8 As-Built Plans

Legend:

- Section loss

Suggested Sequence of Construction:

In general, the sequence of construction is as indicated below. Deviations from the sequence of construction shown are acceptable upon review and approval by the Engineer. Live load over the subject stringer shall be removed during repair.

1. Install temporary bracing for the bottom flange near the proposed repair.
2. Remove the two bolts in gusset plate connection as indicated in the photograph.
3. Remove the existing area of web called out in the plans by the air carbon arc process.
4. Install and weld web patch plate.
5. Reinstall/replace the two bolts at the gusset plate connection.
6. Perform all required weld testing.
7. Remove temporary bracing.
8. Clean and paint repair area.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE 8
SOUTHBOUND POWHITE PKWY
STRINGER 4 WEB REPAIR AT SOUTH ABUTMENT

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

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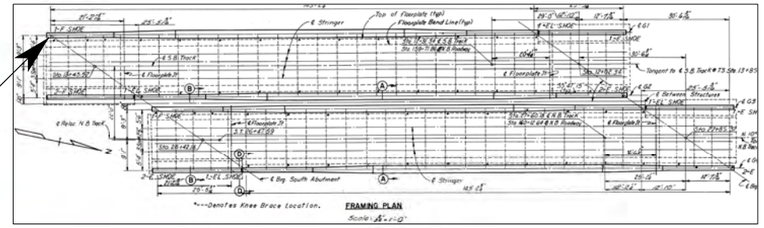
FLOORBEAM WEB CRACK NEAR SOUTH EAST ABUTMENT



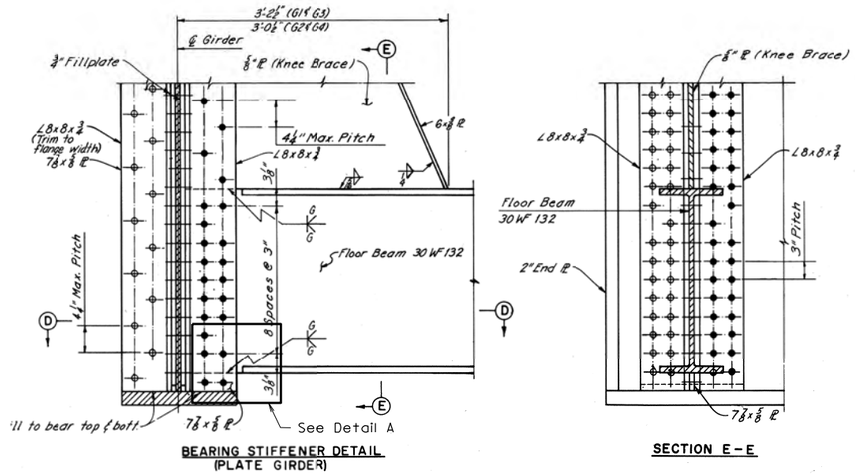
PLAN LOCATION OF DEFECT

MAGNIFIED VIEW OF CRACK LOCATION

Notes:

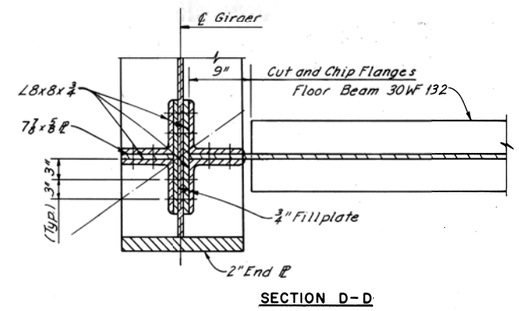
1. Work shall be completed in accordance with the Virginia Department of Transportation Road and Bridge Specification, issued 2007, current supplemental specifications, contract special provisions, and contract.
2. All work shall be completed in accordance with the construction agreement between CSX Transportation and the Richmond Metropolitan Transportation Authority. Contractor shall abide by and perform all work in accordance with Schedule I.
3. Contractor shall verify all dimensions prior to beginning repair work.
4. Existing floorbeam structural steel is ASTM-A36.
5. Contractor to take special care to ensure smooth edges and to not damage any structural steel.
6. The repair area of floor beam and angle shall be cleaned to meet SSPC-SP15, commercial grade power tool cleaning.
7. Contractor shall perform a dye penetrant test to determine end of existing crack location.
8. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition.
9. Contractor shall be required to apply a prime coat and top coat of paint to all new weld material, structural steel and existing coatings damaged during repair work. Type and color of primer shall be approved by the Engineer.
10. The Contrator shall not cross or foul CSX rail tracks or right-of-way.

Reference: Bridge B9 as-built plans.



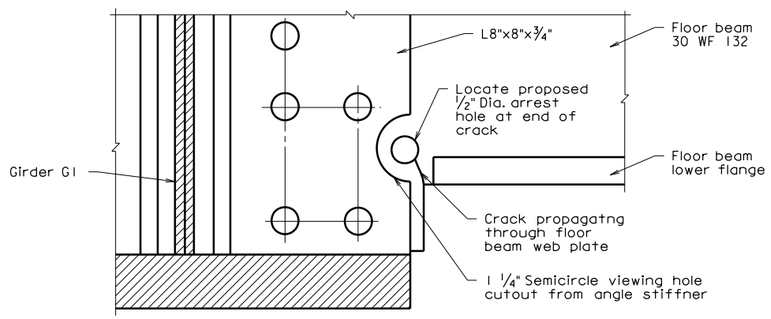
BEARING STIFFENER DETAIL
(PLATE GIRDER)

SECTION E-E



SECTION D-D

THREE PLAN SHEET EXTRACTS
SHOWING CONNECTION DETAIL



DETAIL A: REPAIR PROPOSAL
Photo opposite hand
Not to scale

Suggested Sequence of Construction:

In general, the Sequence of Construction is as indicated below. Deviation from the Sequence of Construction shown is acceptable upon review and approval by the Engineer.

1. SSPC-SP15 clean repair area.
2. Perform dye penetrant test to locate the end of the crack.
3. Core drill (or other method approved) the 1¼" viewing hole through the angle stiffner as shown to expose approximately ⅜" of the floor beam web. Core depth shall not exceed angle plate thickness. Contractor shall notify the Engineer if the viewing hole interferes with the adjacent bolt.
4. Core drill (or other method approved) the ½" Dia. crack arrest hole through the floor beam web as shown. Locate the circumference of the crack arrest hole ⅛" beyond the end of the crack. Arrest hole depth shall not impact far side L8x8x3/4.
5. Order of drilling arrest hole and viewing hole may be reversed.
6. Prime and paint repair area. Apply silicone sealant on adjacent/top side of plate.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE 9
FLOOR BEAM TO GIRDER G1
CRACK PROPAGATION CURTAILMENT

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	OF
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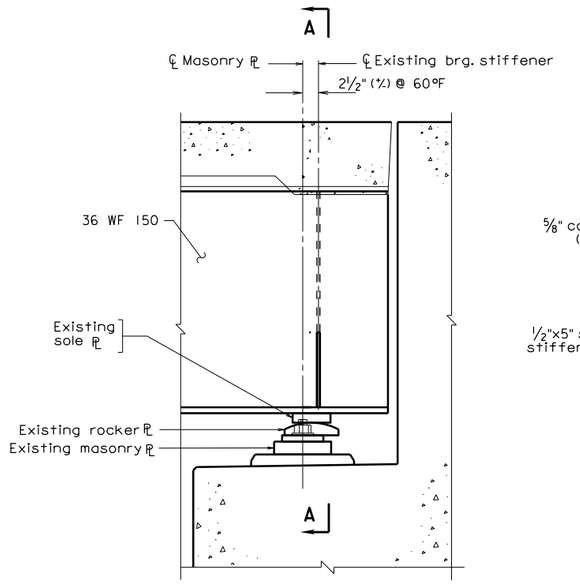
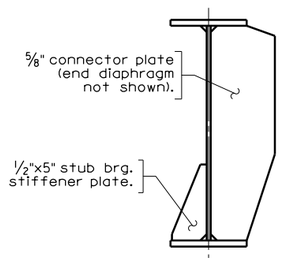


EXISTING NORTH ABUTMENT
EAST FASCIA ELEVATION



SECTION A-A
Stringer shown only

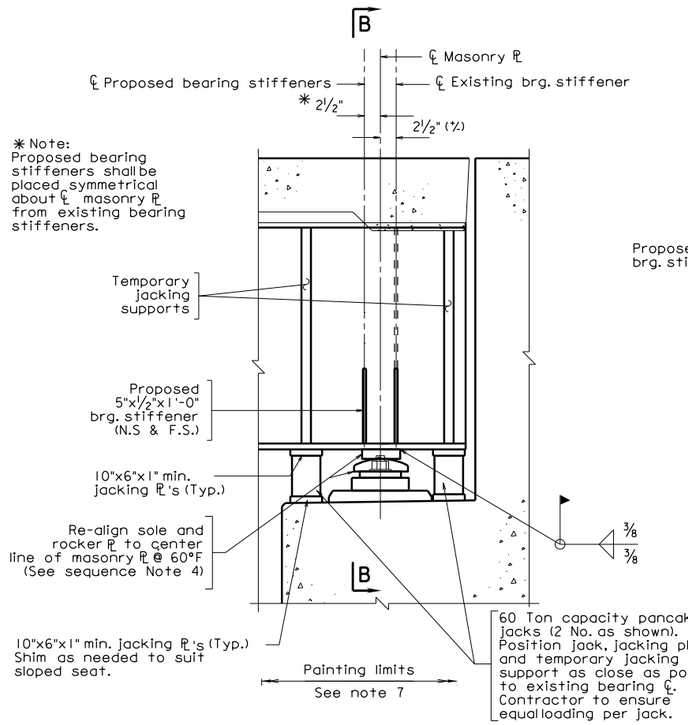
Notes:

1. Work shall be completed in accordance with the Virginia Department of Transportation Road and Bridge Specification, issued 2007, current supplemental specifications, contract special provisions, and contract.
2. Contractor shall field verify all dimensions and existing plate sizes prior to fabrication.
3. The existing structural steel is ASTM-A36. All new structural steel shall be AASHTO M270, grade 36.
4. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition.
5. Contractor is responsible for determining the best location and method for jacking. Contractor shall only apply enough jacking force to relieve the load from the Stringer bearing. A suggested jacking point is shown in these plans; however, an alternate method or location may be submitted by the Contractor. Alternate methods and locations shall be approved by the Engineer. Maximum jacking height is ¼". Live load over subject stringer shall be removed while jacks are in use.
6. Temporary jacking supports shall be installed as close to existing bearing stiffener as possible.
7. Contractor shall be required to apply prime coat of paint to all new structural steel and to areas of existing structural steel where existing coatings were damaged during repair work. Cleaning shall meet SSPC-SP1, SP2 and SP3. Type and color of primer shall be approved by the Engineer. Finish coating shall match the existing paint color.
8. Contractor shall provide shop drawings signed and sealed by a licensed Professional Engineer in the Commonwealth of Virginia for temporary jacking support, jack and jacking procedure.

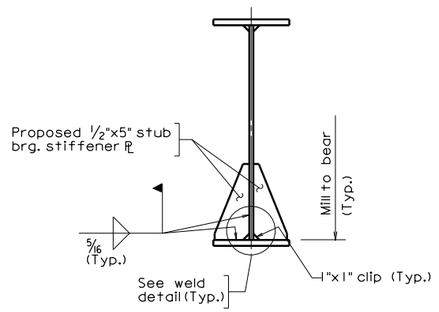
   Service loads on jack:

   Vertical: Dead load = 71kips, Live load + Impact + I = 52kips
   Horizontal: Wind and thermal = 10kips

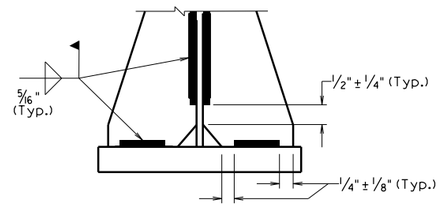
   Jacks shall have minimum 2x capacity of the maximum jacking load.
9. Reference: Bridge B60 original plans.



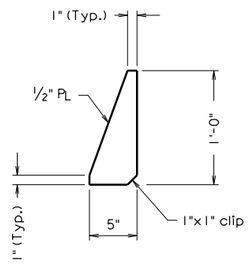
PROPOSED NORTH ABUTMENT
EAST FASCIA ELEVATION



SECTION B-B
New stiffener detail
Stringer shown only



WELD DETAIL
Not to scale



PROPOSED STIFFENER PLATE (x2)
Scale: 1½" = 1'-0"

Legend:

N.S. - Near side
F.S. - Far side

Suggested Sequence of Construction:

In general, the sequence of construction is as indicated below. Deviation from the sequence of construction shown is acceptable upon review and approval by the Engineer. Live load over subject stringer shall be removed while jacks are in use.

1. Install new bearing stiffeners. Weld in place.
2. Install temporary jacking supports and jacking assemblies. Jack fascia stringer from abutment seat and lock-off jacks. Maximum jacking height is 1/4".
3. Grind weld between sole plate and bottom flange.
4. Realign sole plate and rocker plate to centerline of masonry plate at 60°F.
   For temperatures other than 60°F adjustment shall be 1/16" expansion or contraction per 10°F increase or decrease.
   Reweld sole plate to bottom flange.
5. Remove jacking system and temporary jacking support.
6. Clean and paint repair area.

Scale: 1" = 1'-0" unless otherwise noted

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE 60
NORTH ABUTMENT EAST FASCIA STRINGER
BEARING REALIGNMENT

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

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PLAN NO.	PROJECT	FILE NO.	SHEET NO.
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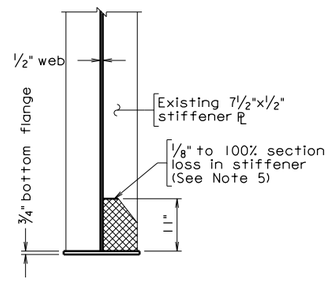
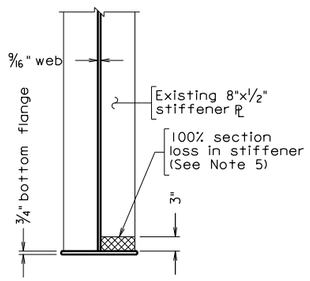
PIER 1
FLOORBEAM 14 STIFFENER PLATE

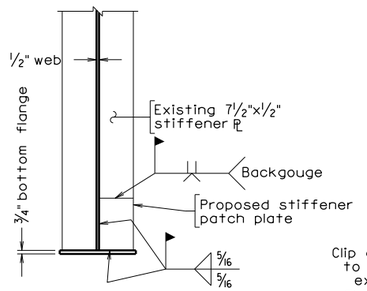
PIER 12W
FLOORBEAM 16 STIFFENER PLATE



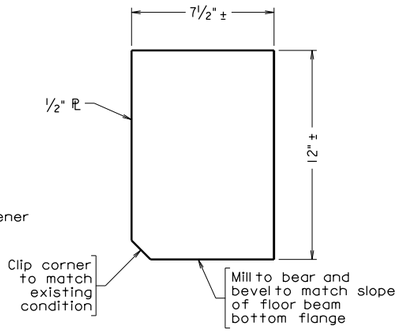
PIER 1
FLOORBEAM 14 STIFFENER PLATE
EXISTING SECTION
Looking EAST



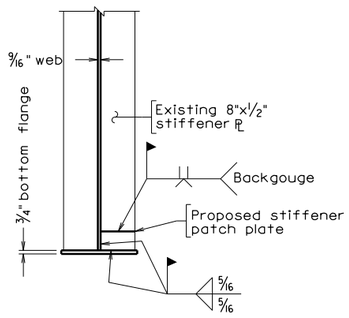
PIER 12W
FLOORBEAM 16 STIFFENER PLATE
EXISTING SECTION
Looking EAST



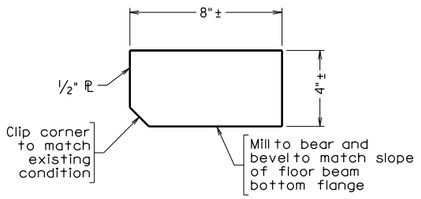
PIER 1
FLOORBEAM 14 STIFFENER PLATE
PROPOSED SECTION
Looking EAST



PIER 1
PROPOSED STIFFENER
PATCH PLATE
Scale: 3" = 1'-0"



PIER 12W
FLOORBEAM 16 STIFFENER PLATE
PROPOSED SECTION
Looking EAST



PIER 12W
PROPOSED STIFFENER PATCH PLATE
Scale: 3" = 1'-0"

Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specifications, current supplemental specifications, contract special provisions and contract.
2. Contractor shall field verify all dimensions and existing plate sizes prior to fabrication.
3. Contractor shall be required to apply a three coat epoxy-urethane system to all new structural steel and to areas of existing structural steel where existing paint coatings are damaged during repair work. Surface preparation shall meet SSPC-SP1, SP2 and SP3. Type and color of coating shall be approved by the Engineer.
4. All existing structural steel is ASTM A36. All new structural steel shall be AASHTO M270, Grade 36.
5. Contractor shall provide temporary bracing for web near the proposed repair prior to cutting stiffener.
6. All existing structural steel in the stiffener that is to be removed shall be cut by the air carbon arc process. All weld metal that remains shall be ground flush. Contractor to take special care not to damage the floorbeam flange.
7. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th Edition. The Contractor is required to perform 100% ultrasonic testing for the length of the full penetration weld in the stiffener and the stiffener patch plate to web and flange fillet welds. All full penetration welds in stiffener shall be ground smooth.
8. Details shown are based on As-Built drawings for bridge B64 and B67.
9. This structure resides on a portion of structural elements constructed as part of RMTA Bridge 67. These elements include Piers 10W, 12W and the truss between them.

Suggested Sequence of Construction:

The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

1. Remove debris on bottom flange.
2. Install temporary bracing for the web near the proposed repair.
3. Remove the existing area of stiffener plate called out in the plans by air carbon arc process.
4. Install and weld the stiffener patch plate.
5. Perform all required weld testing.
6. Remove temporary bracing.
7. Clean and paint the repair area.

Legend:

- Section loss

Scale: ¾" = 1'-0" unless otherwise noted

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE 64
PIER 1 AND 12W
FLOORBEAM STIFFENER REPAIRS

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	OF
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SSPC: The Society for Protective Coatings

SURFACE PREPARATION SPECIFICATION NO. 1

Solvent Cleaning

1. Scope

1.1 This specification covers the requirements for the solvent cleaning of steel surfaces.

2. Definition

2.1 Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants from steel surfaces.

2.2 It is intended that solvent cleaning be used prior to the application of paint and in conjunction with surface preparation methods specified for the removal of rust, mill scale, or paint.

3. Surface Preparation Before and After Solvent Cleaning

3.1 Prior to solvent cleaning, remove foreign matter (other than grease and oil) by one or a combination of the following: brush with stiff fiber or wire brushes, abrade, scrape, or clean with solutions of appropriate cleaners, provided such cleaners are followed by a fresh water rinse.

3.2 After solvent cleaning, remove dirt, dust, and other contaminants from the surface prior to paint application. Acceptable methods include brushing, blow off with clean, dry air, or vacuum cleaning.

4. Methods of Solvent Cleaning

4.1 Remove heavy oil or grease first by scraper. Then remove the remaining oil or grease by any of the following methods:

4.1.1 Wipe or scrub the surface with rags or brushes wetted with solvent. Use clean solvent and clean rags or brushes for the final wiping.

4.1.2 Spray the surface with solvent. Use clean solvent for the final spraying.

4.1.3 Vapor degrease using stabilized chlorinated hydrocarbon solvents.

4.1.4 Immerse completely in a tank or tanks of solvent. For the last immersion, use solvent which does not contain detrimental amounts of contaminant.

4.1.5 Emulsion or alkaline cleaners may be used in place of the methods described. After treatment, wash the surface with fresh water or steam to remove detrimental residues.

4.1.6 Steam clean, using detergents or cleaners and follow by steam or fresh water wash to remove detrimental residues.

5. Inspection

5.1 All work and materials supplied under this standard shall be subject to timely inspection by the purchaser or his authorized representative. The contractor shall correct such work or replace such material as is found defective under this standard. In case of dispute the arbitration or settlement procedure established in the procurement documents, if any, shall be followed. If no arbitration or settlement procedure is established, then a procedure mutually agreeable to purchaser and contractor shall be used.

5.2 The procurement documents covering work or purchase should establish the responsibility for testing and for any required affidavit certifying full compliance with the standard.

6. Disclaimer

6.1 While every precaution is taken to ensure that all information furnished in SSPC standards and specifications is as accurate, complete, and useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, coatings, or methods specified herein, or of the specification or standard itself.

6.2 This specification does not attempt to address problems concerning safety associated with its use. The user of this specification, as well as the user of all products or practices described herein, is responsible for instituting appropriate health and safety practices and for ensuring compliance with all governmental regulations.

7. Note

Notes are not requirements of this specification.

7.1 A Commentary Section is available and contains additional information and data relative to this specification. The Surface Preparation Commentary, SSPC-SP COM, is not part

of this specification. The table below lists the subjects discussed relevant to solvent cleaning and the appropriate Commentary section.

Section Subject	SSPC-SP COM Section
Solvents and Cleaners	5.1.1 through 5.1.3
Steam Cleaning	5.1.4
Threshold Limit Values	5.1.5

SSPC: The Society for Protective Coatings

SURFACE PREPARATION SPECIFICATION NO. 2

Hand Tool Cleaning

1. Scope

1.1 This standard covers the requirements for hand tool cleaning steel surfaces.

2. Definitions

2.1 Hand tool cleaning is a method of preparing steel surfaces by the use of non-power hand tools.

2.2 Hand tool cleaning removes all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife.

2.3 SSPC-VIS 3 or other visual standard of surface preparation agreed upon by the contracting parties may be used to further define the surface (see Note 8.1).

3. Referenced Standards

3.1 The latest issue, revision, or amendment of the referenced standards in effect on the date of invitation to bid shall govern, unless otherwise specified. Standards marked with an asterisk (*) are referenced only in the Notes, which are not requirements of this standard.

3.2 If there is a conflict between the requirements of any of the cited reference standards and this standard, the requirements of this standard shall prevail.

3.3 SSPC SPECIFICATIONS:

SP 1	Solvent Cleaning
***SP 3**	Power Tool Cleaning
***SP 11**	Power Tool Cleaning to Bare Metal
***SP 15**	Commercial Grade Power Tool Cleaning
VIS 3	Guide and Reference Photographs for Steel Surfaces Prepared by for Power- and Hand-Tool Cleaning

3.4 INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO):

***8501-1**	Preparation of steel substrates before application of paints and related products: Visual assessment of surface cleanliness—Part I.

4. Surface Preparation Before and After Hand Tool Cleaning

4.1 Before hand tool cleaning, visible deposits of oil, grease, or other materials that may interfere with coating adhesion shall be removed in accordance with SSPC-SP 1 or other agreed-upon methods. Nonvisible surface contaminants such as soluble salts shall be treated to the extent specified by the procurement documents [project specifications] (see Note 8.2).

4.2 After hand tool cleaning and prior to painting, reclean the surface if it does not conform to this standard.

4.3 After hand tool cleaning and prior to painting, remove dirt, dust, or similar contaminants from the surface. Acceptable methods include brushing, blow off with clean, dry air, or vacuum cleaning.

5. Methods of Hand Tool Cleaning

5.1 Use impact hand tools to remove stratified rust (rust scale).

5.2 Use impact hand tools to remove all weld slag.

5.3 Use hand wire brushing, hand abrading, hand scraping, or other similar non-impact methods to remove all loose mill scale, all loose or non-adherent rust, and all loose paint.

5.4 Regardless of the method used for cleaning, if specified in the procurement documents, feather the edges of remaining old paint so that the repainted surface can have a reasonably smooth appearance.

5.5 If approved by the owner, use power tools or blast cleaning as a substitute cleaning method for this standard.

6. Inspection

6.1 Unless otherwise specified in the procurement documents, the contractor or material supplier is responsible for quality control to assure that the requirements of this document are met. Work and materials supplied under this standard are also subject to inspection by the purchaser or an authorized representative. Materials and work areas shall be accessible to the inspector.

6.2 Conditions not complying with this standard shall be corrected. In the case of a dispute, an arbitration or settlement procedure established in the procurement documents (project specification) shall be followed. If no arbitration or settlement procedure is established, then a procedure mutually agreeable to purchaser and material supplier (or contractor) shall be used.

7. Disclaimer

7.1 While every precaution is taken to ensure that all information furnished in SSPC standards and specifications is as accurate, complete, and useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, coatings, or methods specified herein, or of the specification or standard itself.

7.2 This standard does not attempt to address problems concerning safety associated with its use. The user of this standard, as well as the user of all products or practices described herein, is responsible for instituting appropriate health and safety practices and for ensuring compliance with all governmental regulations.

8. Notes

Notes are not requirements of this standard.

8.1 Note that the use of visual standards in conjunction with this standard is required only when they are specified in the procurement documents (project specification) covering the work. It is recommended, however, that the use of visual standards be made mandatory in the procurement documents.

SSPC-VIS 3 provides a suitable comparative visual standard for SSPC-SP 2, SSPC-SP 3, SSPC-SP 11, and SSPC-SP 15. ISO 8501-1 may also serve as a visual standard.

8.2 The SSPC Surface Preparation Commentary (SSPC-SP COM) contains additional information and data relevant to this specification. The Commentary is non-mandatory and is not part of this specification. The table below lists the subjects discussed relevant to hand tool cleaning and the appropriate Commentary Section.

Subject	Commentary Section
Film Thickness	10
Maintenance Painting	4.2
Rust, Stratified Rust, Pack Rust, and Rust Scale	4.3.1
Visual Standards	11
Weld Spatter	4.4.1

product data carboline®

Carbomastic® 15

Selection & Specification Data

Generic Type
Epoxy mastic

Description
Aluminum-pigmented, low-stress, high-solids mastic with outstanding performance properties and proven field history. Carbomastic 15 was the pioneer mastic coating in a number of industrial markets and today still provides unmatched levels of barrier protection and corrosion resistance over existing finishes and rusted or SSPC-SP2 or SP3-cleaned steel.

Features
- Excellent performance over minimal surface preparation of steel substrates
- Suitable as a topcoat for most tightly adhered existing coatings
- Excellent choice for field touch-up of zinc-rich primers and galvanized steel
- Unique formulation with aluminum flakes provides exceptional barrier protection
- May be applied at 35°F (2°C) when CM 15 FC's part B is utilized
- Suitable for use under insulation on hot surfaces operating up to 300°F(150°C)
- VOC compliant to current AIM regulations

Color
Aluminum (C901); Red (M500)
Color variations within a batch and from batch to batch may occur due to the metallic pigments and variations in application techniques and conditions. Neither product is color matched, nor will they match each other. (15 FC may have a greenish appearance.) *Red (M500) is available for use as a contrasting primer in multiple coat applications, but should always be topcoated.

Primers
Self-priming. May be applied over most tightly adhering coatings as well as inorganic zinc primers. A mist coat may be required to minimize bubbling over inorganic zinc primers.

Topcoats
May be coated with Acrylics, Epoxies, Alkyds, or Polyurethanes depending on exposure and need.

Dry Film Thickness
3.0 - 5.0 mils (76 - 127 microns) per coat
7.0 - 10.0 mils (178 - 254 microns) per coat
Do not exceed 10.0 mils (250 microns) in a single coat.

Solids Content
By Volume 90% +/- 2%

HAPs Values
As supplied: 0.70 lbs/solid gal

Theoretical Coverage Rate
1444 ft^2 at 1 mil (35 m^2/l at 25 microns)
481 ft^2 at 3 mils (12 m^2/l at 75 microns)
144 ft^2 at 10 mils (4 m^2/l at 250 microns)

Allow for loss in mixing and application.

Severe Exposures
Temperature resistance under insulation: Up to 300°F(150°C)
Discoloration is observed above 180°F(82°C) but does not affect performance.

VOC Values
Thinner 10 32 oz/gal: 2.o lbs/gal (242 g/l)
Thinner 236 E 32 oz/gal: 0.7 lbs/gal (88 g/l)
Thinner 76 32 oz/gal: 1.9 lbs/gal (231 g/l)
As Supplied 0.7 lbs/gal (88 g/l)
These are nominal values.

Selection & Specification Data

Substrates & Surface Preparation

General
Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.

Steel
Immersion: SSPC-SP10 with a 2.0-3.0 mil (50-75 micron) surface profile.
Non-Immersion: SSPC-SP6 with a 2.0-3.0 mil (50-75 micron) surface profile for maximum protection. SSPC-SP2, SP3, SP7, or SP12 are also acceptable methods.

Galvanized Steel
For optimum performance sweep blast cleaning is recommended. Consult your Carboline Sales Representative for specific recommendations.

Previously Painted Surfaces
Lightly sand or abrade to roughen and degloss the surface. Existing paint must attain a minimum 3A rating in accordance with ASTM D3359 “X-Scribe” adhesion test.

Performance Data

Test Method	System	Results
ASTM 4060 Taber Abrasion	1 ct. CM15	130 mg loss; 1000 cycles using CS 17 wheel and 1000 gm load,
ASTM B117 Salt Spray	Rusted Steel 1 ct. CM 15	No blistering, rusting, or softening No rust creep from scribe
ASTM D1735 Water Fog	Rusted Steel 1ct CM 15	No blistering or softening, No creep from scribe
ASTM D522 Flexibility	Blasted steel 1 ct. CM15	A) Conical - crack 0.38", actual elongation 48.57% B) Cylindrical- no cracking observed
ASTM G 14 Impact Resistance	A) Blasted Steel 1 ct. CM 15, B) Rusted Steel 1 ct. CM 15	Area Damaged A) 1/4 inch (0.25") B) 1/4 - 9/16 inch (0.44")

Test reports and additional data available upon written request.

Mixing & Thinning

Mixing
Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS.

Thinning
May be thinned up to 32 oz/gal (25%) with thinner #10. Substitute Thinner #72 when non-photochemically reactive thinners are desired or Thinner 236E if exempt thinners are required. To extend pot life, may be thinned up to 32 oz/gal (25%) with Thinner 72. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Ratio
1:1 Ratio (A to B)

Carbomastic® 15

Mixing & Thinning

Pot Life Approximately 30 minutes at 75°F (24°) unthinned. When thinned 12%, pot life will be 45 minutes at 75°F. Pot life ends when coating becomes too viscous to use.

*For CM 15 FC

Application Equipment Guidelines

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Spray Application (General) The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .086" I.D. fluid tip and appropriate air cap.

Airless Spray Pump Ratio: 30:1 (min.)*
GPM Output: 3.0 (min.)
Material Hose: 3/8" I.D. (min.)
Tip Size: .019-.025"
Output PSI: 1900-2100
Filter Size: 60 mesh
*Teflon packings are recommended and available from the pump manufacturer.

Plural Component May be applied by plural component spray equipment. Contact Carboline Technical Service for specific recommendations.

Brush & Roller (General) Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or rerolling. Use clean natural bristle brush or medium nap phenolic core roller. Work coating into all irregularities.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Minimum	50 °F (10 °C)	50 °F (10 °C)	50 °F (10 °C)	0%
Maximum	90 °F (32 °C)	130 °F (54 °C)	100 °F (38 °C)	95%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Final Cure Immersion	Dry to Recoat or Topcoat
50 °F (10 °C)	15 Days	5 Days
60 °F (16 °C)	10 Days	3 Days
75 °F (24 °C)	5 Days	24 Hours
90 °F (32 °C)	3 Days	18 Hours

For CM 15 Dry to Touch is 5 hours at 75°F (24°C). Maximum re-coat/topcoat times are 30 days for epoxies and 90 days for polyurethanes at 75°F (24°C).
These times are based on a 5.0-7.0 mil (125-175 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. If the maximum recoat time is exceeded, the surface must be abraded by sweep blasting prior to the application of additional coats.
Note: This product contains conductive pigments and cannot be holiday tested.

Cleanup & Safety

Cleanup Use Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel.

Packaging, Handling & Storage

Shelf Life Part A & B: Min. 36 months at 75°F (24°C)

*Shelf Life : (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.

Shipping Weight (Approximate) 2 Gallon Kit - 25 lbs (11 kg)
10 Gallon Kit - 124 lbs (56 kg)

Storage Temperature & Humidity 45° - 110°F (7-43°C)
0-90% Relative Humidity

Flash Point (Setaflash) Part A: >200°F (93°C)
Part B: 76°F (24°C)

Storage Store Indoors.

carboline®
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www.carboline.com

An RPM Company

March 2012
0185

Carbothane® 133 LH

carboline®

MARINE/OFFSHORE COATINGS product data

Selection & Specification Data

Generic Type
Aliphatic Acrylic-Polyester Polyurethane

Description
High build, low sheen finish that has excellent resistance to corrosion, chemicals and abrasion. Suitable for application over a number of Carboline primers and intermediates, this material provides very good weathering performance in a broad range of colors.

Features
- Exceeds SSPC Paint 36 specification for a Level 3 urethane
- Outstanding performance properties in both mild and aggressive environments
- High build; suitable for many two-coat systems
- Application by spray, brush or roller
- Indefinite recoatability
- VOC compliant to current AIM regulations
- Low HAPs content

Color
Refer to Carboline Color Guide.

Finish
Satin

Primers
Carbozinc, Carboguard and Carbomastic or other primers as specified. Refer to *Substrates & Surface Preparation*

Topcoats
Carbothane® Clear Coat when required.

Dry Film Thickness
3.0-5.0 mils (75-125 microns) per coat.
Dry film thickness in excess of 7 mils (175 microns) per coat is not recommended.

Solids Content
By Volume: 61% ± 2%

Theoretical Coverage Rate
978 mil ft^2 (24 m^2/l at 25 microns)
244 ft^2 at 4 mils (6 m^2/l at 100 microns)
Allow for loss in mixing and application.

VOC Values
As supplied: 2.7 lbs./gal (324 g/l)
Thinning:
4 oz/gal w/ Thinner 25: 2.8 lbs/gal (340 g/l)
4 oz/gal w/ Thinner 214: 2.8 lbs/gal (339 g/l)
3.6 oz/gal w/ Thinner 230: 2.8 lbs/gal (340 g/l)
4 oz/gal w/ Thinner 215: 2.8 lbs/gal (340 g/l)
13 oz/gal w/ Thinner 225e: 2.7 lbs/gal (324 g/l)
13 oz/gal w/ Thinner 236e: 2.7 lbs/gal (324 g/l)
13 oz/gal w/ Thinner 241: 2.7 lbs/gal (376 g/l)
13 oz/gal w/ Thinner 243e: 2.7 lbs/gal (324 g/l)
4 oz/gal w Thinner 252: 2.9 lbs/gal (341 g/l)
1.5 oz/gal w/ Additive 101: 2.78 lbs/gal (334 g/l)
These are nominal values and may vary slightly with color.

Dry Temp. Resistance
Continuous: 200°F (93°C)
Non-Continuous: 250°F (121°C)
Discoloration and loss of gloss is observed above 200°F (93°C).

Substrates & Surface Preparation

General
Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. Refer to the specific primer's Product Data Sheet for detailed requirements of the specified primer.

Steel
SSPC-SP6 with a 1.5-2.5 mil (37.5-62.5 micron) surface profile for maximum protection. SSPC-SP2 or SP3 as minimum requirement. Prime with specific Carboline primers as recommended by your Carboline sales representative.

Galvanized Steel
Prime with specific Carboline primers as recommended by your Carboline Sales Representative. Refer to the specific primer's Product Data Sheet for substrate preparation requirements.

Aluminum
SSPC-SP1 and prime with appropriate Carboline primer as recommended by your Carboline sales representative.

Previously Painted Surfaces
Lightly sand or abrade to roughen and degloss the surface. Existing paint must attain a minimum 3B rating in accordance with ASTM D3359 "X-Scribe" adhesion test. Prime with specific Carboline primers as recommended by your Carboline sales representative.

Packaging, Handling & Storage

Shipping Weight (Approximate)	1 Gallon Kit 15 lbs (7 kg)	5 Gallon Kit 70 lbs (32 kg)
Flash Point (Setaflash)	Part A: 68°F (20°C) Part B: 28°F (-2°C)	
Storage (General)	Store Indoors.	
Storage Temperature & Humidity	40° -110°F (4°-43°C) 0-90% Relative Humidity	
Shelf Life	Part A: Min. 24 months at 75°F (24°C) Part B: Min. 24 months at 75°F (24°C)	

***Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.**

April 2014 replaces March 2010 8837

Carbothane®133 LH

Application Equipment

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

General Guidelines:

Spray Application (General) This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless Spray

Pump Ratio:	30:1 (min.)*
GPM Output:	3.0 (min.)
Material Hose:	3/8" I.D. (min.)
Tip Size:	.013-.015"
Output PSI:	2100-2300
Filter Size:	60 mesh

*Teflon packings are recommended and available from the pump manufacturer.

Brush & Roller (General) Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or re-rolling. For best results, tie-in within 10 minutes at 75°F (24°C).

Brush Recommended for touch-up only. Use a medium, natural bristle brush.

Roller Use a medium-nap synthetic roller cover with phenolic core.

Mixing & Thinning

Mixing Power mix Part A separately, then combine and power mix. DO NOT MIX PARTIAL KITS.

Ratio 4:1 Ratio (A to B)

	1.0 Gal. Kit	5.0 Gal. Kit
Part A:	1 gal. can (partial filled)	5 gal. can (partial filled)
UC 8800:	1 qt. (parital filled)	1 gallon can

Thinning Thinning not normally required. Carboline Thinner #225e, 236e or 243e may be used to thin this product to minimize HAP and VOC emissions. Thinner #25, #214, #215, or #230 may also be used. See "VOC Values" or Consult Carboline Technical Service for guidance.

Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Pot Life 4 Hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use. MOISTURE CONTAMINATION WILL SHORTEN POT LIFE AND CAUSE GELLATION.

Cleanup & Safety

Cleanup Use Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Cleanup & Safety Cont.

Safety Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.

Caution This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Normal	65°-85°F (18°-29°C)	65°-85°F (18°-29°C)	65°-85°F (18°-29°C)	35-60%
Minimum	40°F (4°C)	40°F (4°C)	40°F (4°C)	0%
Maximum	100°F (38°C)	110°F (43°C)	110°F (43°C)	90%

Industry standards are for substrate temperatures to be 5°F (3°C) above the dew point. This product simply requires the substrate temperature to be above the dew point.

Caution: This Product is moisture sensitive in the liquid stage and until cured. Protect from high humidity, dew and direct moisture contact until cured. Application and/or curing in humidities above maximum, or exposure to moisture from rain or dew may result in a loss of gloss and/or microbubbling of the product.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Handle	Minimum Dry to Recoat*	Final Cure
40°F (4°C)	24 Hours	24 Hours	28 Days
50°F (10°C)	15 Hours	15 Hours	14 Days
75°F (24°C)	6 Hours	6 Hours	7 Days
90°F (32°C)	3 Hours	3 Hours	4 Days

These times are based on a 3.0-5.0 mil (75-125 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.

*Maximum recoat times are indefinite. Surface must be clean and dry.

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April 2014 replaces March 2010

SPECIAL PROVISION
EXPANSION JOINT SEALANT

DESCRIPTION

This work shall include two different methods.

Method I: consists of removing existing partial joint material, sandblasting the joint substrates clean, priming the joint surfaces and installing a flexible two part silicone joint.

Method II: consists of removing joint material for its entire length, including parapet walls, sandblasting the joint substrates clean, applying an epoxy bonder to both the joint substrate and joint seal and to install a low density, closed cell, cross-linked nitrogen blown joint seal.

All repair work, materials, methods and equipment shall be in accordance with the joint sealant manufacturer's recommendations unless specified in this special provision or as directed by the Engineer. Contractor shall obtain the most recent copies of the joint sealant manufacturer's current installation guidelines and equipment recommendations and submit to the Engineer 7 days prior to any joint installation or removal.

Contractor shall refer to Special Provision E: Hydraulic Cement Concrete Repair, and shall be used in conjunction with work contained in this Special Provision.

MATERIALS

Materials shall be delivered to the job site in the manufacturer's original sealed containers. Each container shall be marked with the manufacturer's name and lot number. Materials will be accepted based on the manufacturer's certification, subject to the storage and handling requirements of the manufacturer.

Backer rod shall be a round, flexible, continuous-length, non-absorbent, non-gassing, non-staining and non-shrinking material extruded from a closed-cell polyolefin or equivalent that is compatible with the joint sealant and approved for use by the sealant manufacturer.

For Method I: Joint Sealant Repairs shall be the Dow Corning 902 Rapid Cure Silicone (RCS) or Engineer approved equal.

Wherever the Dow Corning 902 RCS is to be applied, the primer shall be the recommended primer listed in the Dow Corning Brand Silicone Pavement Sealants document for the type of substrate. Mixing and application apparatus utilized for sealant application must be as recommended by the manufacturer.

For Method II: Joint Sealant Replacement shall be the Wabo Evazote UV seal or Engineer approved equal.

Wherever the Wabo Evazote UV seal is to be applied, the epoxy bonder shall be the recommended epoxy bonder listed in the *Watson Bowman ACME* document for the type of seal. Mixing and application apparatus utilized for sealant application must be as recommended by the manufacturer.

LOCATION

A table of currently identified Joint Sealant Replacements is presented below. This table is provided for informational purposes only. The estimated quantities below are provided for planning purposes only and are in no way a guarantee of actual quantities. The RMTA reserves the right to add or delete structures and repair/replacement locations to the scope of work. The Contractor is responsible to inspect the structure locations prior to bidding. No adjustments in unit price shall be made as a result of the addition or deletion of work locations from the scope of work.

In addition to the Joint Sealant Replacement locations identified below, there are additional areas that will require partial removal and repair of the existing Joint Sealant Material. Locations for Joint Sealant Repair will be identified by the Engineer.

JOINT SEALANT REPLACEMENT TABLE				
Bridge #	Description	Location	Length (ft)	Width (in)
11	NB Powhite over DTE Connector	S. Abut	24	2
48	Harrison St. Over DTE	Abutment	96	2 1/2
49	Cherry St. over DTE	S. Abut	45	2 1/2
50	Laurel St. over DTE	S. Abut	45	2
55	3rd St. over DTE	S. Abut	45	2 3/4
56	4th St. over DTE	Pier 1	45	2
57	5th St. over DTE	S. Abut	60	1 5/8
		N. Abut	60	1 5/8
		Pier 1	60	1 5/8
58	7th St. over DTE	N. Abut	60	2 3/16
		S.Abut - main	30	2 3/16
		S.Abut - ramp	30	1 7/8
60	10th St. over DTE	S.Abut	60	2 5/8
		N. Abut	60	2 5/8
		Pier 1	60	2 5/8

JOINT SEALANT REPAIR TABLE				
Bridge #	Description	Location	Length (ft)	Width (in)
49	Cherry St. over DTE	N. Abut	5	2 1/2
		Pier 1	6	2 1/2
50	Laurel St. over DTE	N. Abut	5	2
		Pier 1	5	1 5/8
		Pier 2	2	1 5/8
55	3rd St. over DTE	N. Abut	7	2 3/4
		Pier 1	6	1 5/8
58	7th St. over DTE	Pier 1	10	1 1/2

COORDINATION AND SCHEDULING

Contractor shall refer to Special Provision B: Maintenance of Traffic for details on scheduling restrictions.

Contractor is advised that joint sealant replacement/repair work on RMTA bridges may require permits from the City of Richmond. Contractor shall secure all permits required by the City of Richmond necessary to perform all joint replacement tasks, including Work in Street permits, and submit to the Engineer for approval, prior to performing any joint replacement activities.

Contractor shall provide the necessary prior notification of scheduled work start required by the City of Richmond to the appropriate City of Richmond divisions. In addition, Contractor shall provide a minimum of (7) calendar days notice to the Engineer and the City of Richmond Department of Traffic Engineering prior to any lane or bridge closure.

In order to minimize disruptions to local traffic, Contractor may be directed by City of Richmond and the Engineer to perform joint replacement activities at night or on weekends. In addition to abiding by the MOT requirements detailed in other sections of the Contract documents, Contractor shall abide by the City of Richmond's traffic control requirements including directives concerning total or partial lane closures.

PROCEDURES

It is the Contractor's responsibility to field measure the openings at each joint location:

Method I:

Limits of repair locations will be directed by the Engineer. The Contractor shall follow the Manufacturer's recommendations and the *Installation Guidelines and Equipment Regulations Dow Corning 902 RCS Joint Sealant* document for installation of the Joint Sealant Material. All Manufacturer's recommendations shall be submitted to the Engineer for approval (7) days prior to initial installation. The Contractor shall remove partial seal and sealant from transverse joint and parapet joint if present. The exposed substrate shall be sandblasted thoroughly, removing all visible residue and contaminants to assure a good bonding surface. Contractor is hereby advised that sandblasting shall be the only cleaning procedure allowed, wire brushing will not be allowed. The steel substrate, if present, shall be sandblasted to "near white" SSPC – SP10. All dust and debris shall be blown out with moisture-free and oil-free properly trapped compressed air immediately prior to application of primer.
Joints shall be inspected and approved by the Engineer prior to placing the sealant. Personnel installing the joint sealant must be skilled and properly trained.
Installation technician shall ensure that both sealant components dispense and mix uniformly resulting in a uniform color. Sealed joints displaying non-uniform colored sealant or sealants displaying color "streaks" shall be completely removed, the joint surfaces completely reworked and new uniformly colored sealant installed at no additional cost to the Authority, to the approval of the Engineer, and without extension of contract time.

Method II:

Measurements will be taken at each location in accordance with the manufacturer's guidelines. Seal material should be sized 25% larger than the joint opening at near neutral but never less than 10% oversized or greater than 35% oversized. Joint variations: if a joint opening is not uniform, the limits of the joint opening for the specified seal size are as follows:

Maximum limit for increase in joint opening is 8%.
Maximum limit for decrease in joint opening is 13%.

Contractor shall be aware that measurement taken during this stage will not be used for payment. The procedures for taking measurements for payment are described below.

The Contractor shall follow the Manufacturer's recommendations for installation of the Joint Sealant Material and submit to the Engineer for approval (7) calendar days prior to initial installation. The Contractor shall completely remove the old seal and sealant from transverse joint and parapet joint if present. The exposed substrate shall be sandblasted thoroughly, removing all visible residue and contaminants to assure a good bonding surface. Wire brushing will not be allowed. The concrete substrate, if present, shall be sandblasted until clean, sound, free of contaminants and to "Near White" SSPC–SP10. All dust and debris shall be blown out with moisture-free and oil-free compressed air immediately prior to application of the epoxy bonder.

PROJECT CLEANUP

All of the existing joint sealant removed, sandblasting debris, containers, boxes, packages, wrappers, etc. generated under this project shall be disposed of properly off site.

Sandblasting media shall be properly cleaned and removed from area below bridge. Failure to properly clean media from below the bridge to the approval of the Engineer will result in a delay of payment for work completed.

MEASUREMENT AND PAYMENT

Joint widths are to be measured just prior to primer application and recorded. Widths shall be measured at three locations on the bridge deck and the average of the three measurements shall be used for payment.

Measurement and Payment of **Joint Sealant Repair** (Method I) shall be per Inch width x Linear Foot of joint for each specified joint width. Payment shall include removing and disposing of a portion of the existing sealant, sandblasting and disposing of the sandblast media, and furnishing and installing the primer, backer rod and joint sealant in accordance with the sealant manufacturer's guidelines.

Measurement and Payment of **Joint Sealant Replacement** (Method II) shall be per Linear Foot of joint for each specified joint width range. Payment shall include removing and disposing of the existing sealant, sandblasting and disposing of the sandblast media, and furnishing and installing the epoxy bonder and joint sealant in accordance with the sealant manufacturer's guidelines.

Payment will be made under:

Pay Item	Pay Unit
Joint Sealant Repair	In x Linear Foot
Joint Sealant Replacement (0" to 1 -15/16" width)	Linear Foot
Joint Sealant Replacement (2" to 2-15/16" width)	Linear Foot
Joint Sealant Replacement (3" and greater width)	Linear Foot

SPECIAL PROVISION
REPAIRING ASPHALT CONCRETE PAVEMENT CRACKS

DESCRIPTION

This work includes repairing pavement cracks in asphalt pavement. The repair consists primarily of filling the joint with hot poured liquid asphalt and applying a detack liquid over top to remove surface tack.

LOCATIONS

A table of currently identified locations of Asphalt Concrete Pavement Cracks is presented below. This table is provided for informational purposes only. The estimated quantities below are provided for planning purposes only and are in no way a guarantee of actual quantities. The RMTA reserves the right to add or delete locations to the scope of work. The Contractor is responsible to inspect these locations prior to bidding. No adjustments in unit price shall be made as a result of the addition or deletion of work locations from the scope of work.

Asphalt Concrete Pavement Cracks	
Location	**Area (lf)**
Downtown Expressway	15,000
Downtown Expressway Connector	9,000
Powhite Parkway	12,000
Beltline Expressway Connector	4,000
Boulevard Bridge	5,000

MATERIALS

Asphalt shall conform to VDOT Spec. Section 210. Detack shall be manufactured by Crafco or Engineer approved equal.

Contractor shall submit product data or information sheet to the Engineer for review a minimum of 7 calendar days prior to starting work.

PROCEDURES

Joints shall be prepared by blowing loose debris from them with compressed air. Compressors shall be of sufficient capacity to clean the crack opening with relative ease. Hot liquid asphalt shall then be poured into the crack to a level 3/16" ± 1/16" below the existing asphalt surface (horizontal) and as per Manufacturers Recommendations. Immediately after asphalt application apply Detack over hot liquid asphalt.

MEASUREMENT AND PAYMENT

Repair of asphalt pavement cracks shall be measured and paid by the linear foot which shall include joint preparation, hot liquid asphalt, detack, and all labor, equipment, and incidentals necessary to complete the work.

Pay Item	Pay Unit
Repair Asphalt Concrete Pavement Cracks	Linear Foot

SPECIAL PROVISION
BRIDGE RAILING REPLACMENT

DESCRIPTION

This work shall consist of removal of damaged railings, posts, and hardware, and replacement with new railings, railing posts and installation using all necessary hardware as directed by the Engineer. The Contractor shall refer to the bridge railing replacement plan sheet for details and other notes.

Prior to beginning work, the Contractor shall submit shop drawings of the railing and posts to the Engineer for approval. All materials shall match existing color and appearance of existing railing to remain and to the approval of the Engineer. Installation of "shinny" railing and posts will not be permitted. The Contractor may submit refurbished railing and posts matching the existing railing to the Engineer for review and approval.

MATERIALS

ITEMS	VDOT SECTION
Replacement Bridge Railing	410
Replacement Railing Posts	410

PROCEDURES

Installation of bridge railings, posts, and all other necessary hardware shall be per Manufacturer's recommendations. The Contractor shall refer to Maintenance of Traffic Special Provisions, SP-B, for allowable lane closure times.

LOCATIONS

Three locations have been identified for repair. Locations, approximate lengths of Railing and number of posts to be replaced are provided. The Contractor shall field verify all lengths of railing, and number of posts requiring replacement to the approval of the Engineer.

Bridge Railing and Post Replacement				
Bridge #	**Location**		**Approximate Length (FT)**	**Approximate Railing Posts (EA)**
8 NB	Span 5	East Parapet (Inside Shoulder)	32	2
8 NB	Span 6	East Parapet (Inside Shoulder)	32	2
8 SB	Span 15	West Parapet (Outside Shoulder)	0	1

MEASUREMENT AND PAYMENT

Replacement Bridge Railing will be paid by linear foot at the contract price. This price shall include full compensation for removal and proper disposal offsite of existing damaged bridge railing, installation of new bridge railing, rail splice and expansion joints, all equipment, labor, materials, and incidentals necessary to replace the railing with in the required limits and in accordance with section 410 of the specifications.

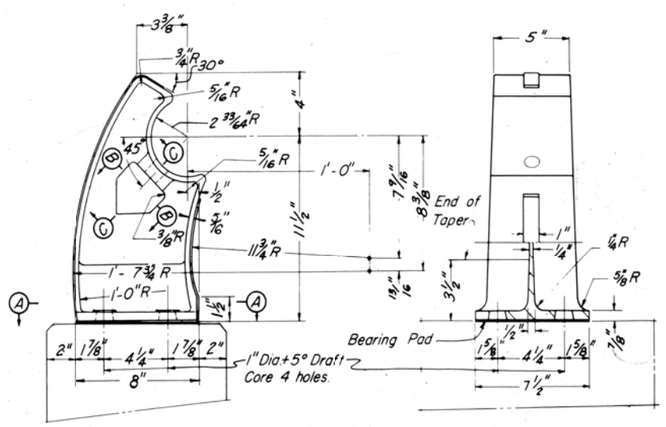
Replacement Railing Posts will be paid by each at the contract price. This price shall include full compensation for removal and proper disposal offsite of existing damaged bridge railing posts, installation of new bridge railing posts, neoprene bearing pads, Aluminum shims, Anchor bolts, Toggle Bolts, drilling and grouting in concrete parapet, and all necessary hardware, equipment, labor, and any incidentals necessary to complete this work in accordance with section 410 of the specifications.

Pay Item	Pay Unit
Replacement Bridge Railing	Linear Foot
Replacement Railing Posts	Each

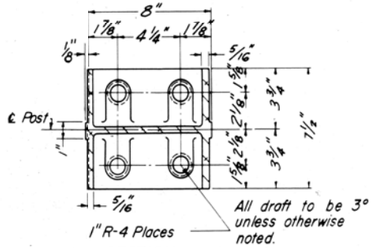
BRIDGE RAILING AND POST REPLACEMENT DETAIL:

NOTES:

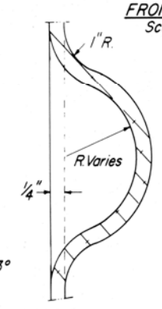
1) Dimensions and details shown are based on as-built drawings from the James River Bridge Widening in 1987.
2) Contractor shall field verify all existing dimensions bridge railing, posts, and all necessary hardware required for installation prior to fabrication and construction.
3) Locations of repairs as shown in the special provision and to be determined by the Engineer.
4) Shop drawings of the type of bridge railing, and posts shall be submitted to the Engineer for review in accordance with these details and section 410 of the specifications.
5) Contractor shall submit a construction plan and maintenance of traffic plan for approval by the Engineer before beginning construction.



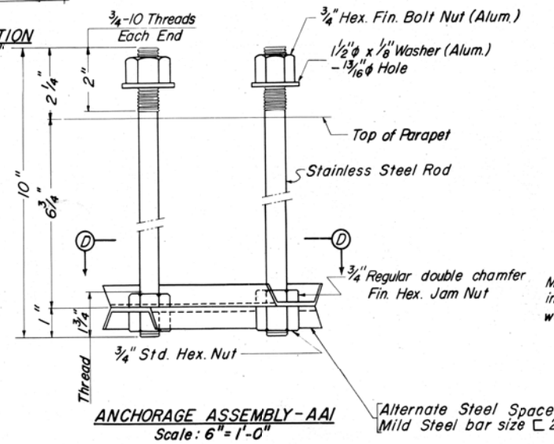
SIDE ELEVATION
Scale: 3"=1'-0"



SECTION A-A
Scale: 3"=1'-0"

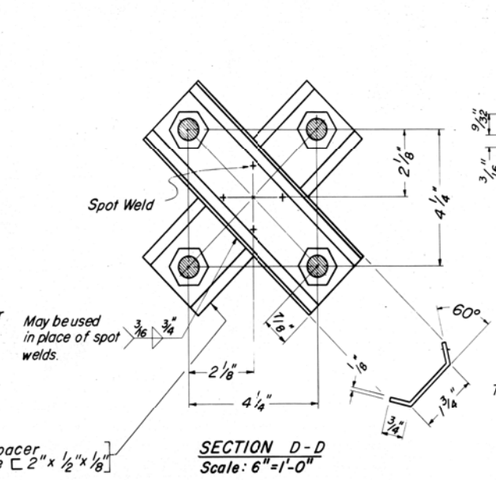


SECTION B-B
Full Size

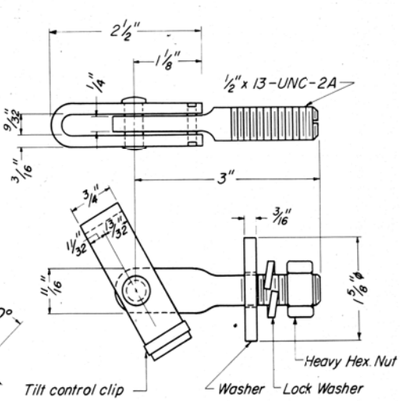


FRONT ELEVATION
Scale: 3"=1'-0"

NOTES:
Rail to be continuous over a minimum of 3 posts before splicing, unless otherwise shown.
Post spacing to be measured along inside face of parapet. See Deck Plans.



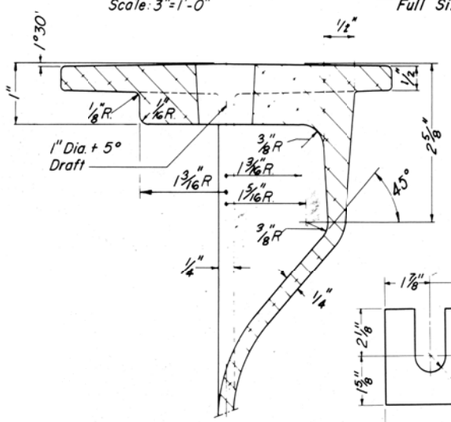
SECTION D-D
Scale: 6"=1'-0"



TOGGLE BOLT ASSEMBLY-TBI
TRAFFIC RAIL
Full Size

Material for toggle bolt assembly TBI shall be carbon or stainless steel having a minimum elongation of 12%. Any non stainless component to be either galvanized to ASTM-A153 or cadmium plated to ASTM-A165, Type NS.

Required minimum tensile load to equal 9000 lbs. when in an open position and tested thru a 1"ϕ hole.

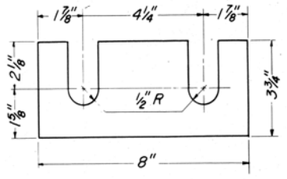


SECTION C-C
Full Size

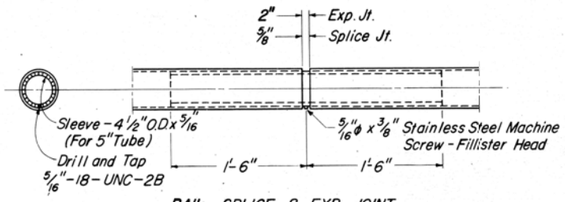
AA1 - Steel Spacer — ASTM A425, or A36 (As shown)
AA1
- Nuts (Top) — ASTM B211, Alloy 6262-T9 or 6061-T6
- Top Washers — ASTM B209, Alloy ALCLAD 2024-T3 or T4
- Rods — ASTM A-276, Type 430 Annealed, Hot-finished
- Nuts (Bottom) — ASTM A307

Threads on all rods may be rolled or cut.

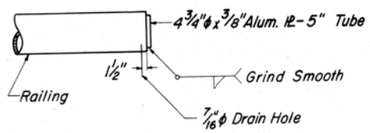
ANCHORAGE ASSEMBLY-AA1
Scale: 6"=1'-0"



SHIM DETAIL
No Scale
Shims to be made from 1/16" or 1/8" material Shims shall not project outside of post base.



RAIL SPLICE & EXP. JOINT
Scale: 1 1/2" =1'-0"



RAIL END CAP
Scale: 1 1/2" =1'-0"

NOTES:

Posts shall be seated on neoprene bearing pads 1/16" minimum thickness, having a nominal durometer hardness of 70. Pads shall conform to post base dimensions.

Aluminum shims may be used for adjusting post alignment, maximum thickness of shim build-up not to exceed 1/8". Where more tilting of the post is required, the concrete area shall be ground down

Posts shall be cast aluminum.

Rail members shall be aluminum extruded tube.

Anchor bolts may be set normal to profile grade.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

MISCELLANEOUS REPAIRS – 2015

BRIDGE RAILING AND POST REPLACEMENT

Scale:	Date:	Contract No.:	Sheet:
NTS	MAY 2015		SP-L-3

2015 MR Railing Replacement.dgn
3/31/2015

SPECIAL PROVISION
SLOPE STABILIZATION

DESCRIPTION

This work consists of furnishing and placing materials as described in Method I or Method II below, to stabilize slopes from erosive forces, and / or improve the stability of soil slopes that are subject to seepage or have poor soil structure. Unsuitable material shall be excavated and disposed of offsite, as directed by the Engineer. Areas excavated shall be backfilled with approved material. Soil shall be compacted in horizontal layers not more than 6 inches.

MATERIALS

ITEMS	VDOT SECTION
Aggregate Material #1	203
Top Soil, Class B	244
Borrow Excavation	303
RipRap Class I Stone	414

LOCATION

Slope Protection	
Location	**Type**
Boulevard Bridge South Abutment	Method 1 -Rip Rap Class I
Forest Hill Ramp Lanes 19-21	Method 1 - Rip Rap EC-1
Douglasdale exit ramp	Method 2- Topsoil
NB Powhite Bridge 9	Method 2- Topsoil
WB DTE 2nd St. Off Ramp	Method 2- Topsoil

PROCEDURES

Generally, all work shall be performed from the edge of pavement or shoulder, utilizing lane closures as necessary to protect workers and the motoring public. Removal of guardrail is not anticipated and if removed is incidental to work performed. It is solely the responsibility of the Contractor for acquiring permits or permissions for access from areas not owned by the RMTA. If the Contractor removes fence fabric to facilitate the repair work, the cost of removing and

reinstalling the fence fabric will be incidental to the scope of work. Equipment shall be capable of depositing repair materials over existing guardrail. Compaction of stone will not be required.

Method 1, Stone Repair:

The Contractor shall perform regular excavation to prepare the subgrade for RipRap. Contractor shall cut the subgrade to the approval of the Engineer, so that the finished grade of the riprap will be at the elevation of the surrounding area. Contractor shall excavate a trench at the toe of the slope to key in the riprap and shall be at least two feet deep. Contractor shall remove and dispose offsite all brush, trees, stumps, and other objectionable material to the approval of the Engineer. Removal of such items will be incidental to the work.

Stone placement should start at the toe trench and work upwards. RipRap shall be placed so it forms dense, well-graded mass of stone with minimum voids. The Contractor should be aware that the desired distribution of stones throughout the mass may be obtained by selective loading at the quarry and controlled dumping during final placement. RipRap shall be placed at its full thickness in one operation. The Contractor shall not place riprap by dumping through chutes or other methods that cause segregation of stone sizes. Extra care shall be taken not to dislodge the underlying base when placing the RipRap. The finished slope shall be free of pockets of small stone or clusters of large stones. The Contractor should be advised that hand placing may be necessary to achieve proper distribution of stone sizes to produce a relatively smooth, uniform surface. The finished grade of the riprap shall blend with the surrounding area.

Method 2, Borrow and Top Soil Repair:

The Contractor shall perform regular excavation to prepare the site for top soil. All areas of slope stabilization shall have a minimum of 6" Class B Topsoil. The Contractor shall install borrow excavation in 6" lifts and benched into the existing slope. The Contractor shall then place top soil in a way that the loose depth shall be sufficient to allow the area to conform to the elevations shown on the plans after the topsoil settles. After topsoil has been applied, the Contractor shall remove large clods, hard lumps, and stones larger than 3 inches in diameter; brush; roots; stumps; litter; and foreign material. Where residential or commercial yards exist and to the approval of the Engineer, the Contractor shall remove all stones larger than 3/4 inch in diameter. Such areas shall be hand raked to provide a smooth yard suitable for mowing by a yard mower. When the placement of top soil is complete, the area shall be in a condition to receive seed, sod, or plants without further soil preparation. Areas of repair shall be seeded within 7 calendar days after repair is completed. The Contractor is advised that temporary erosion control measures shall to the approval of the Engineer, be installed if seeding operation cannot occur at the

moment that the repair is complete. Contractor shall install and maintain erosion control measures over the entire repaired area until the area is stabilized.

MEASUREMENT AND PAYMENT

Stone will be measured by cross-sectioning the area filled, prior to the placement of stone and then converting to tons by using an appropriate conversion factor. If, by mutual consent, the Engineer and Contractor should agree to use a weight ticket furnished with the stone to gage either the quantity of stone placed at various locations or the total quantity of stone placed at multiple locations to arrive at final quantities, this will be an acceptable method in lieu of the previously specified method.

Pay Item	Pay Unit
RipRap, Class I	Ton
Aggregate Material No. 1	Ton

Top soil will be paid in accordance with VDOT specifications. Any labor and disposal costs required for the removal of large clods, hard lumps, and stones larger than 3/4 inch in diameter; brush; roots; stumps; litter; and foreign material, and hand raking shall be incidental.

Pay Item	Pay Unit
Topsoil Class B	CY

All items below shall be paid accordance with VDOT specifications.

Pay Item	Pay Unit
Borrow Excavation	CY
Regular Excavation	CY
Regular Seed	LB
Fertilizer (15-30-15)	Ton
Lime	Ton

SPECIAL PROVISION
OVERHEAD SIGN PANEL REPLACEMENT AND OVERLAY

DESCRIPTION

This work shall consist of attaching new sign panels to existing mounting hardware on simple span and bridge mounted sign structures. Removal and disposal of the existing panel to be replaced will be required.

This work shall consist of attaching a sign panel overlay to existing overhead sign panels. All overhead sign panels within the Expressway System shall qualify for an overlay. Exact location(s) to be determined by the Engineer.

MATERIALS

ITEM	VDOT SECTION
Overhead Sign Panel Replacement	229 and 701
Overlay Sign Panel Overlay	229 and 701

LOCATIONS

OVERHEAD SIGN PANEL REPLACEMENT			
Number	**OH Str. No.**	**Location**	**Description**
1	200550	Powhite Parkway NB just past Bridge 8	Left Panel
2	200558	Powhite Parkway NB just before Bridge 9	Left Panel
3	Bridge 13 (Douglasdale Rd.)	Powhite Parkway NB mounted to Bridge 13	Both Panels
4	Bridge 46 (Allen Ave.)	DTE WB mounted to Bridge 46	Single Panel

Locations for sign panel overlays will be determined by the Engineer. Any sign on a simple span, cantilever, or bridge mounted structure within the Expressway System shall qualify for repair.

PROCEDURES

Sign Panel Replacement

The Contractor shall follow the manufacturer's recommendations for installation of new overhead sign panels. Contractor shall submit shop drawings for the sign panel and submit any bracket modifications and/or new brackets if required to the Engineer for approval. Once drawings have been approved, the Contractor shall submit an MOT plan (7) days prior to any lane closure for approval by the Engineer and the RMTA. Included in the MOT plan, shall be a contingency plan to direct traffic if the old sign panel is removed and the new panel cannot be put back up during the same closure. Messages, shields, arrows, and borders shall conform to the most current version of the Manual on Uniform Traffic Control Devices (MUTCD), The Virginia Supplement to the 2009 MUTCD, and the specifications herein.

Contractor shall remove and dispose of the existing panel offsite. Proper shielding shall be used to protect motorists from debris caused by saw cutting, grinding, welding or other work tasks creating fragments. All work areas shall be well lit using trailer mounted light pods to illuminate the work area. The Contractor shall take extra care not to damage the existing mounting supports when removing the existing panel.

For the sign panel on OH Str. No. 200558 the Contractor will be required to field verify locations of the down arrows. The Contractor shall have the option to have arrows made separately and field fit them over the center of the lanes during installation. If the Contractor chooses this option, the arrows shall be centered over the lane from an approximate distance of 500 feet downstream from the sign or approximately 100 feet downstream of the flashing beacon sign in the median. The Contractor and Engineer shall both stand in the center of the lane which corresponds to the arrow being located, and agree on its position before the arrow is permanently attached to the larger panel. Any damage to the new panel and existing mounting supports to remain shall be repaired to the Engineer's approval up to full panel replacement and mounting supports and at no extra cost to the RMTA and with no extension of contract time.

Sign Panel Overlay

The Contractor shall follow the manufacturer's recommendation for installation of overlay panels on existing overhead sign structures. Contractor shall submit shop drawings to the Engineer for approval. Once drawings have been approved, the Contractor shall submit an MOT plan (7) days prior to any lane closure for approval by the Engineer and the RMTA

Messages, shields, arrows, and borders shall conform to the most current version of the Manual on Uniform Traffic Control Devices (MUTCD), The Virginia Supplement to the 2009 MUTCD, and the specifications herein.

Contractor shall remove and dispose offsite of all conflicting demountable legends, borders and overlays before attaching new overlays and shall take extra care to not damage the existing portion of the panel to remain. Contractor shall perform such minor repairs to existing signs as necessary before the attachment of overlays to ensure a finished sign face that is completely flat and without any ripples and/or buckles.

Any damage to the existing panel and existing mounting supports to remain shall be repaired to the Engineer's approval up to full panel replacement and at no extra cost to the RMTA and with no extension of contract time.

MEASUREMENT AND PAYMENT

Overhead Sign Panel Replacement Str. No. 200550 will be measured by a lump sum basis and paid at the contract unit price. This shall be full compensation for verifying the existing mounting structure; submitting and resubmitting, if required, of shop drawings for Engineer's approval; removal of the existing sign panel and disposal offsite; any required permits or fees for disposal; furnishing and fabricating the new sign panel and any additional mounting brackets if required, installing the sign panel; trailer mounted lighting pods; and all equipment, labor and incidentals required to install the new sign panel. MOT will be paid for under the items listed in the Maintenance of Traffic special provision SP-B and the supplemental specifications.

Overhead Sign Panel Replacement Str. No. 200558 will be measured by a lump sum basis and paid at the contract unit price. This shall be full compensation for verifying the existing mounting structure; submitting and resubmitting, if required, of shop drawings for Engineer's approval; removal of the existing sign panel and disposal offsite; any required permits or fees for disposal; furnishing and fabricating the new sign panel and any additional mounting brackets if required, installing the sign panel; trailer mounted lighting pods; and all equipment, labor and incidentals required to install the new sign panel. MOT will be paid for under the items listed in the Maintenance of Traffic special provision SP-B and the supplemental specifications.

Overhead Sign Panel Replacement Bridge 13 will be measured by a lump sum basis and paid at the contract unit price. This shall be full compensation for verifying the existing mounting structure; submitting and resubmitting, if required, of shop drawings for Engineer's approval; removal of the existing sign panel and disposal offsite; any required permits or fees for disposal;

furnishing and fabricating the new sign panel and any additional mounting brackets if required, installing the sign panel; trailer mounted lighting pods; and all equipment, labor and incidentals required to install the new sign panel. MOT will be paid for under the items listed in the Maintenance of Traffic special provision SP-B and the supplemental specifications.

Overhead Sign Panel Replacement Bridge 46 will be measured by a lump sum basis and paid at the contract unit price. This shall be full compensation for verifying the existing mounting structure; submitting and resubmitting, if required, of shop drawings for Engineer's approval; removal of the existing sign panel and disposal offsite; any required permits or fees for disposal; furnishing and fabricating the new sign panel and any additional mounting brackets if required, installing the sign panel; trailer mounted lighting pods; and all equipment, labor and incidentals required to install the new sign panel. MOT will be paid for under the items listed in the Maintenance of Traffic special provision SP-B and the supplemental specifications.

Overlay Sign Panel will be measured in square feet and will be paid for at the contract unit price. This shall be full compensation for verifying the size and color of overlay; submitting and resubmitting, if required, of shop drawings for Engineer's approval, removal of a portion of the existing panel if required, removal of demountable messages including borders if required; additional repair to existing panel if required; fabricating and furnishing overlay sign panel, trailer mounted lighting pods; and all equipment, labor and incidentals required to install overlay sign panel. MOT will be paid for under the items listed in the Maintenance of Traffic SP-B and the supplemental specifications.

Pay Item	Pay Unit
Overhead Sign Panel Replacement Str. No. 200550	L.S.
Overhead Sign Panel Replacement Str. No. 200558	L.S.
Overhead Sign Panel Replacement Bridge 13	L.S.
Overhead Sign Panel Replacement Bridge 46	L.S.
Overhead Sign Panel Overlay	S.F.

SIGN DETAIL

1:125

FONT:
(1) ClearviewHwy–5–W

Panel Style: guide_exp_advance_b.ssi

Dimensions are in inches eighths

Letter spacings are to start of next letter

NUMBER 1	OH Str. No. 200550
WIDTH x HGHT.	29'–0" x 13'–6"
BORDER WIDTH	2"
CORNER RADIUS	12"
MOUNTING	Overhead
BACKGROUND	TYPE: Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: Reflective
	COLOR: White/White

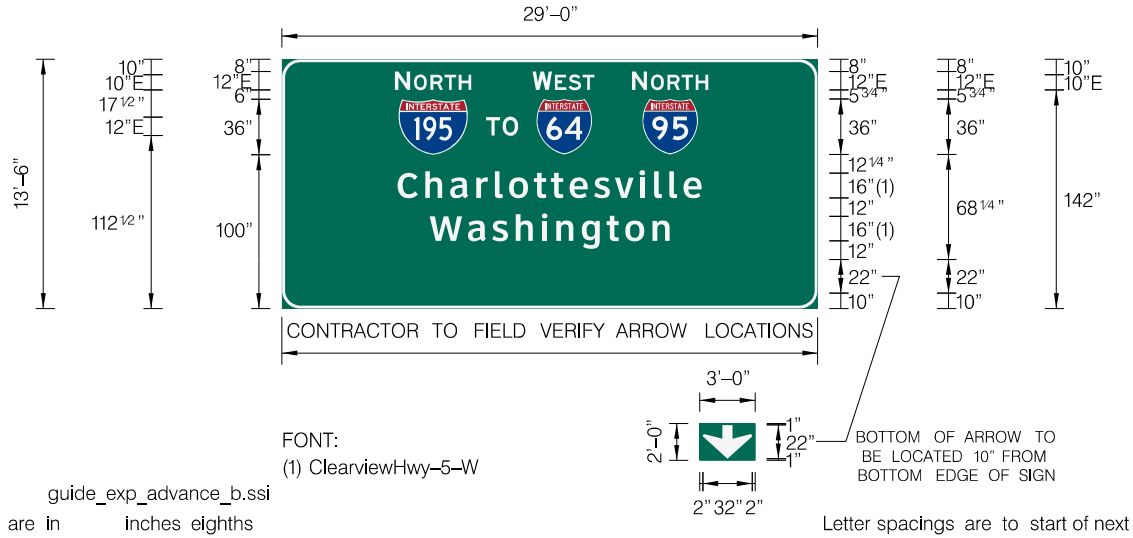
SYMBOL	ROT	X	Y	WID	HT
M1_1	0	75 3/4"	100"	45"	36"
M1_1	0	165 3/8"	100 1/8"	36"	36"
M1_1	0	234 1/8"	100 1/8"	36"	36"
ARDOWN	0	13 7/8"	10"	32"	22"
ARDOWN	0	157 7/8"	10"	32"	22"
ARDOWN	0	301 7/8"	10"	32"	22"

LETTER POSITIONS (X)

																					LENGTH	SERIES/SIZE
	N		O	R	T	H																E 2000
73 1/2"	9 3/4"	2 1/2"	10 3/4"	9 1/4"	9 1/4"	8 1/8"	225"														49 1/2"	12,10
	W		E	S	T																	E 2000
162 3/4"	12 3/4"	1 3/4"	8 7/8"	9 1/4"	7 1/2"	145 1/8"															40 1/8"	12,10
	N		O	R	T	H																E 2000
227 3/8"	9 3/4"	2 1/2"	10 3/4"	9 1/4"	9 1/4"	8 1/8"	71 1/8"														49 1/2"	12,10
	T	O																				E 2000
132 5/8"	10 5/8"	10 1/8"	194 5/8"																		20 3/4"	12
	C	h	a	r	l	o	t	t	e	s	v	i	l	l	e							ClearviewHwy–5–W
75 1/4"	17 7/8"	16 1/4"	17"	12	9 1/4"	16 1/4"	11 1/8"	12"	16"	13 1/2"	16"	9 1/2"	9 7/8"	9 1/4"	11 3/4"	75 3/8"					197 3/8"	16/13"
	W	a	s	h	i	n	g	t	o	n												ClearviewHwy–5–W
96"	24 7/8"	15 3/4"	15 3/8"	16 7/8"	9 1/2"	16 1/2"	16 1/8"	12"	17 3/4"	11 1/8"	96 1/8"										155 7/8"	16/13"

SIGN DETAIL

1:125



FONT:
(1) ClearviewHwy–5–W

Panel Style: guide_exp_advance_b.ssi
Dimensions are in inches eighths

Letter spacings are to start of next letter

NUMBER 2	OH Str. No. 200558
WIDTH x HGHT.	29'–0" x 13'–6"
BORDER WIDTH	2"
CORNER RADIUS	12"
MOUNTING	Overhead
BACKGROUND	TYPE: Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: Reflective
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
M1_1	0	75¾"	100"	45"	36"
M1_1	0	165⅜"	100⅛"	36"	36"
M1_1	0	234⅛"	100⅛"	36"	36"
ARDOWN	0	–	–	32"	22"

LETTER POSITIONS (X)

																					LENGTH	SERIES/SIZE
	N		O	R	T	H																E 2000
73½"	9¾"	2½"	10¾"	9¼"	9¼"	8⅛"	225"														49½"	12,10
	W		E	S	T																	E 2000
162¾"	12¾"	1¾"	8⅞"	9¼"	7½"	145⅛"															40⅛"	12,10
	N		O	R	T	H																E 2000
227⅜"	9¾"	2½"	10¾"	9¼"	9¼"	8⅛"	71⅛"														49½"	12,10
	T	O																				E 2000
132⅝"	10⅝"	10⅛"	194⅝"																		20¾"	12
	C	h	a	r	l	o	t	t	e	s	v	i	l	l	e							ClearviewHwy–5–W
75¼"	17⅞"	16¼"	17"	12	9¼"	16¼"	11⅛"	12"	16"	13½"	16"	9½"	9⅞"	9¼"	11¾"	75⅜"					197⅜"	16/13"
	W	a	s	h	i	n	g	t	o	n												ClearviewHwy–5–W
96"	24⅞"	15¾"	15⅜"	16⅞"	9½"	16½"	16⅛"	12"	17¾"	11⅛"	96⅛"										155⅞"	16/13"

SIGN DETAIL

1:125

FONT:
(1) ClearviewHwy–5–W

NUMBER 3	OH Str. No. Bridge 13
WIDTH x HGHT.	15'–0" x 9'–6"
BORDER WIDTH	2"
CORNER RADIUS	12"
MOUNTING	Overhead
BACKGROUND	TYPE: Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: Reflective
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
VG2A3	0	13 7/8"	66"	45"	36"

Panel Style: guide_exp_advance_b.ssi
Dimensions are in inches eighths

Letter spacings are to start of next letter

LETTER POSITIONS (X)

																				LENGTH	SERIES/SIZE
	C	a	r	y		S	t														ClearviewHwy–5–W
70 3/4"	16 7/8"	17"	10 1/8"	12 1/2"	15 7/8"	15 1/8"	7 7/8"	14"												95 1/4"	16/13"
	F	l	o	y	d		A	v	e												ClearviewHwy–5–W
25"	14 7/8"	9 1/4"	15 7/8"	16"	11 5/8"	17 1/4"	17 5/8"	15 3/4"	11 3/4"	25"										130 1/8"	16/13"
	1/2		M	l	L	E															E 2000
55"	22"	15"	12	4 3/8"	9 1/4"	7 1/2"	55"													70 1/8"	15,10

SIGN DETAIL

1:125

FONT:
(1) ClearviewHwy–5–W–R
(2) ClearviewHwy–5–W

Panel Style: guide_exp_advance_b.ssi
Dimensions are in inches eighths

Letter spacings are to start of next letter

NUMBER 3	OH Str. No. Bridge 13
WIDTH x HGHT.	21'–0" x 8'–6"
BORDER WIDTH	2"
CORNER RADIUS	12"
MOUNTING	Overhead
BACKGROUND	TYPE: Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: Reflective
	COLOR: White/White

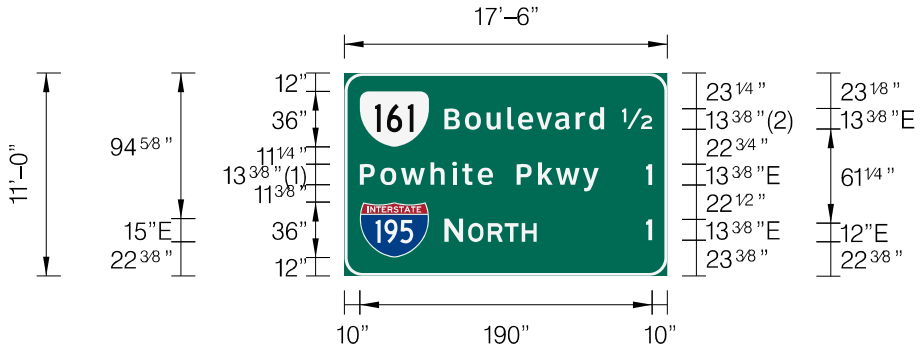
SYMBOL	ROT	X	Y	WID	HT
AR_Type A	150	215 1/4"	39 7/8"	22 1/4"	35"

LETTER POSITIONS (X)

																					LENGTH	SERIES/SIZE
	D	o	u	g	l	a	s	d	a	l	e		R	d								ClearviewHwy–5–W–R
12 1/4"	16 7/8"	16 7/8"	15 3/8"	16 3/4"	8"	14 5/8"	13 3/4"	15 3/4"	16"	8 1/4"	11 3/4"	16 5/8"	15 3/4"	11 5/8"	41 5/8"						198 1/8"	16/13"
	M	c	C	l	o	y		S	t													ClearviewHwy–5–W
46 1/2"	20 1/4"	15"	17 7/8"	9 1/4"	15 7/8"	12 1/2"	15 7/8"	15 1/8"	7 7/8"	76"											129 5/8"	16/13"
	C	i	t	y		S	t	a	d	i	u	m										ClearviewHwy–5–W
25 3/8"	17 1/2"	7 7/8"	10 3/4"	12 1/2"	15 7/8"	15 1/8"	11 3/4"	16 3/8"	17 3/8"	9 1/2"	17"	18 1/8"	56 7/8"								169 5/8"	16/13"

SIGN DETAIL

1:125



NUMBER 4	OH Str. No. Bridge 46
WIDTH x HGHT.	17'–6" x 11'–0"
BORDER WIDTH	2"
CORNER RADIUS	12"
MOUNTING	Overhead
BACKGROUND	TYPE: Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: Reflective
	COLOR: White/White

SYMBOL	ROT	X	Y	WID	HT
VG2A3	0	10	84"	45"	36"
M1_1	0	10	12"	45"	36"

Panel Style: guide_exp_advance_b.ssi

Dimensions are in inches eighths

FONT:

(1) ClearviewHwy–5–W

(2) ClearviewHwy–5–W–R

Letter spacings are to start of next letter

LETTER POSITIONS (X)

																				LENGTH	SERIES/SIZE
	B	o	u	l	e	v	a	r	d												ClearviewHwy–5–W–R
65"	13 3/8"	14 1/8"	13 3/8"	6 7/8"	12"	12 1/8"	13 3/8"	8 3/4"	9 3/4"	41 1/4"										103 7/8"	13 3/8"/10 7/8"
	1/2																				E 2000
180 1/2"	19 1/2"	10"																		19 1/2"	13 3/8"
	P	o	w	h	i	t	e		P	k	w	y									ClearviewHwy–5–W
10"	13 3/8"	13 1/2"	19 1/8"	14 1/8"	6 5/8"	10 1/8"	9 7/8"	15 3/8"	13 7/8"	11 1/2"	17 1/2"	10 1/2"	44 5/8"							155 3/8"	13 3/8"/10 7/8"
	1																				E 2000
196"	4"	10"																		4"	13 3/8"
	1																				E 2000
196"	4"	10"																		4"	13 3/8"
	N		O	R	T	H															E 2000
65 1/8"	12 1/8"	3 1/8"	12 7/8"	11"	11"	9 3/4"	85													60"	15,12

SPECIAL PROVISION
MISCELLANIOUS BRIDGE COATINGS

DESCRIPTION

This work shall consist of cleaning and coating miscellaneous steel surfaces of existing bridge structural members. The intent of this work is to re-coat isolated structural members which exhibit corrosion and possible minor section loss. Structures are assumed to be Type B structures.

MATERIALS

All cleaned surfaces shall receive the following coating system, or engineer approved equal:

A. Polymeric Epoxy Amine at 1.0 -2.0 mils DFT. A thixotropic penetrating primer/sealer with excellent wetting properties that cures down to 35°. High solids that contains corrosion inhibitors and is compatible with a variety of topcoats.

B. Epoxy Polyamide (3/4 tint formula) at 3.0 – 5.0 mils DFT. Low temperature and rapid curing primer/finish that is VOC compliant with current AIM regulations. Solids content by Volume 63% ±2%.

C. Aliphatic Acrylic-Polyester Polyurethane (full tint formula) at 3.0 – 5.0 mils DFT. High build, low sheen finish that has excellent resistance to corrosion, chemicals and abrasion. VOC compliant with to current AIM regulations. Solids content by volume 61% ± 2%.

PROCEDURES

Contractor shall remove deteriorated coating back around the edges of the repair until an area of completely intact and adherent coating film, with no rust or blisters underneath, is attained. Edges of tightly adherent coating remaining around the repair shall be recoated and must be feathered so that the recoated surface can have a smooth appearance to provide a transition from the area of repair to the intact coating.

The remaining existing coating should have sufficient adhesion so that it cannot be lifted as a layer by inserting the blade of a dull putty knife under it using moderate pressure. Unless experience or spot tests show otherwise and to the approval of the Engineer, the contractor should use the same generic type of coating for this work as is in the existing coating.

The cleaning method required shall be power tool cleaning (SSPC-SP-3). This is Method 3 in Section 411.

LOCATIONS

Possible work areas include:

Bridge 5: Localized fascia girder ends and bearing assemblies at Piers
Additional areas as determined by the Engineer.

MEASUREMENT AND PAYMENT

Miscellaneous Coating will be measured in units of square foot of surface area and will be paid for at the contract unit price. This price shall include costs of any necessary staging for access, equipment required, labor, environmental protection, proper disposal of material offsite, and any incidentals required to complete the work.

The minimum square footage payment for an individual work location shall be 30 square feet. An individual work location shall be defined as a single bridge span.

Payment for MOT required at individual work locations shall be paid for in accordance with the individual Electronic arrow, Group 2 channelizing devices and Truck mounted attenuator bid items listed in Section 512.

Payment will be made under:

Pay Item	Pay Unit
Miscellaneous Coating	Square Foot

SPECIAL PROVISION
DEICING CHEMICAL

DESCRIPTION

This work shall consist of delivering 4400 Gallons of Deicing Chemical product to the RMTA's holding tank at the Powhite South Storage yard. Delivery date must be submitted to the Engineer for approval at a minimum 7 days prior to actual delivery. The liquid chemical shall be deposited into the holding tank by the contractor. Delivery must be in bulk quantity, 55-gallon drums or other containers will not be acceptable. In the event of a spill, contractor shall take all necessary actions to mitigate affected area, and shall replace spilled quantity at no additional cost to the Authority.

MATERIALS

The de-icing chemical shall be CF7 or approved equal, and be 50% aqueous potassium acetate solution, by weight, plus corrosion inhibitors. Density at 68 degrees F shall be 10.68 lbs/gallon. It shall be nonflammable with a freezing point of -76 degrees F. Typical pH shall be between 10.5 and 11.5. Specific Gravity at 68 degrees F shall be between 1.25 – 1.30. Contractor's proposed product specification sheet shall be submitted for approval by the Engineer.

PROCEDURES

Contractor will be required to provide testing of the existing liquid in the tank if required by a new provider. The Contractor shall determine the volume of the existing chemical in the tank prior to placing the order with the supplier.

MEASUREMENT AND PAYMENT

Pay Item for delivery will be paid for by the gallon of product transferred to the RMTA storage tank located on Powhite Parkway. This price shall include all costs necessary to complete the delivery including the chemical, transportation costs, equipment, labor, and any other associated costs with testing of the existing chemical, determining the current volume of chemical in the tank, delivery, and transferring chemical into the existing storage tank.

Transportation costs and other fees for returning any unused product back to the supplier will be the responsibility of the Contractor.

Pay Item	Pay Unit
De-Icing Chemical	Gal

CRYOTECH CF7®
MATERIAL SAFETY DATA SHEET

1. PRODUCT NAME & DESCRIPTION

CRYOTECH CF7® Liquid Commercial Deicer

MANUFACTURED AND SUPPLIED IN THE USA BY:
Cryotech Deicing Technology
6103 Orthoway
Fort Madison, IA 52627
United States

CRYOTECH CONTACT INFORMATION:
Telephone: (800)346-7237
FAX: (319)372-2662
email: deicers@cryotech.com
website: http://www.cryotech.com

2. CHEMICAL COMPOSITION

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT	COMPONENT	CAS#
100%	Cryotech CF7® Liquid Commercial Deicer	
CONTAINING		
50%	Potassium Acetate	127-08-2
<1.0%	Corrosion Inhibitors in	
50%	Water	7732-18-5

CAS - Chemical Abstract Service Number

3. HAZARD IDENTIFICATION
(also see Sections 11 and 12)

CAUTION! - MAY CAUSE EYE IRRITATION

EYE CONTACT:
This substance is slightly irritating to the eyes and could cause prolonged (days) impairment of your vision.
The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment.
Signs and symptoms may include pain, tears, swelling, redness and blurred vision.
SKIN IRRITATION:
This substance is not expected to cause prolonged or significant skin irritation.
DERMAL TOXICITY:
The systematic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin.
RESPIRATORY/INHALATION:
This material does not present an inhalation hazard.
INGESTION:
If swallowed, this substance is considered practically non-toxic to internal organs. Ingestion may cause irritation of the digestive tract which may result in nausea, vomiting and diarrhea.
This product contains potassium salts. Ingestion of large amounts (25 or more grams) of potassium salts usually causes a person to vomit. If the person is not suffering from a preexisting kidney condition, the absorbed potassium is rapidly excreted in the urine. However, very young children or individuals with compromised kidney and/or cardiac function could experience the following effects after ingesting excessively large doses of potassium salts: irritation and inflammation of the stomach lining, muscular weakness, burning, tingling and numbness sensations of hands and feet, slower heart beat, reduced blood pressure, irregular heart beat and cardiac arrest.
OCCUPATIONAL EXPOSURE LIMITS:
None identified

4. FIRST AID MEASURES

Chemical Emergency: Spill, leak, fire, or accident call
Chemtrec day or night (800)424-9300;
Outside continental USA call (703)527-3887

EYE CONTACT:
Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.
SKIN CONTACT:
No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.
INHALATION:
Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.
INGESTION:
If swallowed, give water or milk to drink and telephone for medical advice.
DO NOT make the person vomit unless directed to do so by medical personnel.
If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

5. FIRE FIGHTING MEASURES

FLASH POINT:
>100°C
AUTO IGNITION:
No data available
FLAMMABILITY LIMITS (% by volume in air):
Lower: No data available
Upper: No data available
Non-flammable
EXTINGUISHING MEDIA:
Use extinguishing media appropriate for surrounding fire.
FIRE FIGHTING PROCEDURES:
Fire fighters should wear proper protective equipment, self-contained breathing apparatus with full face piece operated in positive pressure mode.
COMBUSTION PRODUCTS:
Normal combustion forms carbon dioxide and water.
NFPA RATINGS:
Health 1; Flammability 0; Reactivity 0; Special NDA:
(Least - 0, Slight - 1, Moderate - 2, High - 3, Extreme - 4)
These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint Coating Association.

6. ACCIDENTAL RELEASE MEASURES

Chemical Emergency: Spill, leak, fire, or accident call
Chemtrec day or night (800)424-9300;
Outside continental USA call (703)527-3887

SPILL/LEAK PRECAUTIONS:
Contain spillage and absorb on suitable material e.g. sawdust, sand or earth. Transfer to a container for disposal. See section 13.
Wash the spillage area with plenty of water.

7. HANDLING AND STORAGE

STORAGE:
Store in clean vessels and containers away from direct heat and strong oxidizing agents. Do not store or handle product with systems constructed of wetted parts that have galvanized steel, zinc or brass components.
SPECIAL PRECAUTIONS:
Avoid contact with skin and eyes. Avoid breathing mist when spraying.

CRYOTECH CF7®
MATERIAL SAFETY DATA SHEET

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION:
Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.
SKIN PROTECTION:
No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.
RESPIRATORY PROTECTION:
No special respiratory protection is normally required.
VENTILATION:
No special ventilation is necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:
Clear, colorless to light straw colored liquid. (May be dyed blue at customer request)
pH (20°C):
10.5 - 11.5
BOILING POINT:
~115°C
SPECIFIC GRAVITY (20°C):
1.28
EVAPORATION:
No data available
VAPOR PRESSURE (20°C):
17 mm Hg
PERCENT VOLATILE (VOLUME %):
No data available
VAPOR DENSITY (AIR = 1):
No data available
VISCOSITY (20°C):
6.5 cP
FREEZING POINT:
-60°C
SOLUBILITY:
Completely miscible in water.

10. STABILITY & REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
None known.
STABILITY:
Stable
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.
INCOMPATIBILITY:
May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc. Avoid prolonged contact with reactive metals such as magnesium and zinc, especially in closed systems where hydrogen gas may accumulate over time.
SPECIAL PRECAUTIONS:
READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.
Store away from strong oxidizing materials.

11. TOXICOLOGICAL INFORMATION

EYE IRRITATION:
No product toxicology data available. The hazard evaluation was based on data from similar products.
SKIN IRRITATION:
No product toxicology data available. The hazard evaluation was based on data from similar products.
DERMAL TOXICITY:
No product toxicology data available. The hazard evaluation was based on data from similar products.
RESPIRATORY/INHALATION:
No product toxicology data available. The hazard evaluation was based on data from similar products.
INGESTION:
The oral LD50 in rats is greater than 5.0 g/kg.

12. ECOLOGICAL INFORMATION

COD (TOD):	0.32 g O_2/g deicer
BOD_5 @ 20° C:	0.25 g O_2/g deicer

13. DISPOSAL CONSIDERATION

Based on information available to Cryotech Deicing Technology, this product is neither listed as a hazardous waste nor does it exhibit any of the characteristics that would cause it to be classified or disposed of as an RCRA hazardous waste. If product should spill or be otherwise unsuitable for normal deicing applications, it may be absorbed on suitable materials and disposed of in sanitary landfill unless state or local regulations prohibit such disposal.

14. TRANSPORT INFORMATION

Not restricted under any transport regulations.

15. REGULATORY INFORMATION

ALL OF THE COMPONENTS IN THIS PRODUCT ARE ON THE FOLLOWING INVENTORY LISTS:
U.S.A. (TSCA)
Europe (EINECS)
Canada (DSL/NDSL)
TSCA SECTION 12(b):
None of the components in this product are regulated under TSCA Section 12(b).
OSHA HAZARD CLASSIFICATION:
Hazardous Chemical (Irritant);
None of the components in this product are considered highly hazardous by OSHA.
CERCLA HAZARDOUS SUBSTANCES:
There is no CERCLA Reportable Quantity for this material.
SARA 311 CATEGORIES:

Immediate (Acute) Health Hazard:	Yes
Delayed (Chronic) Health Hazard:	No
Fire Hazard:	No
Sudden Release of Pressure Hazard:	No
Reactivity Hazard:	No

SARA 313:
None of the components in this product are subject to reporting under SARA Section 313.
CLEAN WATER ACT:
None of the components in this product are listed as Priority Pollutants under the CWA.
None of the components in this product are listed as Toxic Pollutants under the CWA.
STATE RIGHT-TO-KNOW:
This product does not contain components at levels which are required to be reported under the statutes of the following states: PA, MA, NJ
This product does not contain components known to the State of California (Proposition 65) to cause cancer and/or reproductive harm at levels which would require a warning under the statute.
WHMIS (Canada) CLASSIFICATION:
Not controlled

16. OTHER INFORMATION

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Latest version of this MSDS can be found at http://www.cryotech.com

SPECIAL PROVISION
UNDERWATER PIER FOOTING EPOXY INJECTION OF CRACKS

DESCRIPTION

The work under this item consists of cleaning, chipping, sealing, and subsequent pressure injection of flexible epoxy into cracks of submerged pier footings subjected to river current. All epoxy injection work shall be completed at RMTA Bridge B-8 (James River Bridge) which carries both directions of Powhite Parkway (Route 76) over the James River and RMTA Boulevard Bridge, which carries Route 161 over the James River. In addition, this work shall include the removal of all loose sediment and debris in contact with the pier footings as required to properly execute epoxy treatment and as directed by the Engineer. All work performed under this item shall be in accordance with these Special Provisions, the Standard Specifications, and as directed by the Engineer.

The application for the Nationwide 3 Maintenance Permit from the Army Corps of Engineers (ACOE) is pending approval at the time of this writing. Provided at the end of this special provision, for reference only, is a copy of the Nationwide 3 Permit General Conditions. Typically, these general conditions do not change between the bid period and receiving . The internet link to the ACOE Nationwide 3 Maintenance Permit website is http://www.nao.usace.army.mil/Regulatory/NW_enclosures/NW-3.pdf and provided to bidders for reference only. Bidders should note The Nationwide 3 Maintenance Permit condition prohibiting all in-water work between February 15 to June of any given year. with respect to protecting anadromous fish resources. Bidders are hereby directed to prepare their bids in accordance with the General Conditions of the Nationwide 3 Permit. In the event that the General Conditions of the Nationwide 3 Permit are modified, the winning bidder and the Engineer will evaluate/discuss potential impacts to scope of work and contract unit cost. In the event that an mutually agreed adjustment, arising from modifications to the General Conditions of the Nationwide 3 Permit approved for this work, cannot be reached between the between the successful bidder and the Engineer, the work may, at the direction of the Authority, be deleted from the Contract.

RMTA Bridge B-8:

Access to the work site will be from the access road on the southeast corner of the bridge to below the south abutment. Note that the James River in the vicinity of the Bridge is shallow with a rocky bottom. Access to the pier footers will likely be by wading across the river with a shallow bottom boat.

Piers to be epoxy injected and prepped, approximate crack widths and lengths, and approximate gallons needed are as follows:

RMTA Bridge #	Element	Prep cracks 1/8" (LF)	Prep cracks 1/16" (LF)	Inject cracks (Gallons)
8	Pier 4:A	0.0	10.0	1.00
	Pier 8:A	0.0	7.0	0.75
	Pier 9:A	0.0	6.0	0.75
	Pier 11:A	0.0	5.0	0.50
	Pier 10:H	10.5	26.0	3.50
	Pier 12:H	0.0	11.5	1.25

*New crack observed along alignment of existing crack repair.

- Footing A is on the upstream (west) side of the bridge and Footing H is on the downstream (east) side of the bridge.

Boulevard Bridge

Access to the work site shall be from the south bank via a service road leading to the river. Note that the James River in the vicinity of the Bridge is shallow with a rocky bottom. Access to the pier footers will likely be by wading across the river as the waterway in the vicinity of the bridge is not navigable.

Piers to be epoxy injected and prepped, approximate crack widths and lengths, and approximate gallons needed are as follows:

RMTA Bridge #	Element	Prep cracks 1/8" (LF)	Prep cracks 1/16" (LF)	Inject cracks (Gallons)
BB	Pier 12	16.0	2.0	1.75
	Pier 15	22.0	16.0	3.75
	Pier 16	5.0	12.0	1.75
	Pier 17	18.0	10.5	2.75
	Pier 19	0.0	13.0	1.25

Note that concrete patch repairs and shotcrete repairs (Excluded from epoxy injection pay item) are also scheduled for piers 12, 15, 16 and 17 for completion by late July 2015. It is expected that epoxy injection crack repairs will be complete ahead of this work, unless approved by the Engineer.

MATERIALS

Crack Injection Epoxy

Epoxy material for bridging or sealing cracks shall be a **FX-751 LV Hydro-Ester® Epoxy** manufactured by Simpson Strong-Tie (Formerly Fox Industries Inc.) or Engineer approved equal. Epoxy material shall be capable of being installed by pressure injection and under water in the presence of mild river currents. Epoxy material shall be 100% solids, low modulus, moisture insensitive material. Bond strength shall be a minimum of 1,700 psi minimum as defined by ASTM C-882, compressive strength of 11,000 psi as defined by ASTM D-695, and tensile strength (min) of 8,000 psi as defined by ASTM D-638. Epoxy material for pressure injection shall conform to ASTM C-881-02, Types I, II, IV, Grade 1, Class B.

Surface Sealing Epoxy

Epoxy for surface sealing and setting of injection ports shall be **FX-763 Low Modulus Hydro-Ester® Trowel Grade Epoxy or FX-764 Hydro-Ester® Splash Zone and Underwater Paste** manufactured by Simpson Strong-Tie (Formerly Fox Industries, Inc.) or Engineer approved equal.

Epoxy injection work shall be in accordance with manufacturer's specifications. Contractor shall provide operating temperature gauge/thermometer that shall be placed in the river water at locations mutually agreed upon by Contractor and Engineer. Epoxy injections tasks shall not be performed when water temperature is outside of the recommended range provided in the manufacturer's specification and as directed by the Engineer.

All work and equipment shall in accordance with manufacturer's specifications recommendations and as directed by the Engineer.

Contractor shall advise Engineer of any condition(s) that the Contractors suspects may impact the quality of the finished product **immediately** upon becoming aware of the potential or actual condition(s).

Equipment

All equipment and the equipment's actual operation capabilities used shall conform with Epoxy Manufacturer's specifications and are subject to Engineer's approval.

1. The Injection machine used to meter and mix the two injection adhesive components and inject the mixed adhesive into the crack shall be of a positive displacement type.
2. Discharge of Pressure: The injection machine shall have the capability of discharging the mixed adhesive at pressures up to 200 psi and maintaining that pressure.
    a. Test for Pressure Check
    1. Method: The mixing head of the injection machine shall be disconnected and the two adhesive component delivery lines shall be attached to the pressure check device. The pressure check device shall consist of two independent valved nozzles capable of controlling flow rate and pressure by opening or closing the valve. There shall be a pressure gauge capable of sensing the pressure build-up behind each valve. The valves on the pressure check device shall be closed and the equipment operated until the gauge pressure on each line reads 200 psi. The pumps shall be stopped and the monitored gauge pressure shall not drop below 190 psi within three minutes.
    2. Frequency of pressure check test: The pressure check test shall be run for each injection machine at the beginning and at the end of every day that the unit is used in the work of the crack repair and as directed by the Engineer.
    3. Proportioning the Adhesive Components
        a. Ratio Tolerance: The injection machine shall have the capability of maintaining the mix ratio for the injection adhesive prescribed by the manufacturer of the adhesive within a tolerance of ±5% by volume at any discharge pressure up to 200 psi.
        b. Test for Proper Ratio
            1. Method: The mixing head of the injection machine shall be disconnected and the two adhesive components shall be pumped simultaneously through the ration check device. Both adhesive components shall be simultaneously discharged into the calibrated containers simultaneously during the same time period and shall be compared to determine the mix ratio.
            2. Frequency of Test for Proper Ratio: The ratio test shall be run for each injection machine at the beginning and at the

end of every day that the unit is used in the work of crack repair and as directed by the Engineer.

c. Proof of Ratio and Pressure Check: At all times during the course of the work, the contractor must keep complete and accurate records available to the Engineer of the ratio check tests described in Section 3.b and the pressure check tests described in Section 2.a.

In addition, the Engineer at any time without prior notification of the Contractor may request the Contractor to conduct the tests described in Paragraph 3.b.1 in the presence of the owner or others at the Engineer's discretion.

Procedures

1. The Contractor shall ensure that no existing debris is in contact with piers to be repaired. Debris at these repair locations are not expected because virtually all-conflicting debris was removed last summer in preparation of this work. If debris is present, The Contractor shall strategically make relief cuts in the accumulated debris, or as directed by the Engineer, so that the repair can be properly executed. These cuts shall be made in the wood to a depth and quantity as determined solely by the Engineer, sufficient to allow the debris to release from the riverbed or bridge pier.

   The Contractor will be permitted to use hand tools including chainsaws and cutting devices, boats, and rigging equipment. The Contractor will not be allowed to construct a causeway or structure in the James River, nor will the use of self – propelled equipment be permitted in the James River.

   All work shall occur between sunrise and sunset. Night work will not be allowed.

   All equipment is subject to the approval of the Engineer. The Contractor shall submit the proposed relief cutting method, access to the site and MOT plans if required, to the Engineer for approval at least seven (7) days prior to beginning this work. All debris removal work shall be completed prior to executing the repairs herein.

2. The work to be performed under this item shall not be started until the existing concrete surfaces have been cleaned and the cracks to be injected identified and delineated.

3. **Crack Preparation:** Before repair work commences, clean all cracks of loose matter such as concrete, dirt, laitance, oil, grease, salt or any other contaminants. All

cracks shall be blown clean as practical with pressurized water within 24 hours of sealing cracks and installing injection ports. Pressure washing equipment shall be capable of producing zero degree (0°) spray angle and 2,000 psi (min) at the tip.

4. **Surface Seal and Set Injection Ports:** Prior to pressure injection, surface seal the crack and set injection ports using FX-763 Hydro-Ester® Trowel Grade Epoxy or FX-764 Hydro-Ester® Splash Zone and Underwater Paste. The injection ports shall be surfaced mounted or tap in type, whichever is deemed more appropriate and effective subject to Engineer's approval. Should certain conditions be encountered which require the use of a special quick setting injection port adhesive, the Contractor shall notify Engineer of these conditions and submit proposed special adhesive specification sheets to the Engineer. Special adhesive to be used in this work item are subject to Engineer's approval. The distance between entry ports horizontally or vertically shall not be greater than 12".

5. **Injection:** The epoxy shall be injected under pressure, using a small nozzle mechanically attached to the injection port. The operation shall be continued until epoxy material advances to and begins to exude from the next port or until the back pressure indicates that that no more material is being accepted subject to Engineer's approval. The operation shall begin at the lowest port(s) and continue upwards along the crack(s) in a continuous fashion until the injection procedure for the member is complete. Injection ports shall be sealed by mechanical means prior to disconnecting the hose or nozzle from the injection line as the operation proceeds. Injection ports and associated hardware may be left in place after the injection procedure is complete.

6. The Engineer may elect to seal cracks by means other than injection (application of surface seal epoxy material).

7. Sketches depicting the existing footings and pertinent details are provided in the Appendix for the Contractor's reference.

8. The Contractor shall provide the Engineer with the following notices prior to mobilizing and engaging in any onsite repair work:
   a. Mobilization: Five (5) days
   b. Preparation: Forty-eight (48) hours
   c. Injection of existing cracks: Forty-eight (48) hours

   In addition to the above, Contractor shall submit to the Engineer (for his review and comment) a detailed work plan containing the specifics of the proposed

schedule, materials, equipment, staging, and procedures to be used in completing the work.

MEASUREMENT AND PAYMENT

Prepare Existing Cracks will be measured in linear feet of crack and paid for at the contract unit price per linear foot. This price shall include pressurized cleaning, furnishing and placing crack sealing material, joint preparation (including, but not limited to, cleaning and furnishing ports for injection), power washing, equipment, labor, tools and incidentals necessary to complete the work. The cost associated with removal of sediment, making relief cuts and any other required work to remove debris adjacent to the piers, to the approval of the Engineer, shall be incidental to this pay item.

Inject Existing Cracks will be measured in gallons of epoxy injected and paid for at the contract unit price per gallon. This price shall include furnishing and injecting epoxy, equipment, labor, tools and incidentals necessary to complete the work. Epoxy used for pressure tests conducted in accordance with this Special Provision shall be measured for payment.

Payment will be made under:

Pay Item	Pay Unit
Prepare Existing Cracks	Linear Foot
Inject Existing Cracks	Gallon

Nationwide Permit (3) Maintenance (9/12/2012 as corrected)

(a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project or within the boundaries of the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris in the vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) and/or the placement of new or additional riprap to protect the structure. The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization. The placement of new or additional riprap must be the minimum necessary to protect the structure or to ensure the safety of the structure. Any bank stabilization measures not directly associated with the structure will require a separate authorization from the district engineer.

(c) This NWP also authorizes temporary structures, fills, and work necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be

removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects. Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 31). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Sections 10 and 404)

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption for maintenance.

REGIONAL CONDITIONS

(needed)

General Conditions:

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the 29 provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation.

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby,

without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed. (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the nonFederal applicant of the Corps' determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps. (d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs. (e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take'' means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.
(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties.

(a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for

listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA 33 section 106 consultation is required and will occur, the district engineer will notify the non Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an

applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332. (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment. (2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered. (3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). (4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided. (5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in

the loss of greater than 1/2-acre of waters of 35 the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature: "When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____
(Transferee)
_____ (Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permitteeresponsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the

certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation. 31. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either: (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or

revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2). (b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information: (1) Name, address and telephone numbers of the prospective permittee; (2) Location of the proposed project; 38 (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans); (4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate; (5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan. (6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act. (c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used. (d)

Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level. 39 (2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5. (3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act. (4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a

waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the 40 vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10- acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any

activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) that the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific 41 conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

Section 401 Water Quality Certification (4/18/12)

The State Water Control Board provided unconditional §401 Water Quality Certification for the following Nationwide Permits, as meeting the requirements of the Virginia Water Protection Permit Regulation, which serves as the Commonwealth's §401 Water Quality Certification.
Nationwide Permits
1,2,3,4,5,6,8,9,10,11,13,15,20,22,23,28,30,31,33,34,35,36,37,38,45,46,49 and 50.

Coastal Zone Management Consistency Determination (4/19/12)

The Commonwealth of Virginia's Department of Environmental Quality (DEQ) had determined that the 2012 Nationwide Permits are consistent with the Virginia Regional Conditions provided that the USACE and NWP holders comply with all applicable requirements and with the recommendations found in their letter of April 19, 2012. The applicable requirements include, but are not limited to the following:

1) Prior to construction, applicants shall obtain all required permits and approvals not yet secured for the activities to be performed that are applicable to the VCP's enforceable policies and that applicants also adhere to all the conditions contained therein.
2) The State Water Control Board has provided §401 Clear Water Act Water Quality Certification for the NWPs and Virginia Regional Conditions. Therefore, the activities that qualify for the NWPs meet the requirements of DEQ's Virginia Water Protection permit Regulation, provided that the permittee abides by the conditions of the NWP. As to the exceptions for activities that would otherwise qualify for one of these Nationwide Permits, the State will

continue to process applications for individual §401 Certifications through a Virginia Water Protection General or Individual Permit pursuant to 9 VAC 25-210-10 et seq. The Commonwealth requests that the USACE forward to DEQ pre-construction notifications for any activities that fall into an excepted category for individual review of certain activities.

SIMPSON STRONG – TIE
(FORMERLY FOX INDUSTRIES INC.)
PRODUCT DATA SHEETS

FX-751LV

Low-Viscosity Structural Injection Epoxy

SIMPSON Strong-Tie®

CSI Specification: 03 01 00 Maintenance of Concrete

DESCRIPTION

FX-751LV Low-Viscosity Structural Injection Epoxy is a two-component, 100% solids, moisture-tolerant, structural epoxy designed for pressure injection of concrete cracks.

SPECIFICATION COMPLIANCE

FX-751LV exceeds the performance requirements of ASTM C 881, Type I and IV, Grade 1, Class B.

ASSESSMENT

WHERE TO USE

- Pressure injection of static cracks up to ¼ in. (6.4 mm)
- Underwater pressure injection
- Binder for anchor and base plate grouting

FEATURES

- Structural formulation
- Low-viscosity
- Moisture tolerant, can be used on dry and damp (SSD) surfaces
- Can be used with metered pressure-injection equipment

PRODUCT DATA

Generic Description
Epoxy Resin

Packaging
15 oz. side-by-side dual cartridge (FX751LVCTG)
3 gallon kit (FX751LVKT3) contains:
- (2) 1 gallon cans of Component "A" (FX751LV-1A)
- 1 gallon can of Component "B" (FX751LV-1B)

15 gallon kit (FX751LVKT15) contains:
- (2) 5 gallon pails of Component "A" (FX751LV-5A)
- 5 gallon pail of Component "B" (FX751LV-5B)

150 gallon kit (FX751LVKT150) contains:
- (2) 50 gallon drums of Component "A" (FX751LV-50A)
- 50 gallon drum of Component "B" (FX751LV-50B)

Color
Mixed Epoxy: Light Straw

Mixing Ratio
2A:1B

Product Yield
231 $in.^3$/gal. (0.001 m^3/L) neat

300–600 $in.^3$/gal. (0.0013–0.0026 m^3/L) when mixed 1-3 parts by volume with FX-701 Oven-Dried Graded Silica Filler

Full Cure
24 hrs at 70°F (21°C)

Storage
Store dry between 40–95°F (4–35°C)

Shelf Life
2 years in unopened packaging

Viscosity
800 cps at 72°F (22°C)

VOC
56 g/L (A+B)

TECHNICAL INFORMATION

Compressive strength, neat, 28 days
ASTM D 695
11,000 psi 75.8 MPa

Compressive yield strength
12,000 psi 82.7 MPa

Tensile strength, 14 days
ASTM D 638
8,000 psi 55.2 MPa

Tensile modulus of elasticity
480,500 psi 3,310 MPa

Flexural strength, 14 days
ASTM D 790
12,000 psi 82.7 MPa

Bond strength, slant shear, 7 days
ASTM C 882, hard to hard
2,800 psi 19.3 MPa

Compressive strength, with 3 1/4 parts FX-701 filler
ASTM C 109
24 hours
8,500 psi 58.6 MPa
3 days
9,500 psi 65.5 MPa
7 days
10,000 psi 68.9 MPa

PLANNING

Limitations

- Do not apply to surfaces below 40°F (4°C)
- Do not apply to surfaces above 90°F (32°C)
- Material is a vapor barrier after cure. When used as a grout, concrete surface must not exhibit an active moisture vapor drive.
- For use in non-moving cracks only
- Not for use in actively leaking or seeping cracks. Remove active hydrostatic pressure before attempting injection.
- For cracks wider than ¼ in. (0.6 cm), consult a qualified engineer
- Not recommended for large exterior repairs or applications subject to large thermal change when used as a repair mortar
- Product may discolor if exposed to direct sunlight
- Not recommended for use as a mortar for repairs subject to large thermal change
- When used as a base plate grout or repair mortar, minimum application thickness is ½ in. (1.3 cm). Maximum installation depth is 3 in. (7.6 cm)
- Epoxy grouts can crack due to thermal stress. Do not form more than 4 in. (10.2 cm) beyond the plate to limit thermal cracking
- When used as a binder, use FX-701 Oven-Dried, Graded Silica Filler to prevent encapsulating moisture

Please note: This product has not been evaluated for resisting long-term sustained loads in anchor applications. Refer to the current Anchoring and Fastening Systems for Concrete and Masonry catalog or www.strongtie.com for code-listed structural anchoring adhesives.

PREPARATION

Surface Preparation

Concrete must be sound, clean and free of all contaminants that could impair product adhesion or performance. Concrete should be a minimum of 28 days old and fully cured prior to coating application.

Anchor Bolt Grouting: Drill hole to specified diameter and depth using a rotary hammer drill with a carbide tip. Blow the hole clean for a minimum of 4 seconds using 80 p.s.i. (min.) oil free, compressed air to remove dust from hole. Brush the hole clean for a minimum of 4 cycles using with a nylon hole brush such as ETB6 (See **www.strongtie.com** for appropriate brush size). Blow again for a minimum of 4 seconds to remove remaining dust.

Base Plate Grouting: Prepare concrete surface by abrasive blasting or other mechanical means to achieve an open pore structure and profile per ICRI Guideline 310.2 CSP5-9. For best results, chamfer the edges of the grout pad.

Steel Equipment Surfaces: Prepare steel equipment base surfaces to be grouted per SSPC-SP6/NACE 3 Commercial Blast Cleaning with a 2–3 mil surface profile. Remove all cleaning media and debris by vacuum or blowing with high-pressure, oil-free air. Wipe with clean cloths to remove any remaining surface contaminants. Install grout immediately or prime with FX-408 Zinc-Rich Epoxy Primer before flash rusting can occur.

Forming: Form area to be grouted with a single head box. Forms must be liquid tight to prevent grout leakage during installation. Use appropriate sealants or putties to seal all surfaces to prevent leaks. Use an appropriate release agent prior to erecting forms to improve release. Do not allow release agent to be applied to any non-formed surfaces as it can inhibit the bond of the grout. Do not extend form edges more than 4 in. (10 cm) beyond the plate.

Repair Mortar: Prepare the surface by abrasive blasting or other mechanical means to achieve an open pore structure and profile per ICRI Guideline 310.2 CSP5-9. Prepare the repair area in accordance with ICRI Guideline No. 310.1R, taking care to avoid micro-cracking. Prime exposed reinforcing steel with either FX-406 or FX-408 zinc-rich primers.

Pressure Injection: Prepare surface area around crack by abrasive blasting or other mechanical means, taking care not to impact any debris into the crack. Blow out the crack with 80 p.s.i. (min.) oil free, compressed air to remove any visible debris. For surface mounted ports, use a suitable paste-over material such as SET, CIP or FX-763 to adhere the ports to concrete surface. For drill-in ports, drill the appropriate sized hole and set. Paste over and seal the entire crack, and port bases using a putty knife. Apply the paste-over material at a minimum thickness of 3⁄16 in. (0.47 cm) and 1 in. (2.5 cm) wide. Cover port bases with a minimum thickness of ¼ in. (0.6 cm) and extend the paste-over at least 1 in. (2.5 cm) beyond the base of the port. If possible, seal the backside of the crack. Allow paste-over material to fully cure before injecting.

PREPARATION (CONT.)

Mixing

For optimal product performance, condition individual components to 70°F (21°C) and stir thoroughly prior to use. Do not prepare more material than can be used within the pot life of the product. **For neat resin:** Proportion components at a 2A:1B ratio by volume in a clean pail or use calibrated mixing equipment. Mix thoroughly with a low-speed (300–600 rpm) drill and mixing paddle for 2–3 minutes, scraping unmixed material from sides and bottom of mixing container as needed to achieve a uniform consistency. Avoid entrapping air into mixture.

For grout or patching mortar: mix neat resin as stated above, then add 1–3 parts of FX-701 by volume, slowly to avoid clumping, while continuing to mix for approximately 2–3 minutes or until a uniform consistency is achieved, scraping the pail as needed.

For large batches, mix neat resin as stated above, then transfer the mixed liquid to a mortar mixer and add 1–3 parts of FX-701 by volume, and continue mixing for 2–3 minutes or until a uniform consistency is achieved. Do not thin FX-751LV.

Dual Cartridges: Hold cartridge upright, unscrew retaining nut and remove plugs. Attach Simpson Strong-Tie EMNO22 mixing nozzle (included) to the top of cartridge and secure with retaining nut. Insert cartridge into dispensing tool. When using a pneumatic dispensing tool, regulate air pressure to 80–100 psi. **IMPORTANT:** Cartridge must be equalized prior to use. Failure to follow these instructions can result in product not properly curing. To ensure proper mixing ratio, orient the cartridge and tool in an upward direction so any entrapped air can escape into the mixing nozzle. Begin by squeezing the trigger on the tool until the mixing nozzle is completely full. Once full, re-orient the cartridge and tool to the side and dispense 3 full trigger pulls (approximately ½ oz./30 mL) and insure all air bubbles are out of the cartridge before beginning the injection process. Repeat if necessary. Dispose of unmixed adhesive in accordance with local regulations. When properly mixed, FX-751LV Low-Viscosity Structural Injection Epoxy will be a uniform straw color.

Modification or improper use of mixing nozzle may impair adhesive performance. To store partially used cartridges, leave hardened nozzle in place. To re-use, attach new nozzle. Adhesive will start to gel in the nozzle if allowed to stand beyond the listed pot life. Adhesive will gel faster at higher temperatures. Material under pressure can blowout the back of the cartridge if the adhesive in the nozzle hardens.

EXECUTION

Application

For Anchor Bolt Grouting: With clean, oil- free anchor bolt stabilized in place, fill hole with properly mixed FX-751LV grout taking care to avoid entrapping air. Strike off any excess material with a steel trowel. Do not disturb anchor until fully cured.

For Dowel Grouting: Fill hole by pumping or pouring properly mixed grout approximately ½ to ⅔ full. If pumping, withdraw nozzle as the hole fills up taking care to avoid entrapping air. Insert clean, oil-free dowel, turning slowly until it contacts the bottom of the hole. Strike off any excess material with a steel trowel. Do not disturb until fully cured.

For pressure injection: With all ports open, begin injecting FX-751LV at the lowest port and work your way up. For horizontal applications, choose one end of the affected site and work your way to the other end. Begin pumping FX-751LV into the first port to establish flow. If the next port shows material, close that port and continue pumping until the first port refuses material. If the first port refuses material prior to showing at the next port, close the first port and re-establish flow at the second port. Repeat until all ports refuse material. When injection is complete, and following initial set time, remove installation ports and seal holes with FX-922 Plug and Fast Set or FX-763 Low-Modulus Trowel-Grade Epoxy. Remove cured paste-over epoxy by mechanical means.

For base plate grouting: Pour properly mixed FX-751LV grout into the head box from side of the form only, allowing the grout to freely flow to all sides of the baseplate. Do not pour from more than one location as air entrapment can occur. Pour continuously while maintaining a minimum of 1 inch (2.5 cm) of head above the bottom of the baseplate until grout appears at full depth on all sides. The use of banding straps or plywood strips to aid the flow is allowed so long as care is taken to avoid air entrapment. Do not vibrate. Continue pouring until the grout levels at ¼ in. (0.6 cm) above the plate bottom on all sides. Leaks will not self-seal and will result in voids, so take care to stop all leaks during the grouting process.

For repair mortar: Pour mixed material into repair area. Screed and vibrate if necessary. Finish with wood float or steel trowel. Allow FX-751LV grout to fully cure to its design strength prior to placing into service.

FX-751LV grout can be applied to dry or damp (SSD) surfaces. Do not apply to wet surfaces or through standing water. Do not apply in direct sunlight and protect from large temperature variations for 48 hours following installation.

SAFETY

CAUTION

Component "A": May cause eye and skin irritation. May cause skin sensitization.

Component "B": CORROSIVE! Severe irritation to eyes and skin. May cause skin sensitization. Components of the product may affect the nervous system.

Protective Measures: The use of safety glasses and chemically resistant gloves is recommended. Use appropriate clothing to minimize skin contact. The use of a NIOSH-approved respirator is required to protect respiratory tract when ventilation is not adequate to limit exposure below the PEL. Refer to Material Safety Data Sheet (MSDS) available at **www.strongtie.com/msds** for detailed information.

FIRST AID

Eye Contact: Immediately flush eyes with plenty of cool water for at least 15 minutes while holding the eyes open. If redness, burning, blurred vision, or swelling persists, **CONSULT A PHYSICIAN**.

Skin Contact: Remove product and wash affected area with soap and water. Do not apply greases or ointments. Remove contaminated clothing. Wash clothing with soap and water before reuse. If redness, burning, or swelling persists, **CONSULT A PHYSICIAN**.

Ingestion: DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY FOR CURRENT INFORMATION. Never administer anything by mouth to an unconscious person. Rinse mouth out with water. Never leave patient unattended. If vomiting occurs spontaneously, lay individual on their side, keeping head below hips to prevent aspiration of material into lungs.

Inhalation: Remove patient to fresh air. If patient continues to experience difficulty breathing, **CONSULT A PHYSICIAN**.

CLEAN UP

Spills: Construct a dike to prevent spreading. Soak up with absorbent material such as clay, sand or other non-reactive material. Place in leak-proof containers. Keep out of sewers, storm drains, surface waters, and soils.

Surface Clean: Wipe up uncured material with cotton cloths. If desired scrub area with abrasive, water-based cleaner and flush with water. If approved, solvents such as FX-Epoxy Cleaner, ketones (MEK, acetone, etc.), or adhesive remover can be used. Cured material can only be removed by mechanical means.

Tools and Equipment: Remove uncured material with FX-Epoxy Cleaner, ketones (MEK, acetone, etc.), or adhesive remover. Cured material can only be removed by mechanical means.

Skin: Use a non-toxic pumice-based soap, citrus-based hand cleaner, or waterless hand cleaner towel. Never use solvents to remove product from skin.

Disposal: Dispose of container and unused contents in accordance with federal, state, and local requirements. Containers may be recycled; consult local regulations for exceptions.

Distributor

IMPORTANT INFORMATION

It is the responsibility of each purchaser and user of each product to determine the suitability of the product for its intended use. Prior to using any product, consult a qualified design professional for advice regarding the suitability and use of the product, including whether the capacity of any structural building element may be impacted by a repair. As jobsite conditions vary greatly, a small-scale test patch is required to verify product suitability prior to full-scale application. The installer must read, understand and follow all written instructions and warnings contained on the Limited Warranty, product label(s), Product Data Sheet(s), Material Safety Data Sheet(s) and the **www.strongtie.com** website prior to use. For industrial use only by qualified applicators. KEEP OUT OF REACH OF CHILDREN!

Proposition 65: Products contained within this document contain materials listed by the state of California as known to cause cancer, birth defects, or reproductive harm.

FX-763

Low-Modulus Trowel-Grade Epoxy

SIMPSON Strong-Tie®

CSI Specification: 03 01 00 Maintenance of Concrete

DESCRIPTION

FX-763 Low-Modulus Trowel-Grade Epoxy is a two-component, 100% solids, moisture-tolerant, non-sag epoxy designed for vertical, horizontal, and overhead applications and uses.

SPECIFICATION COMPLIANCE

FX-763 exceeds the performance requirements of ASTM C 881, Type I, Grade 3, Class B.

ASSESSMENT

WHERE TO USE

- Joint repairs
- Mortar when combined with FX-701 Graded Silica Filler for heavy-traffic floor repairs
- For vertical and overhead concrete patching
- Vertical, horizontal and overhead crack sealing
- Securing ports and paste-over for pressure injection applications
- As a jacket joint sealer and top-bevel material for the FX-70® Structural Repair and Protection System

FEATURES

- Bonds well to most construction materials
- Bonds to dry or damp surfaces
- Excellent chemical and abrasion resistance in wastewater and other industrial applications
- Exceptional resistance to hydrogen sulfide (H_2S) gas
- Easily applied with trowel or putty knife
- Can be feather edged

PRODUCT DATA

Generic Description
Trowel-grade epoxy

Packaging
3 gallon kit (FX763KT3) contains:
- (2) 1 gallon cans of Component "A" (FX763-1A)
- 1 gallon can of Component "B" (FX763-1B)

15 gallon kit (FX763KT15) contains:
- (2) 5 gallon pails of Component "A" (FX763-5A)
- 5 gallon pail of Component "B" (FX763-5B)

Color
Mixed Epoxy: Gray

Mixing Ratio
2A:1B

Product Yield
231 in.^{3}/gal. (0.001 m^3/L) neat

350 in.^{3}/gal. (0.0015 m^3/L) when mixed 1 part by volume with FX-701 Oven-Dried Graded Silica Filler

Pot Life
30 min. at 72°F (22°C)

Storage
Store dry between 40–95°F (4–35°C)

Shelf Life
2 years in unopened packaging

Solids Content
100% by volume

Viscosity
non-sag

VOC
3 g/L (A+B)

TECHNICAL INFORMATION

Tensile strength, 72°F (22.2°C)
ASTM D 638
6,000 psi min 34.5 MPa

Linear coefficient of shrinkage on cure
ASTM D 2566
0.005

Compressive strength, 7 days
ASTM D 695
9,000 psi min 62 MPa

Compressive modulus
ASTM D 695
200,000 psi 1,380 MPa

Bond strength (slant shear), 7 days
ASTM C 882
2,500 psi min 10.3 MPa

PLANNING

Limitations

- Do not apply to surfaces below 40°F (4°C)
- Do not apply to surfaces above 90°F (32°C)
- 1 in. (2.5 cm) maximum lift thickness for vertical and overhead repairs
- Material is a vapor barrier after cure. Concrete surface must not exhibit an active moisture vapor drive.
- Adhesion and product compatibility testing must be performed prior to over-coating existing coatings
- Product may discolor if exposed to direct sunlight
- Not recommended for large exterior repairs or applications subject to large thermal change
- Not for use as a structural anchoring adhesive
- Do not exceed one part by volume FX-701 Graded Silica Filler for mortar mixes

Please note: This product has not been evaluated for resisting long-term sustained loads in anchor applications. Refer to the current Anchoring and Fastening Systems for Concrete and Masonry catalog or www.strongtie.com for code-listed structural anchoring adhesives.

PREPARATION

Surface Preparation

All surfaces must be sound, clean and free of all contaminants that could impair product adhesion or performance.

Steel: All welds must be ground smooth. Remove weld spatter. Round sharp edges to a minimum ⅛ in. (3.2 mm) radius. Pre-stripe all welds, edges and protrusions. Prepare surface by abrasive blasting or other means per SSPC-SP6/NACE 3 Commercial Blast Cleaning with a 2–3 mil surface profile. Apply FX-763 immediately or prime before flash rusting can occur. Contact Simpson Strong-Tie for primer recommendations.

Concrete: Concrete should be a minimum of 28 days old and fully cured prior to coating application. Prepare surface by abrasive blasting or other mechanical means per SSPC-SP13/NACE, ICRI Guideline 310.2 CSP5-9.

For Repair Mortar applications: Prepare the repair area in accordance with ICRI Guideline No. 310.1R, taking care to avoid micro-cracking. Prime exposed reinforcing steel with either FX-406 or FX-408 zinc-rich primers.

Wood/Previously Painted Surfaces: Remove all surface contaminants and mechanically abrade substrate to achieve the equivalent of a 100 grit sandpaper profile.

Mixing

For optimal product performance, condition individual components to 70°F (21°C) and stir thoroughly prior to use. Do not prepare more material than can be used within the pot life of the product. For neat resin: Proportion components at a 2A:1B ratio by volume in a clean pail or use calibrated mixing equipment. Mix thoroughly with a low-speed (300–600 rpm) drill and mixing paddle for 2–3 minutes, scraping unmixed material from sides and bottom of mixing container as needed to achieve a uniform consistency. Avoid entrapping air into mixture.

For grout or patching mortar: mix neat resin as stated above, then add up to 1 parts of FX-701 Oven-Dried Graded Silica Filler by volume, slowly to avoid clumping, while continuing to mix for approximately 2–3 minutes or until a uniform consistency is achieved, scraping the pail as needed. Do not thin FX-763.

EXECUTION

Application

For anchor grouting/doweling/pinning: Fill hole ½ to ⅔ full. Insert clean, oil-free anchor, turning slowly until the anchor contacts the bottom of the hole. Do not disturb anchor until fully cured (see cure time schedule).

General Concrete Repair/Adhesive: Apply properly mixed FX-763 Low-Modulus Trowel Grade Epoxy to the prepared substrates with a putty knife. Secure in place until fully cured.

For repair mortar: Trowel mixed material into repair area. Screed and finish with a steel trowel.

Crack Injection Paste-Over/Port Adhesive: Apply properly mixed FX-763 Low-Modulus Trowel Grade Epoxy to the surface of injection ports and adhere the ports to concrete surface. After ports have set, seal the entire crack by applying FX-763 Low-Modulus Trowel Grade Epoxy with a putty knife at a minimum thickness of 3⁄16 in. (0.47 cm) and 1 in. (2.5 cm) wide over the crack. Cover all ports with a minimum thickness of ¼ in. (0.6 cm) and extend 1 in. (2.5 cm) beyond the base of the port. If possible, seal the backside of the crack. Allow FX-763 Low-Modulus Trowel Grade Epoxy to fully cure before injecting.

FX-763 Low-Modulus Trowel Grade Epoxy can be applied to (SSD) concrete. Do not apply to wet concrete surfaces. All other surfaces must be dry. Do not apply in direct sunlight and protect from large temperature variations for 24 hours following installation.

SAFETY

CAUTION

Component "A": May cause eye and skin irritation. May cause skin sensitization.

Component "B": CORROSIVE! Severe irritation to eyes and skin. May cause skin sensitization. Components of the product may affect the nervous system.

Protective Measures: The use of safety glasses and chemically resistant gloves is recommended. Use appropriate clothing to minimize skin contact. The use of a NIOSH-approved respirator is required to protect respiratory tract when ventilation is not adequate to limit exposure below the PEL. Refer to Material Safety Data Sheet (MSDS) available at **www.strongtie.com/msds** for detailed information.

FIRST AID

Eye Contact: Immediately flush eyes with plenty of cool water for at least 15 minutes while holding the eyes open. If redness, burning, blurred vision, or swelling persists, **CONSULT A PHYSICIAN**.

Skin Contact: Remove product and wash affected area with soap and water. Do not apply greases or ointments. Remove contaminated clothing. Wash clothing with soap and water before reuse. If redness, burning, or swelling persists, **CONSULT A PHYSICIAN**.

Ingestion: DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY FOR CURRENT INFORMATION. Never administer anything by mouth to an unconscious person. Rinse mouth out with water. Never leave patient unattended. If vomiting occurs spontaneously, lay individual on their side, keeping head below hips to prevent aspiration of material into lungs.

Inhalation: Remove patient to fresh air. If patient continues to experience difficulty breathing, **CONSULT A PHYSICIAN**.

CLEAN UP

Spills: Construct a dike to prevent spreading. Soak up with absorbent material such as clay, sand or other non-reactive material. Place in leak-proof containers. Keep out of sewers, storm drains, surface waters, and soils.

Surface Clean: Wipe up uncured material with cotton cloths. If desired scrub area with abrasive, water-based cleaner and flush with water. If approved, solvents such as FX-Epoxy Cleaner, ketones (MEK, acetone, etc.), or adhesive remover can be used. Cured material can only be removed by mechanical means.

Tools and Equipment: Remove uncured material with FX-Epoxy Cleaner, ketones (MEK, acetone, etc.), or adhesive remover. Cured material can only be removed by mechanical means.

Skin: Use a non-toxic pumice-based soap, citrus-based hand cleaner, or waterless hand cleaner towel. Never use solvents to remove product from skin.

Disposal: Dispose of container and unused contents in accordance with federal, state, and local requirements. Containers may be recycled; consult local regulations for exceptions.

Distributor

FX-764

Splash Zone and Underwater Paste

SIMPSON Strong-Tie®

CSI Specification: 03 01 00 Maintenance of Concrete

DESCRIPTION

FX-764 Splash Zone and Underwater Paste is a two-component, 100% solids, moisture-tolerant, non-sag, trowel-grade epoxy designed for use in underwater applications. FX-764 is ideal for underwater crack sealing, securing injection ports, anchoring, doweling, pinning, and general repair of concrete, steel and wood.

ASSESSMENT

WHERE TO USE

- Underwater repair of concrete, wood and steel
- Non-structural underwater repair of marine structures

FEATURES

- May be applied underwater
- Hand mixed
- Bonds well to wet surfaces
- Paste viscosity

PRODUCT DATA

Generic Description
Underwater epoxy paste

Packaging
1/2 gallon kit (FX764KT2QT) contains:
- 1 quart can of Component "A" (FX764-1QTA)
- 1 quart can of Component "B" (FX764-1QTB)

2 gallon kit (FX764KT2) contains:
- 1 gallon can of Component "A" (FX764-1A)
- 1 gallon can of Component "B" (FX764-1B)

4 gallon kit (FX764KT4) contains:
- 2 gallon pail of Component "A" (FX764-2A)
- 2 gallon pail of Component "B" (FX764-2B)

10 gallon kit (FX764KT10) contains:
- 5 gallon pail of Component "A" (FX764-5A)
- 5 gallon pail of Component "B" (FX764-5B)

Color
Gray

Mixing Ratio
1A:1B

Product Yield
231 in.^{3}/gal. (0.001 m^3/L), depending on surface profile and porosity

Pot Life
2 hours at 70°F (22°C)

Storage
Store dry between 40–95°F (4–35°C)

Shelf Life
2 years in unopened packaging

Viscosity
non-sag

VOC
6 g/L (A+B)

TECHNICAL INFORMATION

Compressive strength
ASTM C 579, Method B

24 hours:	4,000 psi	27.6 MPa
3 days:	6,400 psi	44.1 MPa
7 days:	7,500 psi	51.7 MPa

Tensile strength, 7 days
ASTM C 307

1,500 psi	10.3 MPa

Bond strength
ASTM C 882

2,000 psi	13.8 MPa

Water absorption
ASTM C 413
0.32%

Direct in-situ bond, underwater

50 psi	345 KPa

PLANNING

Limitations

- Do not apply to surfaces below 50°F (10°C)
- Do not apply to surfaces above 100°F (38°C)
- Minimum lift thickness of ⅛ in. (0.3 cm)
- Maximum lift thickness of 2 in. (5 cm)
- Underwater product placement should only be attempted by certified and experienced diving contractors

PREPARATION

Surface Preparation

Surface must be at least 50°F (10°C) prior to application. All surfaces must be sound, free of loose rust, marine growth, oil, and other contaminants. Prepare surface by high-pressure waterjetting or other mechanical means necessary to achieve SSPC-SP12/NACE 5 WJ-4.

Mixing

For optimal product performance, condition individual components to 70°F (21°C) prior to use. Proportion Component “A” and Component “B” at a 1A:1B ratio by volume in a clean pail. Mix thoroughly by hand (wearing chemical resistant gloves dampened with water to prevent sticking) until uniform consistency is achieved. Scrape unmixed material from sides and bottom of mixing container as needed and avoid entrapping air into mixture.

EXECUTION

Application

Apply FX-764 by putty knife, trowel, or by hand wearing tight-fitting rubber or plastic chemical-resistant gloves. Gloves should be wet with soapy water to prevent adhesion to gloves. Press FX-764 onto surface and knead into place to a maximum lift thickness of 2 in. (5 cm). Smooth gently by hand or trowel, using water as a lubricant.

SAFETY

CAUTION

Component "A": May cause eye and skin irritation. May cause skin sensitization.

Component "B": CORROSIVE! Severe irritation to eyes and skin. May cause skin sensitization. Components of the product may affect the nervous system.

Protective Measures: The use of safety glasses and chemically resistant gloves is recommended. Use appropriate clothing to minimize skin contact. The use of a NIOSH-approved respirator is required to protect respiratory tract when ventilation is not adequate to limit exposure below the PEL. Refer to Material Safety Data Sheet (MSDS) available at **www.strongtie.com/msds** for detailed information.

FIRST AID

Eye Contact: Immediately flush eyes with plenty of cool water for at least 15 minutes while holding the eyes open. If redness, burning, blurred vision, or swelling persists, **CONSULT A PHYSICIAN**.

Skin Contact: Remove product and wash affected area with soap and water. Do not apply greases or ointments. Remove contaminated clothing. Wash clothing with soap and water before reuse. If redness, burning, or swelling persists, **CONSULT A PHYSICIAN**.

Ingestion: DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY FOR CURRENT INFORMATION. Never administer anything by mouth to an unconscious person. Rinse mouth out with water. Never leave patient unattended. If vomiting occurs spontaneously, lay individual on their side, keeping head below hips to prevent aspiration of material into lungs.

Inhalation: Remove patient to fresh air. If patient continues to experience difficulty breathing, **CONSULT A PHYSICIAN**.

CLEAN UP

Spills: Construct a dike to prevent spreading. Soak up with absorbent material such as clay, sand or other non-reactive material. Place in leak-proof containers. Keep out of sewers, storm drains, surface waters, and soils.

Surface Clean: Wipe up uncured material with cotton cloths. If desired scrub area with abrasive, water-based cleaner and flush with water. If approved, solvents such as FX-Epoxy Cleaner, ketones (MEK, acetone, etc.), or adhesive remover can be used. Cured material can only be removed by mechanical means.

Tools and Equipment: Remove uncured material with FX-Epoxy Cleaner, ketones (MEK, acetone, etc.), or adhesive remover. Cured material can only be removed by mechanical means.

Skin: Use a non-toxic pumice-based soap, citrus-based hand cleaner, or waterless hand cleaner towel. Never use solvents to remove product from skin.

Disposal: Dispose of container and unused contents in accordance with federal, state, and local requirements. Containers may be recycled; consult local regulations for exceptions.

Distributor

SPECIAL PROVISION
EQUIPMENT PURCHASE AND DELIVERY

DESCRIPTION

This work shall consist of purchasing new fully functional and assembled equipment for and delivery to the RMTA. Presented below are a list of items to be purchased and their minimum specification are contained herein. Additionally all equipment must be delivered to the RMTA by September 1 2015.

1. Tractor with Front Loader
2. 4 ft. Rotary Cutter
3. 20 ft. Utility Trailer
4. Leaf Blower
5. Aerator
6. Tailgate Spreader

The Contractor shall submit specifications certified by the manufacturer to the Engineer for approval prior to purchase of equipment. If the Contractor finds a similar product not meeting the minimum specifications, the Contractor may submit all applicable documents in writing for the Engineer to review. Alternate products not meeting minimum specification shall be substituted only with Approval by both the RMTA and the Engineer.

Once items have been approved, the Contractor shall submit a time for delivery to the Engineer and RMTA for approval. The Contractor shall be aware that delivery times shall take place typically between the hours of 8 A.M. to 5 P.M. Monday through Friday. All equipment shall be delivered to the SB Powhite Parkway Storage Yard. The tractor with font loader, 4 ft. rotary cutter and trailer shall be delivered together.

All manuals, warranty information, registration information, and other paperwork shall be neatly organized in a binder when delivered. Additionally all equipment shall be tested and have all fluids topped off, including, but not limited to fuel, oil, hydraulic fluid, etc.; so that each piece of equipment can be used in the manner it was intended for once it was delivered. All completed units shall comply and be tested in accordance with all applicable O.S.H.A. ANSI, FMVSS, etc. standards and regulations.

ITEMS FOR PURCHASE

1. Tractor with Front Loader

Tractor and Loader shall be provided by the same manufacturer.
Tractor and Loader manufacturer must have an authorized dealer and service center located within 40 miles of Richmond, Virginia.

Manufacturer

- John Deere – 2 Series*
- Kubota -B series*
- Massey Ferguson – 1700 E Series*
- New Holland – Boomer Series*
- Other as approved by the Engineer
  *NOTE: Not all tractors listed in each series will meet minimum specifications

Engine

- Type — Liquid cooled, 3-cylinder diesel, Tier 3 or 4 emissions
- PTO horsepower — 19.0 HP
- Engine gross horsepower — 26.0 HP
- Rated RPM — 2800 rpm
- Air cleaner — Dual paper element
- Lubrication — Forced lubrication
- Cooling system — Pressurized radiator
- Radiator fan — Radial air flow

Capacities

- Fuel tank — 6.0 gal

Drive train

- Drive — Four Wheel Drive
- Transmission — Hydrostatic (2 range)
- Differential lock — Standard
- Final drive — Spur gear
- Brakes — Wet disc type
- PTO — Rear: 540 rpm
  Mid: 2000-2500 rpm

Hydraulics

- Hydraulic outlet — Front outlet (w/standard valve)
- 3-point hitch — Category 1
- Hydraulic control system — Standard
- Lift capacity at lift point: — 1500 lbs
- Lift capacity 24" behind LP: — 1200 lbs
- Steering — Integral type power steering

Tire Type

- Front R4
- Rear R4

Other Specifications

- 12 Volt Outlet Standard
- Lighting 2 work lights at front, 2 flashing hazard lights and 1 rear light
- Ground clearance 12.0 in

Loader

- Lift Capacity (Pivot Pin, Maximum Height) 1000 pounds
- Lift Height (Pivot Pin) 78 inches
- Bucket 53 in

2. Rotary Cutter

- Manufacturer
  - Same Brand as the Tractor with Front Loader provided in Item 1
  - Bush Hog, BH14
  - Woods, BB48X
  - Tennessee River Implements, L440
- Size 4'
- Approximate Weight 400-500 lbs
- Type Hitch Cat. 1
- Deck Thickness 11 GA Steel (or less)
- Slip Clutch Standard
- Gear Box 40 HP
- Wheels Laminated
- Hub Grease able

Additional Requirements:

- Function: Shall be compatible with tractor purchased and include all necessary items to connect with Tractor Loader including, but not limited to a shielded driveshaft and pins or other connections to the 3 point hitch.

3. 20 FT** Utility Trailer

**NOTE: Utility Trailer must be sized to safety accommodate the length, width and weight of the tractor with front loader and rotary cutter attached.

- Deck Dimensions** 82"x 20'
- G.V.W.R** 7,000#
- G.A.W.R. (Ea. Axle)** 3,500#
- Jack Top Wind, Set Back with Sand Foot (Bolted On)
- Frame 4" x 3" x 1/4" Angle
- Cross members 3" x 2" x 3/16" Angle
- Uprights 16" Tall 3" x 2" x 3/16" Angle
- Fenders 9" x 72" Tear Drop w/Back
- Axles Two 3,500# EZ Lube with Electric. Brakes
- Suspension Multi-Leaf Spring with Equalizer
- Tire ST, Load Range C, 15 or 16 inch
- Wheel 15 or 16 inch with 5 Bolt
- Floor 2" Treated Lumber
- Lights Grommet mount sealed LED D.O.T. Stop, Tail, Turn & Clearance
- Elec. Plug 7-Way RV
- Brakes Electric Brakes
- Spare tire Mounted to side of trailer
- Ramps 4' Tractor Ramp Gate

Additional Requirements:

- Forged Coupler
- Safety Chains Attached w/Cold Rolled Eyelets
- Lower Jack Support Plate
- Complete Break-A-Way System w/Charger
- 4 Tie Down Pockets
- Trailer shall be painted Black

4. Wheeled (Walk-Behind) Blower

Manufacturer

- Billy Goat – F9
- Little Wonder – LB160H Optimax
- Peco – F5
- Other as approved by the Engineer

Engine

- Engine Brand Honda
- Starting System Recoil Start
- HP/CC 163 cc
- Cycles 4-Cycle
- Consumer Warranty 2 Years
- Commercial Warranty 90 Days

Wheels

- Front Tire Size 10 Inch
- Rear Tire Size 10 Inch
- Tire Type Pneumatic Wheels

Impeller

- Impeller Blades 7
- Impeller Material Metal or Composite
- Impeller Size 17 Inch

Blower

- Air Speed (mph) 150+
- Volume of Air (CFM) 1397
- Discharge Opening 4 Inch

Overview

- Consumer Warranty 2 Years

Additional Specifications

- Continuously Welded Heavy Gauge Steel Housing
- Ergonomic Adjustable Handle Design with Anti-Vibration Grip

5. Walk-Behind Aerator

Manufacturer

- Bluebird – H424
- Billy Goat – AE401
- Classen – CA-18
- Other as approved by the Engineer

Specifications

- Engine Type Honda
- Engine Displacement 4 hp
- Starting System recoil
- No. of Tines 24
- Tine Width 17.5 inch
- Depth 2.75inch
- Weight System Removable Plates or Water Tank 50lb. minimum
- Productivity Up to 20,000 sq.ft/hr.
- Residential Warranty 1 Year Limited
- Commercial Warranty 1 Year Limited
- Emissions Compliance 49 State Compliant
- Clutch lever integrated into the folding handle
- Built-in Lift Handles

6. Tailgate Spreader

Manufacturer

- Fisher – 2500
- Saltdogg – TGS01B
- Western – 2500
- Other as approved by the Engineer

Specifications

- Hopper Construction Polyethylene
- Capacity 8 cu ft
- Motor 1/3 HP
- Spinner Size 12"
- Spreading Width 3' - 30'
- Material Salt
- Vehicle Application Full Size Trucks
- On-Off Controller

MEASUREMENT AND PAYMENT

Acquisition and Delivery of Tractor with Front Loader will be measured per lump sum and paid for at the contract unit price. The price shall include; purchasing for the RMTA, delivering equipment to the RMTA, any testing and break-in procedures, additional costs associated with filling required reservoirs (fuel, oil, Hydraulic fluid, etc.), organization of all paperwork neatly in a binder, and all equipment, labor and incidentals required to complete the work.

Acquisition and Delivery of 4 FT Rotary Cutter will be measured per lump sum and paid for at the contract unit price. The price shall include; purchasing for the RMTA, delivering equipment to the RMTA, all equipment connect cutter to the tractor including a driveshaft, any testing and break-in procedures, additional costs associated with filing required reservoirs (fuel, oil, Hydraulic fluid, etc.), organization of all paperwork neatly in a binder, and all equipment, labor and incidentals required to complete the work.

Acquisition and Delivery of 20 FT Utility Trailer will be measured per lump sum and paid for at the contract unit price. The price shall include; purchasing for the RMTA, delivering equipment to the RMTA, any testing and break-in procedures, additional costs associated with lubricating any moving parts, organization of all paperwork neatly in a binder, and all equipment, labor and incidentals required to complete the work.

Acquisition and Delivery of Leaf Blower will be measured per lump sum and paid for at the contract unit price. The price shall include; purchasing for the RMTA, delivering equipment to the RMTA, any testing and break-in procedures, additional costs associated with filing required reservoirs (fuel, oil, Hydraulic fluid, etc.), organization of all paperwork neatly in a binder, and all equipment, labor and incidentals required to complete the work.

Acquisition and Delivery of Aerator will be measured per lump sum and paid for at the contract unit price. The price shall include; purchasing for the RMTA, delivering equipment to the RMTA, any testing and break-in procedures, additional costs associated with filing required reservoirs (fuel, oil, Hydraulic fluid, etc.), organization of all paperwork neatly in a binder, and all equipment, labor and incidentals required to complete the work.

Acquisition and Delivery of Tailgate Spreader will be measured per lump sum and paid for at the contract unit price. The price shall include; purchasing for the RMTA, delivering equipment to the RMTA, any testing and break-in procedures, additional costs associated with lubricating any moving parts, organization of all paperwork neatly in a binder, and all equipment, labor and incidentals required to complete the work.

Pay Item	Pay Unit
Acquisition and Delivery of Tractor with Front Loader	L.S.
Acquisition and Delivery of 4 FT Rotary Cutter	L.S.
Acquisition and Delivery of 20 FT Utility Trailer	L.S.
Acquisition and Delivery of Leaf Blower	L.S.
Acquisition and Delivery of Aerator	L.S.
Acquisition and Delivery of Tailgate Spreader	L.S.

SPECIAL PROVISION
PAVEMENT LINE MARKINGS

DESCRIPTION

This work shall consist of applying Type A and Type B Class VI Pavement Line Markings. Type A markings will be installed on asphalt portions of the Downtown Expressway (DTE) and DTE Connector. Type B markings will be installed only on concrete surfaces in all three Open Road Tolling (ORT) zones on the Powhite Parkway and DTE. The Contractor shall install pavement markings per the manufacturer's recommendations.

MATERIALS

ITEM	VDOT SECTION
Type B Class VI Pavement Line Marking 6"	704*
Type A Pavement Line Marking 4"	704*
Type A Pavement Line Marking 6"	704*

*Note: Contractor shall comply with the VDOT 2007 Road and Bridge Specification Revisions in "Division 7 – Traffic Control Devices"

Materials shall be delivered to the job site in the manufacturer's original sealed containers. Each container shall be marked with the manufacturer's name and lot number. Materials will be accepted based on the manufacturer's certification, subject to the storage and handling requirements of the manufacturer. The Contractor shall use an approved inventory tracking system for all materials received from the manufacturer. Shipment of materials from such inventory shall be accompanied by a signed form C-85 containing the following certification statement:

Material shipped under the certification has been tested and approved by VDOT as indicated by Laboratory test numbers listed hereon.

PROCEDURES

The Contractor shall submit an MOT plan (7) days prior for approval of the Engineer and the RMTA. The Contractor shall refer to the Maintenance of Traffic Special Provision (SP-B) for allowable lane closure times.

Prior to installation of any pavement markings the Contractor and Engineer shall drive the site and be in mutual agreement on which markings are being removed / installed. Unless directed by the Engineer, no hatch markings are to be installed. The Contractor shall make sure that the surface is clear of any debris, by removing it with compressed air.

In general, the Contractor shall match all markings in their current location unless directed by the Engineer. The Contractor shall have a Certified Pavement Marking Technician present during pavement marking operations. All pavement marking shall be installed per the Manufacturers recommendations or as approved by the Engineer.

The Contractor shall use extreme caution not to damage any of the loops during eradication and installation of the Type B pavement markings in the ORT Zones. The Contractor shall not perform any work in an ORT Zone unless the Engineer is present in the ORT zone. Hand tools shall be the only method of removal for the existing pavement markings. Power tools, including hand drills / and sanders shall not be used at any time, unless approved by the Engineer. Grinding for inlaid pavement markings will not be used for these repairs.

LIQUIDATED DAMAGES

The RMTA reserves the right to charge liquidated damages for the Contractor's failure to partially remove, remove, partially install or complete installation of the pavement markings in the ORT Zones with damage to any of the loops or the loop sealant. Liquidated damages shall be established as:

- Ten Thousand Dollars ($10,000) per damaged loop (There a minimum of 9 loops per ORT zone)
- Full reimbursement for MOT devices and services required to close specific lanes with damaged loops until loops can be replaced, tested, and certified by the toll provider.

Assessment of Liquidated damages will stop when the loops have been reinstalled, tested, and the toll provider has certified that they are in complete working order AND all MOT devices have been removed and all lanes have been safely reopened to traffic. Any liquidated damages assessed in the Special Provision will be in addition to those listed in Section 108.

LOCATIONS

Roadway:	Material:	Size
DTE	Type A	4" (Gores 6")
DTE Connector	Type A	4" (Gores 6")
DTE ORT	Type B Class VI	6"
SB Powhite Parkway ORT	Type B Class VI	6"
NB Powhite Parkway ORT	Type B Class VI	6"

Other locations for pavement markings may be determined by the Engineer.

MEASUREMENT AND PAYMENT

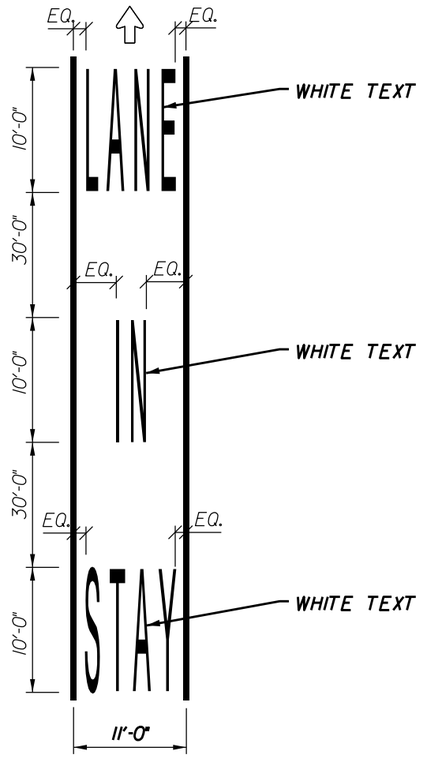
Maintenance of Traffic items for Pavement Markings will be paid for as per MOT Special Provision SP-B and the supplemental specifications.

Type B Class VI Pavement Line Marking 6" will be measured by linear foot and be paid at the contract price. This price shall be full compensation for delivery of materials per this specification; climate controlled storage until application; installation of pavement line markings; surface preparation; eradication of existing markings; all equipment, labor, tools and incidentals required to complete the work.

Type A Pavement Line Marking 4" will be measured by linear foot and be paid at the contract price. This price shall be full compensation for furnishing and installation of pavement line markings; surface preparation; eradication of existing markings, in required; all equipment, labor, tools and incidentals required to complete the work.

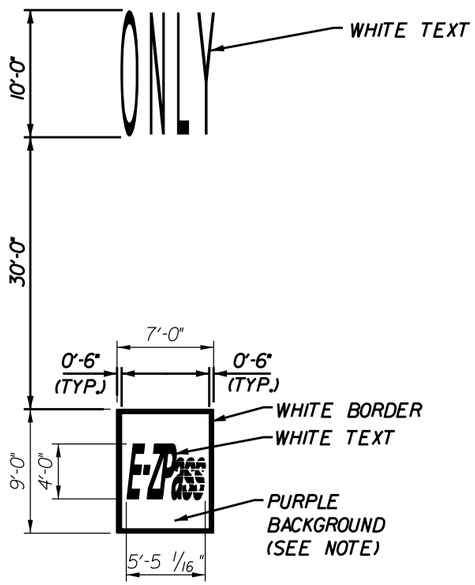
Type A Pavement Line Marking 6" will be measured by linear foot and be paid at the contract price. This price shall be full compensation for furnishing and installation of pavement line markings; surface preparation; eradication of existing markings in required; all equipment, labor, tools and incidentals required to complete the work.

Pay Item	Pay Unit
Type B Class VI Pavement Line Marking 6"	LF
Type A Pavement Line Marking 4"	LF
Type A Pavement Line Marking 6"	LF



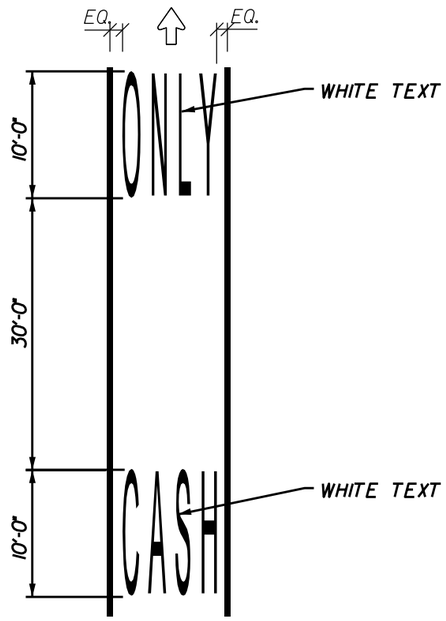
"STAY IN LANE" PAVEMENT MARKING DETAIL

SEE PLANS FOR LOCATIONS



"E-Z PASS" PAVEMENT MARKING DETAIL

SEE PLANS FOR LOCATIONS



"CASH ONLY" MARKING DETAIL

SEE PLANS FOR LOCATIONS

NOTE:
CONTRACTOR SHALL SUBMIT SAMPLE OF BACKGROUND COLOR PRIOR TO PURCHASE AND PLACEMENT OF MARKING TO ENSURE COLOR MATCHES E-Z PASS PURPLE BACKGROUND COLOR ON OVERHEAD AND TOLL PLAZA SIGN PANELS.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

PAVEMENT MARKING DETAILS

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	OF
N.T.S.	APRIL 2015	1	1

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	MR-2015		SP-S-4

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SPECIAL PROVISION
BRIDGE 8 SB DECK SEALING

DESCRIPTION

This work shall consist of furnishing and applying a concrete sealant to the SB Powhite Bridge 8 deck including all lanes and shoulders and other areas as directed by the Engineer.

LOCATION

Bridge	Approx. Quantity
B8 Powhite Parkway SB	14,900 S.Y.

MATERIAL

Contractor shall apply Chem-Crete Pavix CCC100 concrete sealant or Engineer approved equal.

SURFACE PREPARATION

The deck surface shall be cleaned by pressure washing only, to remove oils, dirt, curing compounds, weak surface mortar and other contaminants. Alternative cleaning methods shall require approval of the Engineer. Contractor shall make sure the deck surface is free of any sealers, which may impede absorption of the product.

No Vehicle traffic will be allowed on the prepared surface prior to applying the concrete sealant. In the event the lane must be opened to traffic, the surface shall be cleaned again to the approval of the Engineer.

The Contractor shall be aware that this bridge received a full deck overlay two years ago. Extra care shall be taken not damage any of the recently installed contrast pavement markings, snow-plowable raised pavement markers, and bridge deck joint sealant. Any damage to existing components shall be repaired at the Contractors expense, to the approval on the Engineer and with no extension in contract time.

APPLICATION

Contractor shall follow all of the manufacturer's recommendation for applying the concrete sealant. The concrete substrate shall be at least 40 °F prior to application. The Contractor shall use an application rate at a minimum of 150 square feet per gallon to a maximum of 200 square feet per gallon.

The contractor shall use a truck or trailer mounted low pressure sprayer to apply the sealant in an expeditious manner. The sealant shall cure for a minimum of one hour or per manufacturer's recommendations whichever is greater at an air temperature of 75 ˚F before opening the lane to traffic.

During the drying process the Contractor will be required to remain inside the lane closure until the lane is opened to traffic.

MEASUREMENT AND PAYMENT

Bridge Deck Sealing will be measured in square yards and paid for at the contract unit price, which shall be full compensation for, surface preparation, furnishing and applying the concrete sealant, any additional cleanup required, and all equipment, labor and incidentals required to complete the work. MOT will be paid as per Maintenance of Traffic special provision SP-B.

Pay Item	Pay Unit
Concrete Deck Sealant	S.Y.

SPECIAL PROVISION
DRIVEWAY ENTRANCE RECONSTRUCTION

DESCRIPTION

This work shall consist of reconstructing an existing driveway entrance in the same location. The Contractor shall excavate the remaining driveway and subgrade beneath and properly dispose of it offsite. The Contractor will compact subbase material and place 2 levels of Hot Mix Asphalt. At the direction of the Engineer minor grading and installation of top soil and regular seed may be required.

MATERIALS

ITEM	VDOT SECTION
Asphalt Concrete TY. SM-9.5D	211, 310, 315
Asphalt Concrete TY. IM-19.0D	211, 310 , 315
Aggregate Base Material TY. I No. 21B	208, 305
Regular Excavation	106, 303

LOCATION

The location of this work is just west of the NB Powhite Parkway Plaza. The driveway requiring reconstruction is outline in red in the picture below.

PROCEDURES

Contractor shall submit an MOT plan (7) days prior to any lane closure for approval by the Engineer and the RMTA. The Contractor shall be aware that the RMTA has leased out this space to other entities and he needs to maintain access at all times for vehicles entering and exiting the property. A single right lane and right shoulder closure is expected to be required to provide an area for asphalt trucks to stage. If the work is executed at night, the Contractor shall make sure that the area is well lit with the use of trailer mounted light pods.

The Contractor shall contact Miss Utility and determine if any utilities exist within the proposed work area. Once MOT measures are in place, the Contractor shall excavate all existing pavement and subbase to a depth of approximately 1 foot below the adjacent pavement to remain or as directed by the Engineer. The contractor shall sawcut the pavement along the southbound Powhite Parkway to create a uniform edge.

The Contractor shall install 8" of compacted subbase, 2.5 inches of intermediate mix and 1.5 inches of surface mix or similar depths directed by the Engineer. Proper compaction shall be obtained to the approval of the Engineer.

The Contractor shall make every effort to complete this repair during one work period. If subbase is placed and IM mix cannot be installed, the Contractor shall be required to re-compact the subbase to the approval of the Engineer prior to placement of asphalt.

At the direction of the Engineer, the Contractor shall perform a minimal amount of grading to remove rutting in the soil adjacent to the driveway, install top soil, & regular seed.

MEASUREMENT AND PAYMENT

The Contractor shall refer to Special Provision Slope Stabilization (SP-M) for measurement and payment information about top soil and regular seed

Asphalt Concrete TY. SM-9.5D will be measured by ton and paid at the contract unit price. This shall be full compensation for furnishing and placing the SM mix at the required depth; cleaning the surface prior to placement; furnishing and installing tack coat; trailer mounted lighting pods, if required; all equipment, labor, tools and incidentals required to complete the work. MOT will be paid for under the items listed in the Maintenance of Traffic special provision SP-B and the supplemental specifications.

Asphalt Concrete TY. IM-19.0D will be measured by ton and paid at the contract unit price. This shall be full compensation for furnishing and placing the IM mix at the required depth; cleaning the surface prior to placement; trailer mounted lighting pods, if required; all equipment, labor, tools and incidentals required to complete the work. MOT will be paid for under the items listed in the Maintenance of Traffic special provision SP-B and the supplemental specifications.

Aggregate Base Material TY. I No. 21B will be measured by ton and paid at the contract unit price. This shall be full compensation for furnishing and placing the aggregate at the required depth and compaction; re-compacting the material if required; cleaning the surface prior to placement; trailer mounted lighting pods, if required; all equipment, labor, tools and incidentals required to complete the work. MOT will be paid for under the items listed in the Maintenance of Traffic special provision SP-B and the supplemental specifications.

Regular Excavation will be measured by cubic yards and paid at the contract unit price. This shall be full compensation for verifying if utilities exist within the work area; locating and marking existing utilities, if required; sawcuting asphalt pavement; excavating the material and proper disposal offsite; any required permits or fees for disposal; trailer mounted lighting pods if required; any minor grading required within 20' of any direction from the perimeter of the repair area; and all equipment, labor, tools and incidentals required to complete the work. MOT will be paid for under the items listed in the Maintenance of Traffic special provision SP-B and the supplemental specifications.

Pay Item	Pay Unit
Asphalt Concrete TY. SM-9.5D	TON
Asphalt Concrete TY. IM-19.0D	TON
Aggregate Base Material TY. I No. 21B	TON
Regular Excavation	CY

SPECIAL PROVISION
ASPHALT MATERIAL PRICE ADJUSTMENT

DESCRIPTION

All asphalt material contained in the attached listing of eligible bid items and designated by pay items in the contract will be price adjusted in accordance with the provisions as set forth herein. Other items will not be adjusted, except as otherwise specified in the contract. If new pay items which contain asphalt material are established by a Change Order, they will not be subject to Price Adjustment unless specifically designated in the Change Order to be subject to Price Adjustment.

Each month, the Department will publish an average state-wide PG 64-22 f.o.b. price per ton developed from the average terminal prices provided to the Department from suppliers of asphalt cement to contractors doing work in Virginia. The Department will collect terminal prices from approximately 12 terminals each month. These prices will be received once each month from suppliers on or about the last weekday of the month. The high and low prices will be eliminated and the remaining values averaged to establish the average statewide price for the following month. That monthly state-wide average price will be posted on the Scheduling and Contract Division website on or about the first weekday of the following month.

This monthly statewide average price will be the Base Index for all contracts on which bids are received during the calendar month of its posting and will be the Current Index for all asphalt placed during the calendar month of its posting. In the event an index changes radically from the apparent trend, as determined by the Engineer, the Department may establish an index which it determines to best reflect the trend.

The amount of adjustment applied will be based on the difference between the contract Base Index and the Current Index for the applicable calendar month during which the work is performed. Adjustment of any asphalt material item designated as a price adjustment item which does not contain PG 64-22, except PG 76-22, will be based on the indexes for PG 64-22. The quantity of asphalt cement for asphalt concrete pavement to which adjustment will be applied will be the quantity based on the percent of asphalt cement shown on the appropriate approved job mix formula.

The quantity of asphalt emulsion for surface treatments to which adjustment will be applied will be the quantity based on 65 percent residual asphalt.

Price adjustment will be shown as a separate entry on the monthly progress estimate; however, such adjustment will not be included in the total cost of the work for progress determination.

Any apparent attempt to unbalance bids in favor of items subject to price adjustment or failure to submit required cost and price data as noted hereinbefore may result in rejection of the bid proposal.

PAYMENT

The following is a listing of bid items the RMTA has identified as eligible for price adjustment on this project. Only items on this listing will be eligible for adjustment under this Contract. A copy of VDOT's Form C-21B (c) has been included in the Contract Documents for the Contractor's use. An electronic version may be used and can be downloaded from VDOT's website free of charge.

ASPHALT MATERIAL ITEMS ELIGIBLE FOR PRICE ADJUSTMENT

ITEM	DESCRIPTION	UNITS	SPECIFICATION
10636	Asphalt Concrete TY. SM-9.5D	Ton	211, 310, 315
10611	Asphalt Concrete TY. IM-19.0D	Ton	211, 310, 315

Form C-21B(c)
Rev. 8-10-09

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION

PRICE ADJUSTMENT PERIOD NO. _____ FROM _____ TO _____

COVERING ESTIMATES NO. _____ THROUGH _____ ESTIMATE NO. _____ SHEET _____ OF _____

Contractor _____ Federal Project No. _____

State Project No. _____ Contract Id. No. _____

ITEM	ACTUAL QUANTITIES	UNIT	UNIT PRICE	BASE INDEX	ADJ. INDEX	ADJ. FACTOR (+ OR -)	UNIT PRICE ADJ. (+ OR -)	ADJUSTMENT THIS PERIOD (+ OR -)	CREDIT BROUGHT FORWARD	DEBIT BROUGHT FORWARD	NET INCREASE TO DATE

SPECIAL PROVISION
BRIDGE EXPANSION JOINT REPAIRS

Description

This work shall consist of expansion joint remedial repair work specific to bridge expansion joints located on Bridges B64 and B65 and concrete header repairs on Bridges B11 and B17.

See repair plans in the Appendix for specific design details and requirements.

All repairs shall be completed in accordance with the plan sheets, the requirements herein, and the 2007 VDOT Road and Bridge Specifications.

For lane closures on and underneath these bridges and associated measurement and payment items, the Contractor shall refer to the special provisions for Maintenance of Traffic.

Bridge B64

Contract work involves replacement of the worn portion of expansion joint plate located at Pier 3 as detailed on the repair plan.

The Contractor shall remove all dirt, debris, and remnants of existing joint sealer from the joint and thoroughly clean existing joint and steel surfaces before installing the new built-up plate and pouring joint sealer.

The Contractor shall verify all dimensions of the existing joint, paying particular attention to the geometry, angles, and alignments at both ends of the section to be repaired. Field verified dimensions are to be used to determine the final geometry of built-up plates prior to fabrication.

The Contractor may adjust the detailed lengths of the built-up plate if approved by the Engineer.

The existing plate to be removed shall be cut by the carbon arc process or other approved method. All rough plate edges and weld metal that remain shall be ground flush.

All existing structural steel is ASTM-A36. All new structural steel shall be AASHTO M270, Grade 36.

The Contractor shall apply prime coat paint to all new structural steel and areas of existing structural steel with existing coatings damaged during repair work. Cleaning shall meet SSPC-SP1, SP2, and SP3. Type and color of primer shall be approved by the Engineer.

All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th edition.

Details shown are based on as-built drawings for Bridge B64. A copy of these plans is included in the appendix to bid documents.

All joint reconstruction and installation shall be performed during nighttime lane closures. The cost of any access requirements to complete the work shall be included in the lump sum bid price for the joint repair.

The Contractor is responsible for the design and installation of a protective shield below all joint work to protect the area below from falling debris resulting from this work. The cost of this shielding and any containment system shall be included in a lump sum pay item for the B64 Pier 3 Expansion Joint Repair. All material, labor, and incidental costs including all cutting, removal, grinding, cleaning, fabrication, painting, and field welding shall be included in the lump sum bid item for Bridge B64 joint remediation work.

All welding and testing shall be in accordance with AASHTO/AWS D1.5 specifications. For each welder, welding operator, or tacker, the Contractor shall submit to the Engineer a copy of the certificate of qualification. The qualification certification shall state the name of the welder, operator, or tacker; name and title of the person who conducted the examination; type of specimens; position of welds; results of tests; and date of the examination. The qualification certification shall be made by an approved agency. Testing shall be in accordance with AASHTO/AWS D1.5 specifications with a Flaw Severity Class A.

All shop fabricated steel shall be shop primed. The contractor shall repair any damage to paintwork resulting from joint repair operations

Prior to any steel fabrication, the Contractor shall field verify all dimensions and assess the working conditions to determine any constructability issues. Should the Contractor have any issues or questions, they shall be submitted to the Engineer prior to steel fabrication and start of work.

Suggested Sequence of Construction:
The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

- Cut existing joint floor plate along cut line shown, grind cut edge smooth.

- Clean and prepare exposed plate and joint surfaces.
- See Section B-B. Place fabricated floor plate #1, establish seating and install weld at each end to existing floor plate (Weld B). Place Plate #2, seat then weld to Plate #1 (Weld A). Weld opposite end (Weld B). Install transverse 5/16" weld. Install nose plate to opposite side of joint. Repeat for remaining plates.
- Paint touch-up.
- Remove ½" of existing concrete deck surface to the extent shown and re-profile deck surface run-on/run-off as detailed.

Bridge B65

This work includes partial deck removal and reconstruction on the oncoming traffic side of the expansion joint and installation of a preformed elastomeric joint sealer.

All joint reconstruction and installation shall be performed during nighttime lane closures.

The Contractor shall remove all remnants of existing and pre-existing joint sealer material, dirt, and debris from the joint and thoroughly clean and prepare concrete surfaces before installing the new preformed joint seal.

The Contractor is responsible for the design and installation of a protective shield below all joint work to protect the area below from falling debris resulting from this work. The cost of this shielding and any containment system shall be included in a lump sum pay item for the B65 Pier 12 Expansion Joint Repair. All material, labor, and incidental costs including saw cutting, removal, grinding, cleaning, and fabrication shall be included in the lump sum bid item for Bridge B65 joint remediation work.

The joint is located above CSX rail lines. The Contractor must coordinate and comply with CSX requirements for the performance of this work item.

Details shown are based on available as-built drawings from Bridge B65. A copy is included in the Appendices.

Suggested Sequence of Construction:
The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

- For partial depth deck surface removal, saw cut edge (¾" depth maximum). Remove concrete to 1" below top mat longitudinal reinforcement. Remove full depth end section of deck to required limits.

- Install SL0401 bars, short leg up, and provide 24" minimum lap with existing #4 top mat bars. Loosen top mat transverse bars as required accommodate bar placement. Rotate short leg of SL0401 bars down to vertical as shown in Section A-A. Install EB401 and ST0501 bars as shown. Minimum clear concrete cover required from deck face is 2". For clear cover to other surfaces refer to existing bridge plans.
- Accurately measure the deck joint opening at several locations along the length of the joint as well as temperature of steel. Determine required deck end extension length to provide a 2.5" joint opening at 60°F
- Prepare construction joint surfaces in accordance with Section 404.03 (h) of the Specifications.
- Form and place high strength concrete
- Perform similar procedure for partial depth parapet reconstruction. Maximum saw cut depth to parapet face shall be 1".
- Install elastomeric joint sealer.

Bridge B11

This work includes partial depth deck removal and reconstruction along a 12 foot length on the deck (run-on) side of the north abutment expansion joint and installation of a preformed joint sealer.

All joint reconstruction and installation shall be performed during nighttime lane closures. The cost of any access requirements shall be included in the lump sum bid price for the joint repair.

The Contractor shall remove all remnants of existing and pre-existing joint sealer material, dirt, and debris from the joint and thoroughly clean and prepare concrete surfaces before installing the new preformed joint seal.

The Contractor is responsible for the design and installation of a protective shield below all joint work to protect the area below from falling debris resulting from this work. The cost of this shielding and any containment system shall be included in a lump sum pay item for the B11 Deck Repair at North Abutment Expansion Joint. All material, labor, and incidental costs including saw cutting, removal, grinding, cleaning, and fabrication shall be included in the lump sum bid item for Bridge B11 joint remediation work.

Details shown are based on available as-built drawings from Bridge B11. A copy is included in the Appendices.

Bridge B17

This work includes:

1. Partial depth deck surface removal and reconstruction along a four foot length on the deck adjacent to Pier 2 and installation of a preformed joint sealer.
2. Partial depth deck removal from the deck soffit adjacent to the South abutment.

These repairs are similar to a VDOT Road and Bridge Specifications; Section 412 Type B concrete patching. Repair 1 will be made with Class A4 concrete, high early strength. Repair 2 will be a shotcrete repair (Refer to special provision for shotcreting).

All joint reconstruction and installation shall be performed during lane closures. The cost of any access requirements shall be included in the lump sum bid price for the joint repair.

The Contractor is responsible for the design and installation of a protective shield below all joint work to protect the area below from falling debris resulting from this work. The cost of this shielding and any containment system shall be included in a lump sum pay item for the B17 Deck Repair at North Abutment Expansion Joint. All material, labor, and incidental costs including saw cutting, removal, grinding, cleaning, and fabrication shall be included in the lump sum bid item for Bridge B17 joint remediation work.

Details shown are based on available as-built drawings from Bridge B17. A copy is included in the Appendices.

Measurement and Payment

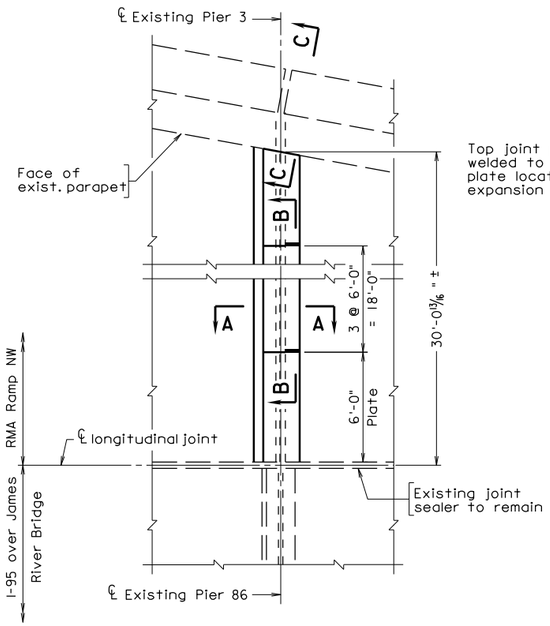
The modifications to the expansion joints at Bridge 64 Pier 3, Bridge 65 Pier 12, Bridge 11 North Abutment, Bridge 17 Pier 2, and Bridge 17 South Abutment shall be paid on a lump sum basis, wherein no measurement is made.

Each lump sum price shall also include:
1) Review fees; submittals; and preparation of all plans, drawings, schedules, and narratives necessary for describing the Contractor's means and methods required to perform the work.
2) Requirements to remain in compliance with all environmental laws.
3) All material, labor, tools, equipment, disposal, and incidental costs necessary to complete the repairs including access to the site, removal and disposal of existing steel and concrete, steel fabrication, cutting, saw-cutting, grinding, steel installation, reconstruction of new expansion joint, and welding.
4) Surface preparation and shop coating of steel plates.

Maintenance of traffic shall be paid separately in accordance with the Maintenance of Traffic special provisions SP-B.

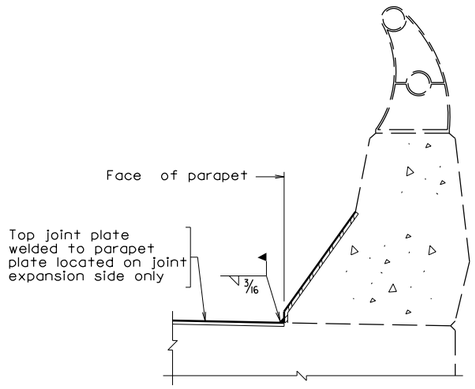
Payment will be made under:

Designation	Description and Location	Pay Unit
Bridge 64	Pier 3 Expansion Joint (Plan Sheet SP-W-7)	Lump Sum
Bridge 65	Pier 12 Expansion Joint (Plan Sheet SP-W-8)	Lump Sum
Bridge 11	North Abutment Expansion Joint (Plan Sheet SP-W-9)	Lump Sum
Bridge 17	Repair 1 - Pier 2 Expansion Joint (Plan Sheet SP-W-10)	Lump Sum
Bridge 17	Repair 2 - South Abutment Expansion Joint (Plan Sheet SP-W-10)	Lump Sum



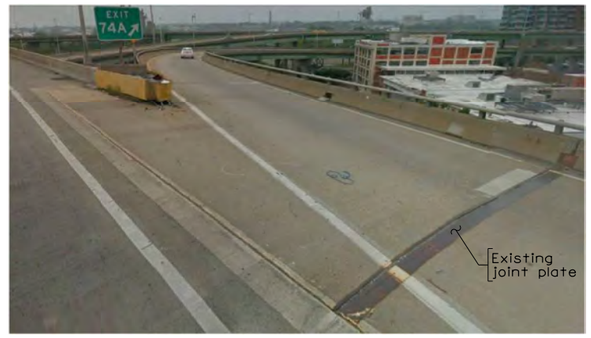
PARTIAL DECK PLAN AT PIER 3

Scale: ½" = 1'-0"

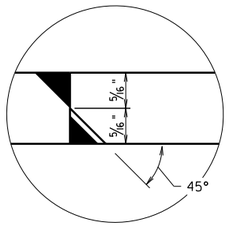


SECTION C-C

Not to scale

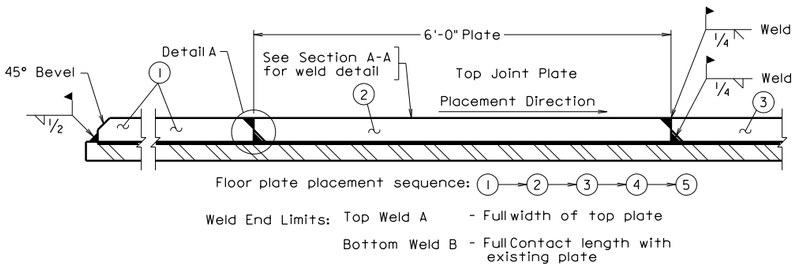


The existing Pier 3 expansion joint plate is severely worn and damaged, with holes evident along the length of the joint adjacent to transversely placed support bar. This repair includes partial removal and replacement of this plate.



DETAIL A
(TOP JOINT PLATE END CONNECTION DETAIL)

Not to scale



SECTION B-B

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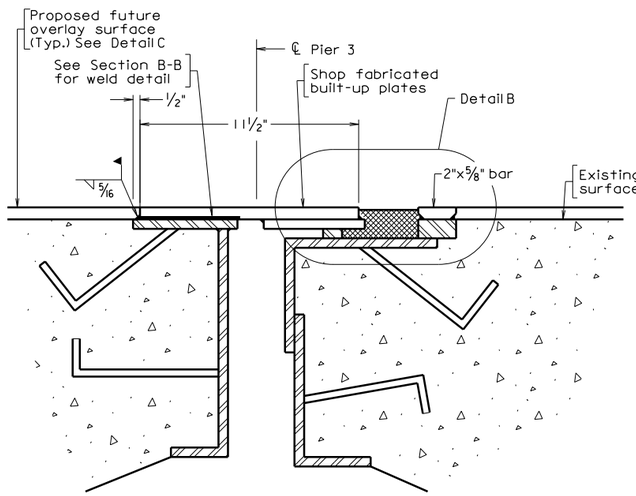
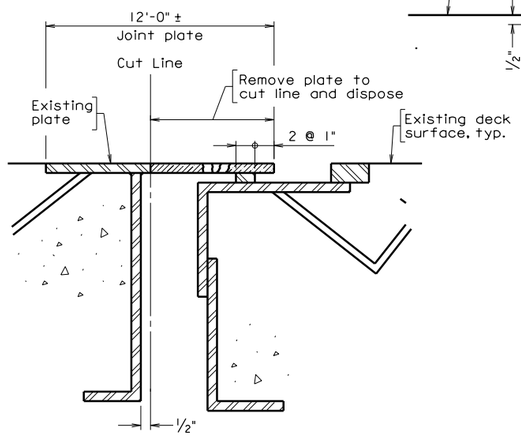


SECTION A-A

Scale: 3" = 1'-0"

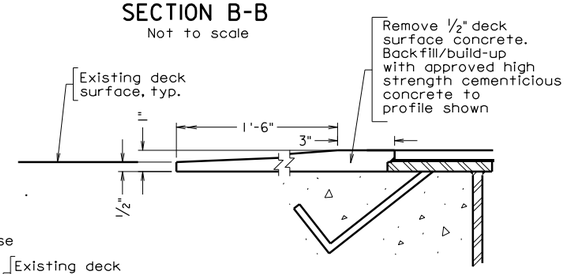
For clarity, deck reinforcement not shown.



EXISTING CONDITION

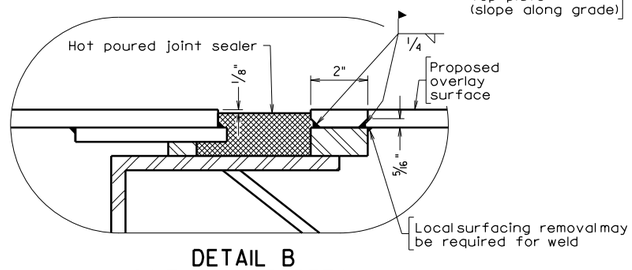
Scale: 3" = 1'-0"

See Section A-A for additional details



DETAIL C

Temp. condition to be implemented either side of joint (future overlay contract pending)



DETAIL B
(JOINT SEALER DETAIL)

Not to scale

Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specification, current supplemental specifications, contract special provisions, and contract.
2. The Contractor shall remove all dirt, debris and remnants of existing joint sealer from the joint and thoroughly clean existing joint and steel surfaces before installing the new built-up plate and pouring joint sealer.
3. The Contractor shall verify all dimensions of the existing joint, paying particular attention to the geometry, angles and alignments at both ends of section to be repaired. Field verified dimensions are to be used to determine the final geometry of built-up plates prior to fabrication, ensuring a snug fit between plates.
4. The Contractor may adjust the detailed lengths of the built-up plate if approved by the Engineer.
5. The existing plate to be removed shall be cut by the carbon arc process or other method approved. All rough plate edges and weld metal that remain shall be ground flush.
6. All existing structural steel is ASTM-A36. All new structural steel shall be AASHTO M270, grade 36.
7. Contractor shall apply prime coat paint to all new structural steel and areas of existing structural steel with existing coatings damaged during repair work. Cleaning shall meet SSPC-SP1, SP2 & SP3. Type and color of primer shall be approved by the Engineer.
8. All repair welding shall be performed in accordance with AASHTO/AWS 2010 Bridge Welding Code, 6th edition.
9. Details shown are based on As-Built drawings for bridge B64. A copy of these plans is included as an appendix to bid documents.
10. All joint reconstruction and installation shall be performed during nighttime lane closures. The Contractor shall coordinate with adjacent work, including the Bridge B64 bridge deck mill and resurfacing overlay program to schedule this work utilizing any pre-established MOT schemes for nighttime deck overlay work. The joint remediation work is to be completed prior to mill and overlay of the adjacent deck areas.
11. The Contractor is responsible for the design and installation of a protective shield below all joint work to protect the area below from falling debris resulting from this work. The cost of this shielding and any containment system shall be included in the lump sum pay item for the joint remediation. All material, labor, and incidental costs including all cutting, removal, grinding, cleaning, fabrication, painting and field welding shall be included in the lump sum bid item for Bridge B64 joint remediation work.

Suggested Sequence of Construction:

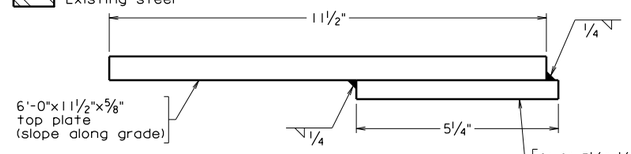
The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

1. Cut existing joint floor plate along cut line shown, grind cut edge smooth.
2. Clean and prepare exposed plate and joint surfaces.
3. See section B-B. Place fabricated floor plate #1: establish seating and install weld at each end to existing floor plate (Weld B). Place Plate #2: seat then weld to Plate #1 (Weld A). Weld opposite end (Weld B). Install transverse 5/16" weld. Install nose plate to opposite side of joint. Repeat
4. for remaining plates.
5. Undertake paint repairs per note 7 above.

Reprofile run-on/runoff deck profile per Detail C

Legend:

Existing steel



SHOP FABRICATED BUILT-UP PLATES (AS DELIVERED)

Not to scale

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE B-64 PIER 3 EXPANSION JOINT REMEDIAL DETAILS

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	OF
AS NOTED			

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	DR 2015		SP-W-7

$FILE$
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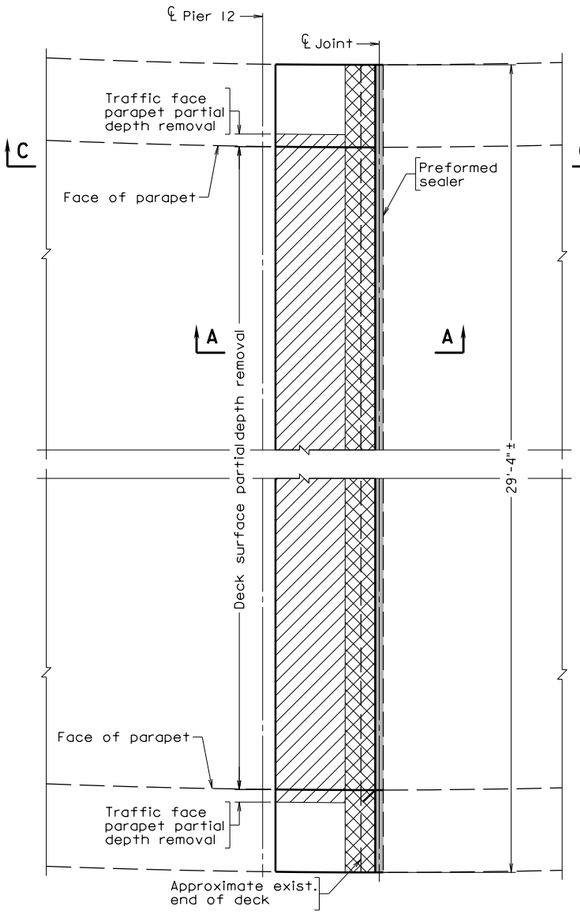
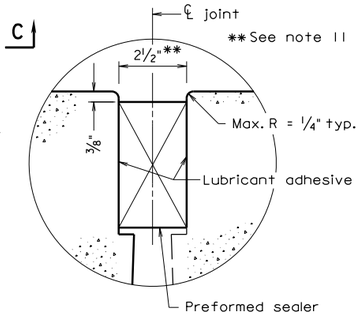
Pen Table - $PENTBL$



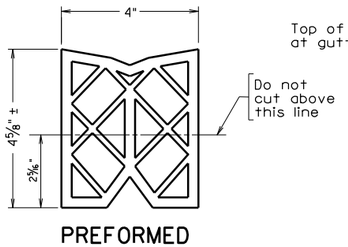
PARTIAL DECK PLAN AT PIER 12

Scale: ½" = 1'-0"



DETAIL B

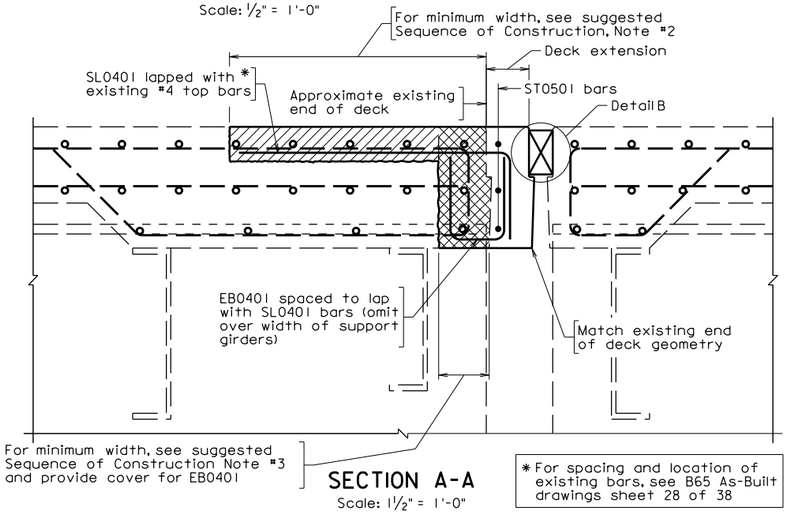
Not to scale



PREFORMED ELASTOMERIC JOINT SEALER

In uncompressed state

Not to scale

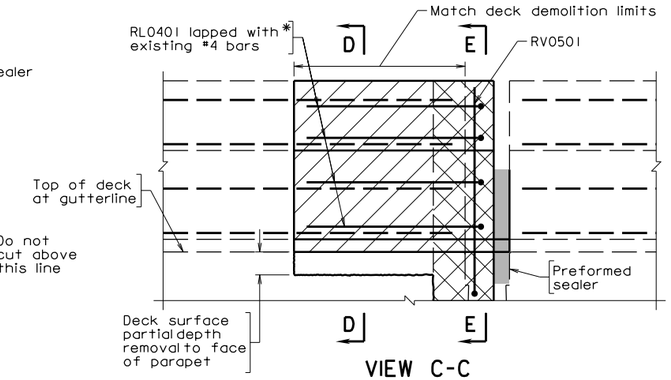


SECTION A-A

Scale: 1½" = 1'-0"

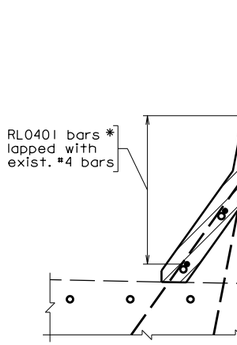
*For spacing and location of existing bars, see B65 As-Built drawings sheet 28 of 38

This work includes partial deck removal and reconstruction on the oncoming traffic side of the expansion joint and installation of a preformed elastomeric joint sealer.



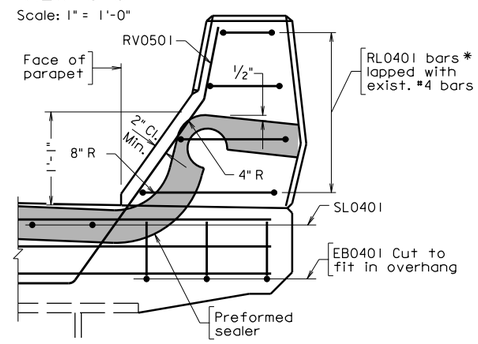
VIEW C-C

Scale: 1" = 1'-0"



SECTION D-D

Not to scale

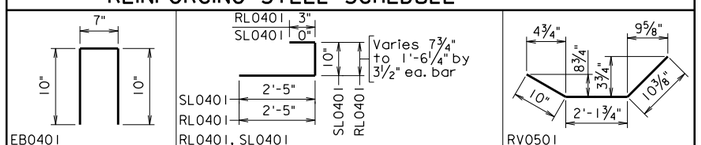


SECTION E-E

(including sealer geometry)
Existing reinforcement not shown for clarity

Not to scale

REINFORCING STEEL SCHEDULE



Mark	Size	No.	Length	Pin ø	Location
EB0401	#4	30	1'-11"	3"	Deck slab
RL0401	#4	8	Varies 3'-1¼" to 3'-11¾"	3"	Parapet
RV0501	#5	2	3'-9¼"	3¾"	Parapet
SL0401	#4	32	3'-2"	3"	Deck slab
ST0501	#5	3	29'-0"	——	Deck slab

Dimensions in bending diagram are out-to-out of bars.

Legend:

- Partial depth deck and front face of parapet reconstruction
- Full depth deck and full parapet reconstruction
- —— — — Existing structure
- ———— Proposed structure

Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specification, current supplemental specifications, contract special provisions, and contract.
2. Contractor shall verify all dimensions prior to beginning repair work.
3. Remove existing concrete deck as shown and rebuild the deck in accordance with Section 412 of the Specifications.
4. Existing reinforcing to be carefully exposed, cleaned and incorporated into the new work as shown and in accordance with Section 412 of the Specifications. Additional bars to be added as shown on the plans.
5. Concrete shall be Class A4, High Early Strength (HES) and shall have minimum 2,500 psi compressive strength prior to opening the repair to traffic. The Contractor shall remove all dirt, debris and remnants of pre-existing joint sealer from the joint and thoroughly clean and prepare existing joint surfaces before installing the new preformed joint sealer.
6. Low permeability concrete shall be used in this project.
7. Deformed reinforcing bars shall conform to ASTM A615, Grade 60. All reinforcing bar dimensions on the detailed drawings are to centers of bars except where otherwise noted and are subject to fabrication and construction tolerances.
8. Section of sealer shown is heavy-duty structural type sealer and may vary slightly depending on manufacturer.
9. As nearly as possible, sides of joints shall be straight, vertical and parallel. The area of the installation shall be free from cracks and spalls.
10. Sealer shall be installed in one continuous piece.
11. Joint width is the final joint width of the cured concrete when placed at 60°F. The width shall be increased or decreased for every 10°F temperature drop or rise respectively by ⅛".
12. Details shown are based on available As-Built drawings for Bridge B65. A copy of these plans is included in the appendix to bid documents.
13. All joint reconstruction and installation shall be performed during nighttime lane closures. The Contractor shall coordinate with adjacent works, including the Bridge B65 bridge deck mill and resurfacing overlay program to schedule this work utilizing any pre-established MOT schemes for nighttime deck overlay work. The joint remedial work is to be completed prior to mill and overlay of the adjacent deck areas.
14. The Contractor is responsible for the design and installation of a protective shield below all joint work to protect the area below from falling debris resulting from this work. The cost of this shielding and any containment system shall be included in the lump sum pay item for the joint remediation. All material, labor, and incidental costs for all concrete removal, grinding, cleaning, fabrication, painting and field welding shall be included in the lump sum bid item for Bridge B65 joint remedial work.
15. The joint is located above CSX raillines. The Contactor is responsible for coordinating with this work with CSX and arranging any flagger attendance required to complete the work. Associated costs shall be included in the lump sum bid item for completing this work.

Suggested Sequence of Construction:

The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

1. For partial depth deck surface removal, saw cut edge (¾" depth maximum). Remove concrete to 1" below top mat longitudinal reinforcement. Remove full depth end section of deck to required limits.
2. Install SL0401 bars (short leg up) providing 24" minimum lap with existing #4 top mat bars. Loosen top mat transverse bars as required to accommodate bar placement. Rotate short leg of SL0401 bars down to vertical as shown in Section A-A. Install EB0401 and ST0501 bars as shown. Minimum clear concrete cover required from deck face end is 2". For clear concrete cover requirements for other surfaces, refer to existing bridge plans.
3. Accurately measure deck joint opening at several locations along the length of the joint as well as ambient temperature of steel. Determine required deck end extension length to provide a 2.5" opening at 60°F
4. Prepare construction joint surfaces in accordance with section 404.03 (h) of the Specifications.
5. Form and place high strength concrete.
6. Perform similar procedure for partial depth parapet reconstruction. Maximum saw cut depth to parapet face shall be 1".
7. Install elastomeric joint sealer.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE B-65 PIER 12 EXPANSION JOINT REMEDIAL DETAILS

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

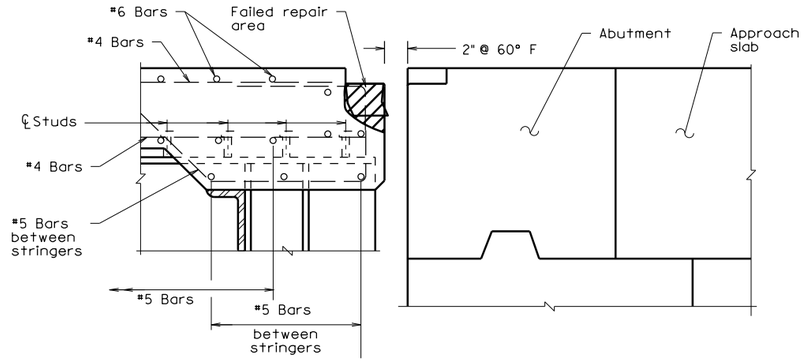
SCALE	DATE	SHEET	OF
AS NOTED	APRIL 2015		

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	DR 2015		SP-W-8

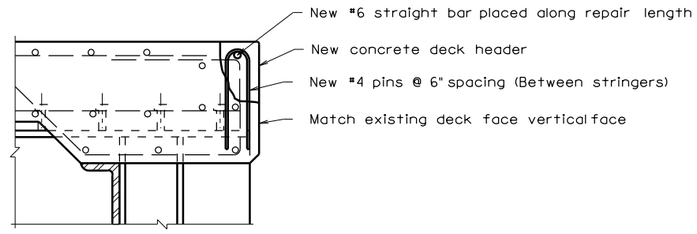
$FILE$
$DATE$ $TIME$
Pen Table - $PENTBL$

Bridge 11 - North abutment deck joint. Records indicate that the original transflex joint was removed in 2001. At that time, localized repairs were performed using Silspec 900 polymer system where deck header concrete had failed.

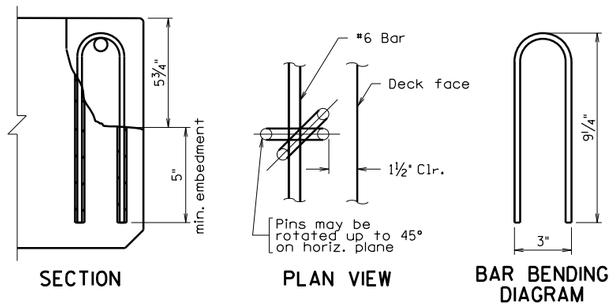
Bridge 11 - The proposed repair to be performed at identified failure locations. The measure length for pricing purposes will be 12 LF. If additional joint failure length is identified and approved by the Engineer, payment shall be made on a per-foot basis, based on the original lump sum bid divided by 12.



EXISTING SECTION THROUGH JOINT AT NORTH ABUTMENT
Not to scale



PROPOSED JOINT REPAIR DETAIL
Not to scale



BAR DETAILS
Not To Scale

Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specification, current supplemental specifications, contract special provisions and contract.
2. Contractor shall verify all dimensions prior to beginning repair work.
3. Remove existing concrete deck as shown and rebuild the deck in accordance with Section 412 of the Specifications.
4. Existing reinforcing to be carefully exposed, cleaned and incorporated into the new work as shown and in accordance with Section 412 of the Specifications. Additional bars to be added as shown on the plans.
5. Concrete shall be Class A4, High Early Strength (HES) and shall have minimum 2,500 psi compressive strength prior to opening the repair to traffic. The Contractor shall remove all dirt, debris and remnants of pre-existing joint sealer from the joint along the repair length and thoroughly clean and prepare existing joint surfaces before installing new lengths of preformed joint sealer.
6. Low permeability concrete shall be used in this project.
7. Deformed reinforcing bars shall conform to ASTM A615, Grade 60. All reinforcing bar dimensions on the detailed drawings are measured out-to-out and are subject to fabrication and construction tolerances.
8. As nearly as possible, sides of joints shall be straight, vertical and parallel. The area of the installation shall be free from cracks and spalls.
9. Sealer shall be installed in one continuous piece.
10. Vertical plane of repaired deck end face to match existing.
11. Details shown are based on available As-Built drawings for Bridge B11. A copy of these plans is included in the appendix to bid documents.
12. All joint reconstruction and installation shall be performed during nighttime lane closures.
13. The Contractor is responsible for the design and installation of a protective shield below all joint work to protect the area below from falling debris resulting from this work. The cost of this shielding and any containment system shall be included in the lump sum pay item for the joint remediation. All material, labor, and incidental costs for all concrete removal, grinding, cleaning, fabrication, painting and field welding shall be included in the lump sum bid item for Bridge B11 joint remedial work.

Suggested Sequence of Construction:

The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

1. Remove remnants of partially failed surface material. Remove any concrete debris lodged in the joint. Carefully remove existing concrete to the approximate profile shown. Remove concrete to 1" below any exposed existing reinforcement.
2. Drill and clean holes using compressed air and epoxy grout (Using Engineer approved material) embedment lengths of #4 reinforcement pins to achieve embedment shown. Hole diameter shall be according to grout manufacturer's recommendations and subject to approval by the Engineer. Install #6 horizontal bar as shown.
3. Minimum clear concrete cover required from deck face end and surface is 1½".
4. Prepare construction joint surfaces in accordance with section 404.03 (h) of the Specifications.
5. Form and place high strength concrete.
6. Install joint sealer along repair length, Wabo Evazote UV or similar approved.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE 11
DECK REPAIR
NORTH ABUTMENT EXPANSION JOINT

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	OF
AS NOTED	April, 2015	1	1

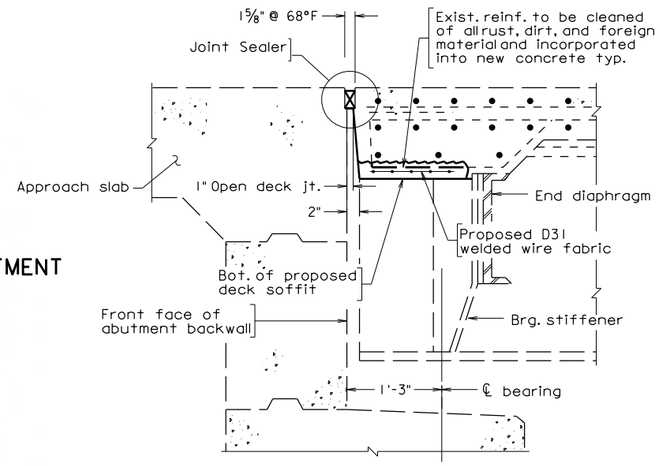
PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	MR 2015		SP-W-9

BRIDGE 17 - DECK SOFFIT AT SOUTH ABUTMENT

BRIDGE 17 - DECK SOFFIT AT SOUTH ABUTMENT
PREVIOUS REPAIR CONCRETE CAST AGAINST BACKWALL

Inspection photos indicate that the deck soffit concrete adjacent to the South Abutment joint was previously repaired. It is evident that these repairs have now failed and that during these repairs, the concrete was placed against the backwall. Portions of the previous repair concrete shall be removed to restore the original joint. Minimum concrete clear cover of 1½" shall be provided.

BRIDGE 17 - PIER 2 - DECK SURFACE CRACKING



PROPOSED JOINT REPAIR
SOUTH ABUTMENT

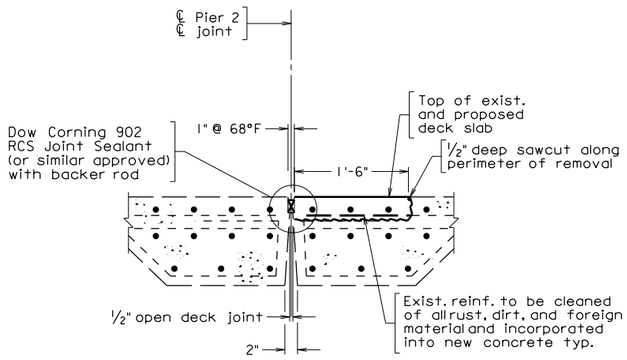
Scale: 1" = 1'-0"

Note: Above repair shall be performed for the full width of the joint (47'-11¼" ±).

Suggested Sequence of Construction:

The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

1. Concrete shall be sounded and all spalled and delaminated soffit concrete removed to at least 1" above bottom mat of reinforcement. Remove all previous repair concrete necessary to restore the joint to its original dimensions.
2. Clean and re-tie existing reinforcement.
3. Secure D31 welded wire fabric in place as shown.
4. Accurately measure deck joint opening at several locations along the length of the joint as well as ambient temperature of steel. Determine required deck end extension length to provide a 1⅝" opening at 68°F
5. Prepare construction joint surfaces in accordance with section 404.03 (h) of the Specifications.
6. Form up deck end and place shotcrete. Provide a minimum of 1¼" clear cover for the wire mesh.
7. Install Wabo Evazote UV Joint Seal manufactured by Watson Bowman Acme, or similar approved.



PROPOSED JOINT REPAIR
PIER 2

Scale: 1" = 1'-0"

Beams and diaphragms not shown for clarity.

Note: Repair length is 4'-0"± .

Suggested Sequence of Construction:

The general sequence of construction is indicated below. Deviations from the sequence of construction shown may be acceptable upon review and approval by the Engineer.

1. Concrete shall be sounded and all delaminated concrete removed to at least 1" below the top mat of reinforcement.
2. Clean and re-tie existing reinforcement.
3. Accurately measure deck joint opening at several locations along the length of the joint as well as ambient temperature of steel. Determine required deck end extension length to provide a 1" opening at 68°F
4. Prepare construction joint surfaces in accordance with section 404.03 (h) of the Specifications.
5. Form up deck end and place HES concrete.
6. Install backer rod and joint sealant.

Notes:

1. Work shall be performed in accordance with the 2007 Virginia Department of Transportation Road and Bridge Specification, current supplemental specifications, contract special provisions and contract.
2. Contractor shall verify all dimensions prior to beginning repair work.
3. Remove existing concrete deck as shown and rebuild the deck in accordance with Section 412 of the Specifications.
4. Existing reinforcing to be carefully exposed, cleaned and incorporated into the new work as shown and in accordance with Section 412 of the Specifications. Additional reinforcment bars to be added as shown on the plans.
5. Shotcrete shall be used for the deck soffit at South Abutment (see special provision for shotcrete). Concrete for top of deck repair shall be Class A4, High Early Strength (HES) and shall have minimum 2,500 psi compressive strength prior to opening the repair to traffic. The Contractor shall remove all dirt, debris and remnants of pre-existing joint sealer from the joint and thoroughly clean and prepare existing joint surfaces before installing the new preformed joint sealer.
6. Low permeability concrete shall be used in this project.
7. Deformed reinforcing bars shall conform to ASTM A615, Grade 60.
8. As nearly as possible, sides of joints shall be straight, vertical and parallel. The area of the installation shall be free from cracks and spalls.
9. Joint seal shall be installed in one continuous piece.
10. Joint width is the final joint width of the cured concrete when placed at 68°F. The width shall be increased or decreased for every 10°F temperature drop or rise respectively by 1/32" at the South Abutment. No adjustment is required at Pier 2.
11. Details shown are based on available As-Built drawings for Bridge B17. A copy of these plans is included in the appendix to bid documents.
12. All joint reconstruction and installation shall be performed during nighttime lane closures. The Contractor shall coordinate with adjacent works to schedule this work utilizing any pre-established MOT schemes for nighttime deck overlay work.
13. The Contractor is responsible for the design and installation of a protective shield below all joint work to protect the area below from falling debris resulting from this work. The cost of this shielding and any containment system shall be included in the lump sum pay item for the joint remediation. All material, labor, and incidental costs for all concrete removal and cleaning, shall be included in the lump sum bid item for Bridge B17 joint remedial work.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

BRIDGE 17
DECK CONCRETE
REPAIRS

HNTB CORPORATION
ARCHITECTS ENGINEERS & PLANNERS
ARLINGTON, VIRGINIA

SCALE	DATE	SHEET	
AS NOTED	April, 2015	1 OF 1	

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	MR 2015		SP-W-10

SPECIAL PROVISION
PARAPET WALL COATINGS

DESCRIPTION

This work shall consist of cleaning, patching and coating the inside face and top of the parapet walls. The intent of this work is to provide a properly prepared concrete surface that is suitable for application and adhesion of the specified protective coating system.

MATERIALS

All cleaned surfaces shall receive the following coating system, or Engineer approved equal:

A. PPG Amercoat 385 Polyamide Epoxy at 3.0 -8.0 mils DFT. A multi-purpose high build epoxy compatible with a wide range of substrates and surface preparations that cures down to 40˚.
B. PPG Amercoat 114A Epoxy Filler Compound for bug holes and surface cracks in concrete.

PROCEDURES

Contractor shall repair all delaminations, spalls and cracks and allow proper curing as per manufacturer's recommendations before applying coating. All delineators shall be removed prior to cleaning. Surface Preparation will be in accordance with SSPC SP-13 guidelines with minimum high-pressure water cleaning of 3000 PSI. Detergent water cleaning and steam cleaning may be used to remove oils and grease from concrete.

A minimum of two coats will be required to achieve 3.0-8.0 mils Recommended Dry Film Thickness. Application will be by brush and roller only. No spraying will be permitted.

LOCATIONS

Bridge 61……..115 square yards
Bridge 63……. 757 square yards
Bridge 64……. 625 square yards
Bridge 65……. 1,221 square yards
Bridge 66…….. 1,389 square yards
Bridge 67…….. 1,216 square yards
Bridge 68…….. 564 square yards

MEASUREMENT AND PAYMENT

Parapet Wall Coating will be measured in units of square yards of surface area and will be paid for at the contract unit price. This price shall include costs of any necessary patching/crack sealing, surface preparation, equipment required, labor, environmental protection, proper disposal of material offsite, and any incidentals required to complete the work.

Maintenance of Traffic items for Parapet Wall Coatings will be paid as per MOT Special Provision SP-B and the supplemental specifications.

Payment will be made under:

Pay Item	Pay Unit
Parapet Wall Coating	Square Yards

SPECIAL PROVISION
CONCRETE BARRIER DELINEATORS

DESCRIPTION

This work shall consist of installing delineators along existing concrete barrier walls on Bridges 61 & Bridges 63-68. The Contractor shall install all delineators per the manufacturer's recommendations and to the approval of the Engineer.

The Contractor shall refer to *Section 3F.04 Delineator Placement and Spacing* on pages 426-427 of the Manual for Uniform Traffic Control Devices for additional guidance.

Any costs for removing and disposing offsite of existing delineators shall be incidental to this work. This shall include any required disposal permits.

MATERIALS

ITEM	VDOT SECTION
Barrier Delineator	702*

*Note: Contractor shall comply with the VDOT 2007 Road and Bridge Specification Revisions in "Division 7 – Traffic Control Devices"

Materials shall be delivered to the job site in the manufacturer's original sealed containers. Each container shall be marked with the manufacturer's name and lot number. Materials will be accepted based on the manufacturer's certification, subject to the storage and handling requirements of the manufacturer. The Contractor shall use an approved inventory tracking system for all materials received from the manufacturer. Shipment of materials from such inventory shall be accompanied by a signed form C-85 containing the following certification statement:

Material shipped under the certification has been tested and approved by VDOT as indicated by

Laboratory test numbers listed hereon.

PROCEDURES

Markings shall be installed in accordance with the latest editions of the "Manual on Uniform Traffic Control Devices" (MUTCD) and the 2008 Road and Bridge Standards.

The Contractor shall, unless otherwise directed by the Engineer, remove old delineators and install new delineators during the same lane closure. Delineators shall always be visible to motorists once traffic is allowed back on the ramp. The Contractor shall refer to Maintenance of Traffic Special Provision SP-B for allowable lane closure times.

The Contractor and the Engineer shall first agree on the delineator spacing and layout prior to the installation of and removal of any existing delineators.

MEASUREMENT AND PAYMENT

Barrier Delineators will be measured by each and be paid for at the contract price. This price shall be full compensation for removing of existing delineators and disposal offsite, and permits or fees required for disposal, furnishing and installing delineators per manufacturer's recommendations, all equipment, labor, materials, and incidentals required to complete the work. Maintenance of Traffic items for Concrete Barrier Delineators will be paid for as per MOT Special Provision SP-B and the supplemental specifications.

Pay Item	Pay Unit
Barrier Delineators	Each

Project: Richmond, Virginia - Proposed repairs on RMTA Bridge 64 ramp between SB I-95 and Downtown Expressway (SR 195) over and adjacent to CSXT; Florence Division; RMTA Bridge 65, Bridge 66, Bridge 67 and Bridge 68 ramps between I-95 and Downtown Expressway (SR 195) over and adjacent to CSXT; C&O Division; RMTA Bridge 8, carrying Powhite Parkway (SR76) over the James River over and adjacent to CSXT; C&O Division; and RMTA Boulevard Bridge carrying SR 161 over the James River over and adjacent to CSXT; C&O Division; CSXT OP# (*TBD*)

CONSTRUCTION AGREEMENT

This Construction Agreement ("**Agreement**") is made as of _____,2015, by and between CSX TRANSPORTATION , INC., a Virginia corporation with its principal place of business in Jacksonville, Florida ("**CSXT**"), and the RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY, a body corporate and political subdivision of the Commonwealth of Virginia ("**Agency**" and "RMTA").

EXPLANATORY STATEMENT

1. Agency has proposed to repair, or to cause to be repaired, RMTA Bridge 64 ramp between SB I-95 and Downtown Expressway (SR 195); RMTA Bridge 8, Bridge 65, Bridge 67 (in two locations) and Bridge 68 ramps between I-95 and Downtown Expressway (SR 195); RMTA Bridge 8, carrying Powhite Parkway (SR76) over the James River, and RMTA Boulevard Bridge carrying SR 161 over the James River in Richmond, Virginia (the "Project"). The six (6) project location, as referenced above, in relation to CSXT facilities is:

   -Pier 8 of RMTA Bridge #64 adjacent to CSXT at Milepost S 0.15 on the Bellwood Subdivision within the Florence Division.
   -Pier 12 of RMTA Bridge #65 adjacent to CSXT at Milepost CAB-0.01 on the Rivanna Subdivision within the C&O Division.
   -Pier 6 of RMTA Bridge #67 adjacent to CSXT at Milepost CAB-0.XX on the Rivanna Subdivision within the C&O Division.
   -Pier 1 of RMTA Bridge #68 adjacent to CSXT at Milepost CAB-0.XX on the Rivanna Subdivision within the C&O Division.
   -Pier 14 of RMTA Bridge #8 adjacent to CSXT at Milepost CAB-3.67 on the Rivanna Subdivision within the C&O Division.
   -Pier 25 & 26 of RMTA Bridge Boulevard adjacent to CSXT at Milepost CAB-2.87 on the Rivanna Subdivision within the C&O Division.

2. Agency has obtained, or will obtain, all authorizations, permits and approvals from all local, state and federal agencies (including Agency), and their respective governing bodies and regulatory agencies, necessary to proceed with the Project and to appropriate all funds necessary to construct the Project.

3. Agency acknowledges that: (i) by entering into this Agreement, CSXT will provide services and accommodations to promote public interest in this Project, without profit or other economic inducement typical of other Agency contractors; (ii) neither CSXT nor its affiliates (including their respective directors, officers, employees or agents) will incur any costs, expenses, losses or liabilities in excess of payments made to CSXT, by or on behalf of Agency or its contractors, pursuant to this Agreement; and (iii) CSXT retains the paramount right to regulate all activities affecting its property and operations.

NOW, THEREFORE, in consideration of the foregoing Explanatory Statement and other good and valuable consideration, the receipt and sufficiency of which are acknowledged by the parties, the parties agree as follows:

1. Project Plans and Specifications

1.1. Preparation and Approval. Pursuant to Exhibit A of this Agreement, all plans, specifications, drawings and other documents necessary or appropriate to the design and construction of the Project shall be prepared, at Agency's sole cost and expense, by Agency or CSXT or their respective contractors. Project plans, specifications and drawings prepared by or on behalf of Agency shall be subject, at CSXT's election, to the review and approval of CSXT. Such plans, specifications and drawings, as prepared or approved by CSXT, are referred to as the "Plans", and shall be incorporated and deemed a part of this Agreement. Plans prepared or submitted to and approved by CSXT as of the date of this Agreement are set forth in Exhibit B to this Agreement.

1.2. Effect of CSXT Approval or Preparation of Plans. By its review, approval or preparation of Plans pursuant to this Agreement, CSXT signifies only that such Plans and improvements constructed in accordance with such Plans satisfy CSXT's requirements. CSXT expressly disclaims all other representations and warranties in connection with the Plans, including, but not limited to, the integrity, suitability or fitness for the purposes of Agency or any other persons of the Plans or improvements constructed in accordance with the Plans.

1.3. Compliance with Plans. The Project shall be constructed in accordance with the Plans.

2. Allocation and Conduct of Work

Work in connection with the Project shall be allocated and conducted as follows:

2.1. CSXT Work. Subject to timely payment of Reimbursable Expenses as provided by Section 4, CSXT shall provide, or cause to be provided, the services as set forth by Exhibit A to this Agreement. Agency agrees that CSXT shall provide all services that CSXT deems necessary or appropriate (whether or not specified by Exhibit A) to preserve and maintain its property

and operations, without impairment or exposure to liability of any kind and in compliance with all applicable federal, state and local regulations and CSXT's contractual obligations, including, but not limited to, CSXT's existing or proposed third party agreements and collective bargaining agreements.

2.2. Agency Work. Agency shall perform, or cause to be performed, all work as set forth by Exhibit A, at Agency's sole cost and expense.

2.3. Conduct of Work. CSXT shall commence its work under this Agreement following: (i) delivery to CSXT of a notice to proceed from Agency; (ii) payment of Reimbursable Expenses (as provided by Section 4.1) as required by CSXT prior to the commencement of work by CSXT; (iii) issuance of all permits, approvals and authorizations necessary or appropriate for such work; and (iv) delivery of proof of insurance acceptable to CSXT, as required by Section 9. The initiation of any services by CSXT pursuant to this Agreement, including, but not limited to, the issuance of purchase orders or bids for materials or services, shall constitute commencement of work for the purposes of this Section. The parties intend that all work by CSXT or on CSXT property shall conclude no later than August 25, 2015, unless the parties mutually agree to extend such date.

3. Special Provisions. Agency shall observe and abide by, and shall require its contractors ("**Contractors**") to observe and abide by the terms, conditions and provisions set forth in Exhibit C to this Agreement (the "Special Provisions"). To the extent that Agency performs Project work itself, Agency shall be deemed a Contractor for purposes of this Agreement. Agency further agrees that, prior to the commencement of Project work by any third party Contractor, such Contractor shall execute and deliver to CSXT Schedule I to this Agreement to acknowledge Contractor's agreement to observe and abide by the terms and conditions of this Agreement.

4. Cost of Project and Reimbursement Procedures

4.1. ·Reimbursable Expenses. Agency shall reimburse CSXT for all costs and expenses incurred by CSXT in connection with the Project, including, without limitation: (1) all out of pocket expenses, (2) travel and lodging expenses, (3) telephone, facsimile, and mailing expenses, (4) costs for equipment, tools, materials and supplies, (5) sums paid to CSXT's consultants and subcontractors, and (6) CSXT labor in connection with the Project, together with CSXT labor overhead percentages established by CSXT pursuant to applicable law (collectively, "**Reimbursable Expenses**"). Reimbursable Expenses shall also include expenses incurred by CSXT prior to the date of this Agreement to the extent identified by the Estimate provided pursuant to Section 4.2.

4.2. Estimate. CSXT has estimated the total Reimbursable Expenses for the Project as shown on Exhibit D (the "**Estimate**", as amended or revised). In the event CSXT anticipates that actual Reimbursable Expenses for the Project may exceed such Estimate, it shall provide Agency with the revised Estimate of the total Reimbursable Expenses, together with a revised

Payment Schedule (as defined by Section 4.3.1), for Agency's approval and confirmation that sufficient funds have been appropriated to cover the total Reimbursable Expenses of such revised Estimate. CSXT may elect, by delivery of notice to Agency, to immediately cease all further work on the Project, unless and until Agency provides such approval and confirmation.

4.3. Payment Terms.

4.3.1. Agency shall pay CSXT for Reimbursable Expenses as set forth in the Payment Schedule as shown on Exhibit E (the "Payment Schedule", as revised pursuant to Section 4.2). CSXT agrees to submit invoices to Agency for such amounts and Agency shall remit payment to CSXT at the later of thirty (30) days following delivery of each such invoice to Agency or, the payment date (if any) set forth in the Payment Schedule.

4.3.2. Following completion of the Project, CSXT shall submit to Agency a final invoice that reconciles the total Reimbursable Expenses incurred by CSXT against the total payments received from Agency. Agency shall pay to CSXT the amount by which Reimbursable Expenses exceed total payments as shown by the final invoice, within thirty (30) days following delivery of such invoice to Agency. In the event that the payments received by CSXT from Agency exceed the Reimbursable Expenses, CSXT shall remit such excess to Agency.

4.3.3. In the event that Agency fails to pay CSXT any sums due CSXT under this Agreement: (i) Agency shall pay CSXT interest at the lesser of 1.0% per month or the maximum rate of interest permitted by applicable law on the delinquent amount until paid in full; and (ii) CSXT may elect, by delivery of notice to Agency: (A) to immediately cease all further work on the Project, unless and until Agency pays the entire delinquent sum, ·together with accrued interest; and/or (B) to terminate this Agreement.

4.3.4. All invoices from CSXT shall be delivered to Agency in accordance with Section 16 of this Agreement. All payments by Agency to CSXT shall be made by certified check and mailed to the following address or such other address as designated by CSXT's notice to Agency:

CSX Transportation, Inc.
P. O. Box 116651
Atlanta, GA 30368-6651

4.4. Effect of Termination. Agency's obligation to pay to CSXT Reimbursable Expenses in accordance with Section 4 shall survive termination of this Agreement for any reason.

5. Appropriations. Agency represents to CSXT that: (i) Agency has appropriated funds sufficient to

reimburse CSXT for the Reimbursable Expenses encompassed by the Estimate attached as Exhibit D; (ii) Agency shall use its best efforts to obtain appropriations necessary to cover Reimbursable Expenses encompassed by subsequent Estimates approved by Agency; and (iii) Agency shall promptly notify CSXT in the event that Agency is unable to obtain such appropriations.

6. Easements and Licenses

6.1. Agency Obligation. Agency shall acquire all necessary licenses, permits and easements required for the Project.

6.2. Temporary Construction Licenses. Insofar as it has the right to do so, CSXT hereby grants Agency a nonexclusive license to access and cross CSXT's property, to the extent necessary for the construction of the Project (excluding ingress or egress over public grade crossings), along such routes and upon such terms as may be defined and imposed by CSXT and such temporary construction easements as may be designated on the Plans approved by CSXT.

7. Permits At its sole cost and expense, Agency shall procure all permits and approvals required by any federal, state, or local governments or governmental agencies for the construction, maintenance and use of the Project, copies of which shall be provided to CSXT.

8. Termination

8.1. By Agency. For any reason, Agency may, as its sole remedy, terminate this Agreement by delivery of notice to CSXT. Agency shall not be entitled to otherwise pursue claims for consequential, direct, indirect or incidental damages or lost profits as a consequence of CSXT's default or termination of this Agreement or Work on the Project by either party.

8.2. By CSXT. In addition to the other rights and remedies available to CSXT under this Agreement, CSXT may terminate this Agreement by delivery of notice to Agency in the event Agency or its Contractors fail to observe the terms or conditions of this Agreement and such failure continues more than ten (10) business days following delivery of notice of such failure by CSXT to Agency.

8.3. Consequences of Termination. If the Agreement is terminated by either party pursuant to this Section or any other provision of this Agreement, the parties understand that it may be impractical for them to immediately stop the Work. Accordingly, they agree that, in such instance a party may continue to perform Work until it has reached a point where it may reasonably and safely suspend the Work. Agency shall reimburse CSXT pursuant to this Agreement for the Work performed, plus all costs reasonably incurred by CSXT to discontinue the Work and protect the Work upon full suspension of the same, the cost of returning CSXT's property to its former condition, and all other costs of CSXT incurred as a result of the Project up to the time of full suspension of the Work. Termination of this

Agreement or Work on the Project, for any reason, shall not diminish or reduce Agency's obligation to pay CSXT for Reimbursable Expenses incurred in accordance with this Agreement. In the event of the termination of this Agreement or the Work for any reason, CSXT's only remaining obligation to Agency shall be to refund to Agency payments made to CSXT in excess of Reimbursable Expenses in accordance with Section 4.

9. Insurance. In addition to the insurance that Agency requires of its Contractor, Agency shall acquire or require its Contractor to purchase and maintain insurance in compliance with CSXT's insurance requirements attached to this Agreement as Exhibit F. Neither Agency nor Contractor shall commence work on the Project until such policy or policies have been submitted to and approved by CSXT's Risk Management Department.

10. Ownership and Maintenance

10.1. By Agency. Agency shall own and, without cost to CSXT, shall maintain, repair, replace and renew, or cause same to be done, in good condition and repair to CSXT's satisfaction, the Bridge #I OS railroad bridge structure (excluding only those components which CSXT owns and has agreed to maintain, repair and replace pursuant to this Section}, the highway underpass structure, the roadway surfacing, the roadway slopes, the retaining walls, the roadway drainage facilities, sidewalks and lighting. In the event that Agency fails to properly maintain such structures and improvements, and such failure, in the opinion of CSXT, jeopardizes the safe and efficient operation of its property, CSXT shall be entitled to remedy such failure and recover from Agency the costs incurred by CSXT in doing so.

Agency shall own and, without cost to CSXT, maintain, repair, replace and renew, or cause same to be done, in good condition and repair to CSXT's satisfaction, the RMTA Bridge #65 highway overpass structures, the roadway surfacing, the roadway slopes, the retaining walls, and the highway drainage facilities. In the event that Agency fails to properly maintain such structures and improvements and such failure, in the opinion of CSXT, jeopardizes the safe and efficient operation of its property, CSXT shall be entitled to remedy such failure and recover from Agency the costs incurred by CSXT in doing so. Upon the cessation of use of the Project by Agency, Agency shall remove the bridge structures and restore CSXT's property to its original condition, at Agency's sole cost and expense, to CSXT's satisfaction.

10.2. By CSXT. CSXT shall own and, at its sole cost and expense, maintain, repair, replace and renew its tracks, ballast and approach embankments, and railroad signal and communication systems, and CSXT shall be permitted to install, maintain, repair and replace other utilities, facilities and cable, or cause same to be done, as CSXT authorizes from time to time on or within the railroad bridge structure.

10.3. Alterations. Agency shall not undertake any alteration, modification or expansion of the Project, without the prior approval of CSXT, which may be withheld for any reason,

and the execution of such agreements as CSXT may require.

11. Indemnification

11.1. Generally. To the maximum extent permitted by applicable law, Agency and its Contractors shall indemnify, defend, and hold CSXT and its affiliates harmless from and against all claims, demands, payments, suits, actions, judgments, settlements, and damages of every nature, degree, and kind (including direct, indirect, consequential, incidental, and punitive damages), for any injury to or death to any person(s) (including, but not limited to the employees of CSXT, its affiliates, Agency or its Contractors), for the loss of or damage to any property whatsoever (including but not limited to property owned by or in the care, custody, or control of CSXT, its affiliates, Agency or its Contractors, and environmental damages and any related remediation brought or recovered against CSXT and its affiliates), arising directly or indirectly from the negligence, recklessness or intentional wrongful misconduct of the Contractors, Agency, and their respective agents, employees, invitees, contractors, or its contractors' agents, employees or invitees in the performance of work in connection with the Project or activities incidental thereto, or from their presence on or about CSXT's property . The foregoing indemnification obligation shall not be limited to the insurance coverage required by this Agreement, except to the extent required by law or otherwise expressly provided by this Agreement.

11.2. Compliance with Laws. Agency shall comply, and shall require its Contractors to comply, with any federal, state, or local laws, statutes, codes, ordinances, rules, and regulations applicable to its construction and maintenance of the Project. Agency's Contractors shall indemnify, defend, and hold CSXT and its affiliates harmless with respect to any fines, penalties, liabilities, or other consequences arising from breaches of this Section.

11.3. "CSXT Affiliates". For the purpose of this Section 11, CSXT's affiliates include CSX Corporation and all entities, directly or indirectly, owned or controlled by or under common control of CSXT or CSX Corporation and their respective officers, directors, employees and agents.

11.4. Notice of Incidents. Agency and its Contractor shall notify CSXT promptly of any loss, damage, injury or death arising out of or in connection with the Project work.

11.5. Survival. The provisions of this Section 11 shall survive the termination or expiration of this Agreement.

12. Independent Contractor The parties agree that neither Agency nor its Contractors shall be deemed either agents or independent contractors of CSXT. Except as otherwise provided by this Agreement, CSXT shall exercise no control whatsoever over the employment, discharge, compensation of, or services rendered by Agency or Agency's Contractors, or the construction

practices, procedures, and professional judgment employed by Agency or its Contractor to complete the Project. Notwithstanding the foregoing, this Section 12 shall in no way affect the absolute authority of CSXT to prohibit Agency or its Contractors or anyone from entering CSXT's property, or to require the removal of any person from its property, if it determines, in its sole discretion, that such person is not acting in a safe manner or that actual or potential hazards in, on or about the Project exist.

13. "Entire Agreement " This Agreement embodies the entire understanding of the parties, may not be waived or modified except in a writing signed by authorized representatives of both parties, and supersedes all prior or contemporaneous written or oral understandings, agreements or negotiations regarding its subject matter. In the event of any inconsistency between this Agreement and the Exhibits, the more specific terms of the Exhibits shall be deemed controlling.

14. Waiver If either party fails to enforce its respective rights under this Agreement, or fails to insist upon the performance of the other party's obligations hereunder, such failure shall not be construed as a permanent waiver of any rights or obligations in this Agreement.

15. Assignment CSXT may assign this Agreement and all rights and obligations herein to a successor in interest, parent company, affiliate, or future affiliate. Upon assignment of this Agreement by CSXT and the assumption of CSXT's assignee of CSXT's obligations under this Agreement, CSXT shall have no further obligation under this Agreement. Agency shall not assign its rights or obligations under this Agreement without CSXT's prior consent, which consent may be withheld for any reason.

16. Notices All notices, consents and approvals required or permitted by this Agreement shall be in writing and shall be deemed delivered upon personal delivery, upon the expiration of three (3) days following mailing by first class U .S. mail , or upon the next business day following mailing by a nationally recognized overnight carrier, to the parties at the addresses set forth below, or such other addresses as either party may designate by delivery of prior notice to the other party:

If to CSXT:
CSX Transportation, Inc.
500 Water Street, J-301
Jacksonville, Florida 32202
Attention: Director Project Management- Public Projects

If to Agency:
Richmond Metropolitan Transportation Authority
919 East Main Street, Suite 600
Richmond, VA 23219
Attention: Theresa Simmons, PE, Director of Operations

17. Severability The parties agree that if any part, term or provision of this Agreement is held to be illegal, unenforceable or in conflict with any applicable federal, state, or local law or regulation, such part, term or provision shall be severable, with the remainder of the Agreement remaining

valid and enforceable .

18. Applicable Law This Agreement shall be governed by the laws of the Commonwealth of Virginia, exclusive of its choice of law rules. The parties further agree that the venue of all legal and equitable proceedings related to disputes under this Agreement shall be situated in Duval County, Florida, and the parties agree to submit to the personal jurisdiction of any State or Federal court situated in Duval County, Florida.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed in duplicate, each by its duly authorized officers, as of the date of this Agreement.

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

By:_____

Print Name:_____

Title: _____

CSX TRANSPORTATION, INC.

By:_____

Print Name : Dale W. Oplfardt
Title: Assistant Vice President – Engineering

EXHIBIT A

ALLOCATION OF WORK

Subject to Section 2.1, work to be performed in connection with the Project is allocated as follows:

A. Agency shall let by contract to its Contractors:

1. Joint Repair for RMTA Bridge 65 carrying I-95 North to WB DTE (SR 195) over and adjacent to CSXT.

Subject to Section 2.1, work to be performed in connection with the Project is allocated as follows:

B. CSXT shall perform or cause to be performed :

1. Preliminary Engineering Services
2. Railroad Flagging Services
3. Construction Monitoring

EXHIBIT B

PLANS AND SPECIFICATIONS

Plans, Specifications and Drawings:

As of the date of this Agreement, the following plans, specifications and drawings have been submitted by Agency to CSXT for its review and approval:

Miscellaneous As-Built Plans for Bridges No. 65; Titled: Richmond Expressway System, Downtown Expressway; Prepared by Howard, Needles, Tammen & Bergendoff

NOTE: **In the event subsequent plan submissions are made by Agency to CSXT for review and approval, once approved, said plans shall be considered to be incorporated into this Exhibit B as of the date of CSXT's written approval**

EXHIBITC

CSXT SPECIAL PROVISIONS

DEFINITIONS:

As used in these Special Provisions, all capitalized terms shall have the meanings ascribed to them by the Agreement, and the following terms shall have the meanings ascribed to them below:

"CSXT" shall mean CSX Transportation, Inc., its successors and assigns.

"CSXT Representative" shall mean the authorized representative of CSX Transportation, Inc.

"Agreement" shall mean the Agreement to which this Exhibit C is made a part thereof and as may be amended from time to time.

"Agency" shall mean the Richmond Metropolitan Transportation Authority.

"Agency Representative" shall mean the authorized representative of Richmond Metropolitan Transportation Authority.

"Contractor" shall have the meaning ascribed to such term by the Agreement.

"Work" shall mean the Project as described in the Agreement.

I. AUTHORITY OF CSXT ENGINEER

The CSXT Representative shall have final authority in all matters affecting the safe maintenance of CSXT operations and CSXT property, and his or her approval shall be obtained by the Agency or its Contractor for methods of construction to avoid interference with CSXT operations and CSXT property and all other matters contemplated by the Agreement and these Special Provisions.

II INTERFERENCE WITH CSXT OPERATIONS

A. Agency or its Contractor shall arrange and conduct its work so that there will be no interference with CSXT operations, including train, signal, telephone and telegraphic services, or damage to CSXT's property, or to poles, wires, and other facilities of tenants on CSXT's Property or right-of-way. Agency or its Contractor shall store materials so as to prevent trespassers from causing damage to trains, or CSXT Property. Whenever Work is likely to affect the operations or safety of trains, the method of doing such Work shall first be submitted to the CSXT Representative for approval, but such approval shall not relieve Agency or its Contractor from liability in connection with such Work.

B. If conditions arising from or in connection with the Project require that immediate and unusual provisions be made to protect train operation or CSXT's property, Agency or its Contractor shall make such provision. If the CSXT Representative determines that such provision is insufficient , CSXT may, at the expense of Agency or its Contractor, require or provide such provision as may be deemed necessary, or cause the Work to cease immediately.

III NOTICE OF STARTING WORK. Agency or its Contractor shall not commence any work on CSXT Property or right-of-way until it has complied with the following conditions:

A. Notify CSXT in writing of the date that it intends to commence Work on the Project. Such notice must be received by CSXT at least ten (10) business days in advance of the date Agency or its Contractor proposes to begin Work on CSXT property. The notice must refer to this Agreement by date. If flagging service is required, such notice shall be submitted at least thirty (30) business days in advance of the date scheduled to commence the Work.

B. Obtain authorization from the CSXT Representative to begin Work on CSXT property, such authorization to include an outline of specific conditions with which it must comply.

C. Obtain from CSXT the names, addresses and telephone numbers of CSXT's personnel who must receive notice under provisions in the Agreement. Where more than one individual is designated, the area of responsibility of each shall be specified.

IV WORK FOR THE BENEFIT OF THE CONTRACTOR

A. No temporary or permanent changes to wire lines or other facilities (other than third party fiber optic cable transmission systems) on CSXT property that are considered necessary to the Work are anticipated or shown on the Plans. If any such changes are, or become, necessary in the opinion of CSXT or Agency, such changes will be covered by appropriate revisions to the Plans and by preparation of a force account estimate. Such force account estimate may be initiated by either CSXT or Agency, but must be approved by both CSXT and Agency. Agency or Contractor shall be responsible for arranging for the relocation of the third party fiber optic cable transmission systems, at no cost or expense to CSXT.

B. Should Agency or Contractor desire any changes in addition to the above, then it shall make separate arrangements with CSXT for such changes to be accomplished at the Agency or Contractor's expense.

V HAUL ACROSS RAILROAD

A. If Agency or Contractor desires access across CSXT property or tracks at other than an existing and open public road crossing in or incident to construction of the Project, the Agency or Contractor must first obtain the permission of CSXT and shall execute a license

agreement or right of entry satisfactory to CSXT, wherein Agency or Contractor agrees to bear all costs and liabilities related to such access.

B. Agency and Contractor shall not cross CSXT's property and tracks with vehicles or equipment of any kind or character, except at such crossing or crossings as may be permitted pursuant to this section.

VI COOPERATION AND DELAYS

A. Agency or Contractor shall arrange a schedule with CSXT for accomplishing stage construction involving work by CSXT. In arranging its schedule, Agency or Contractor shall ascertain, from CSXT, the lead time required for assembling crews and materials and shall make due allowance therefor

B. Agency or Contractor may not charge any costs or submit any claims against CSXT for hindrance or delay caused by railroad traffic; work done by CSXT or other delay incident to or necessary for safe maintenance of railroad traffic; or for any delays due to compliance with these Special Provisions.

C. Agency and Contractor shall cooperate with others participating in the construction of the Project to the end that all work may be carried on to the best advantage.

D. Agency and Contractor understand and agree that CSXT does not assume any responsibility for work performed by others in connection with the Project. Agency and Contractor further understand and agree that they shall have no claim whatsoever against CSXT for any inconvenience, delay or additional cost incurred by Agency or Contractor on account of operations by others.

VII STORAGE OF MATERIALS AND EQUIPMENT

Agency and Contractor shall not store their materials or equipment on CSXT's property or where they may potentially interfere with CSXT's operations, unless Agency or Contractor has received CSXT Representative's prior written permission. Agency and Contractor understand and agree that CSXT will not be liable for any damage to such materials and equipment from any cause and that CSXT may move, or require Agency or Contractor to move, such material and equipment at Agency's or Contractor's sole expense. To minimize the possibility of damage to the railroad tracks resulting from the unauthorized use of equipment, all grading or other construction equipment that is left parked near the tracks unattended by watchmen shall be immobilized to the extent feasible so that it cannot be moved by unauthorized persons.

VIII CONSTRUCTION PROCEDURES

A. General

1. Construction work on CSXT property shall be subject to CSXT's inspection and approval.
2. Construction work on CSXT property shall be in accord with CSXT's written outline of specific conditions and with these Special Provisions.
3. Contractor shall observe the terms and rules of the CSXT Safe Way manual, which Agency and Contractor shall be required to obtain from CSXT, and in accord with any other instructions furnished by CSXT or CSXT's Representative.

B. Blasting

1. Agency or Contractor shall obtain CSXT Representative's and Agency Representative's prior written approval for use of explosives on or adjacent to CSXT property. If permission for use of explosives is granted, Agency or Contractor must comply with the following:

    a. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of Agency or Contractor.

    b. Electric detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.

    c. No blasting shall be done without the presence of an authorized representative of CSXT. At least thirty (30) days advance notice to CSXT Representative is required to arrange for the presence of an authorized CSXT representative and any flagging that CSXT may require.

    d. Agency or Contractor must have at the Project site adequate equipment, labor and materials, and allow sufficient time, to (i) clean up (at Agency's expense) debris resulting from the blasting without any delay to trains; and (ii) correct (at Agency's expense) any track misalignment or other damage to CSXT's property resulting from the blasting, as directed by CSXT Representative, without delay to trains. If Agency's or Contractor's actions result in delay of any trains, including Amtrak passenger trains, Agency shall bear the entire cost thereof.

    e. Agency and Contractor shall not store explosives on CSXT property.

2. CSXT Representative will:

a. Determine the approximate location of trains and advise Agency or Contractor of the approximate amount of time available for the blasting operation and clean-up.

b. Have the authority to order discontinuance of blasting if, in his or her opinion, blasting is too hazardous or is not in accord with these Special Provisions.

IX MAINTENANCE OF DITCHES ADJACENT TO CSXT TRACKS

Agency or Contractor shall maintain all ditches and drainage structures free of silt or other obstructions that may result from their operations. Agency or Contractor shall provide erosion control measures during construction and use methods that accord with applicable state standard specifications for road and bridge construction, including either (1) silt fence; (2) hay or straw barrier; (3) berm or temporary ditches; (4) sediment basin; (5) aggregate checks; and (6) channel lining. All such maintenance and repair of damages due to Agency's or Contractor's operations shall be performed at Agency's expense.

X FLAGGING *I* INSPECTION SERVICE

A. CSXT has sole authority to determine the need for flagging required to protect its operations and property . In general, flagging protection will be required whenever Agency or Contractor or their equipment are, or are likely to be, working within fifty (50) feet of live track or other track clearances specified by CSXT, or over tracks.

B. Agency shall reimburse CSXT directly for all costs of flagging that is required on account of construction within CSXT property shown in the Plans, or that is covered by an approved plan revision, supplemental agreement or change order.

C. Agency or Contractor shall give a minimum of thirty (30) days advance notice to CSXT Representative for anticipated need for flagging service. No work shall be undertaken until the flag person(s) is/are at the job site. If it is necessary for CSXT to advertise a flagging job for bid, it may take up to ninety (90) days to obtain this service, and CSXT shall not be liable for the cost of delays attributable to obtaining such service.

D. CSXT shall have the right to assign an individual to the site of the Project to perform inspection service whenever, in the opinion of CSXT Representative, such inspection may be necessary. Agency shall reimburse CSXT for the costs incurred by CSXT for such inspection service. Inspection service shall not relieve Agency or Contractor from liability for its Work.

E. CSXT shall render invoices for, and Agency shall pay for, the actual pay rate of the flagpersons and inspectors used, plus standard additives, whether that amount is above or below the rate provided in the Estimate. If the rate of pay that is to be used for inspector or flagging service is changed before the work is started or during the progress of the work, whether by law or agreement between CSXT and its employees, or if the tax rates on labor are changed, bills will be rendered by CSXT and paid by Agency using the new rates. Agency and Contractor shall perform their operations that require flagging protection or inspection service in such a manner and sequence that the cost of such will be as economical as possible.

XL UTILITY FACILITIES ON CSXT PROPERTY

Agency shall arrange, upon approval from CSXT, to have any utility facilities on or over CSXT Property changed as may be necessary to provide clearances for the proposed trackage.

XII CLEAN-UP

Agency or Contractor, upon completion of the Project, shall remove from CSXT's Property any temporary grade crossings, any temporary erosion control measures used to control drainage, all machinery, equipment, surplus materials, falsework, rubbish, or temporary buildings belonging to Agency or Contractor. Agency or Contractor, upon completion of the Project, shall leave CSXT Property in neat condition, satisfactory to CSXT Representative.

XIII FAlLURE TO COMPLY

If Agency or Contractor violate or fail to comply with any of the requirements of these Special Provisions, (a) CSXT may require Agency and/or Contractor to vacate CSXT Property; and (b) CSXT may withhold monies due Agency and/or Contractor; (c) CSXT may require Agency to withhold monies due Contractor; and (d) CSXT may cure such failure and the Agency shall reimburse CSXT for the cost of curing such failure.

EXHIDIT D

INITIAL ESTIMATE
ATTACHED

EXHIBIT E

PAYMENT SCHEDULE

Agency shall remit payment to CSXT for its Reimbursable Expenses within thirty (30) days following delivery to Agency of an invoice.

EXHIBIT F

INSURANCE REQUREMENTS

Insurance Policies:

Agency and Contractor, if and to the extent that either is performing work on or about CSXT's property, shall procure and maintain the following insurance policies:

1. Commercial General Liability coverage at their sole cost and expense with limits of not less than $5,000,000 in combined single limits for bodily injury and/or property damage per occurrence, and such policies shall name CSXT as an additional insured.

2. Statutory Worker's Compensation and Employers Liability Insurance with limits of not less than $1,000,000, which insurance must contain a waiver of subrogation against CSXT and its affiliates [if permitted by state law].

3. Commercial automobile liability insurance with limits of not less than $1,000,000 combined single limit for bodily injury and/or property damage per occurrence, and such policies shall name CSXT as an additional insured.

4. Railroad protective liability insurance with limits of not less than $5,000,000 combined single limit for bodily injury and/or property damage per occurrence and an aggregate annual limit of $10,000,000, which insurance shall satisfy the following additional requirements:

    a. The Railroad Protective Insurance Policy must be on the ISO/RIMA Form of Railroad Protective Insurance- Insurance Services Office (ISO) Form CG 00 35.
    b. CSX Transportation must be the named insured on the Railroad Protective Insurance Policy.
    c. Name and Address of Contractor and Agency must be shown on the Declarations page.
    d. Description of operations must appear on the Declarations page and must match the Project description, including project or contract identification numbers.
    e. Authorized endorsements must include the Pollution Exclusion Amendment-CG 28 31, unless using form CG 00 35 version 96 and later.
    f. Authorized endorsements may include:
        i. Broad Form Nuclear Exclusion- IL 00 21
        ii. 30-day Advance Notice of Non-renewal or cancellation
        iii. Required State Cancellation Endorsement
        iv. Quick Reference or Index- CLIIL 240
    g. Authorized endorsements may not include:
        i. A Pollution Exclusion Endorsement except CG 28 31
        ii. A Punitive or Exemplary Damages Exclusion

iii. A "Common Policy Conditions" Endorsement
iv. Any endorsement that is not named in Section 4 (e) or (f) above.
v. Policies that contain any type of deductible

5. All insurance companies must be A.M. Best rated A- and Class VII or better.

6. Such additional or different insurance as CSXT may require.

Additional Terms

1. Contractor must submit the original Railroad Protective Liability policy, Certificates of Insurance and all notices and correspondence regarding the insurance policies to:

Jonathan MacArthur
Insurance Department
CSX Corporation
500 Water Street- C907
Jacksonville, FL 32202
904.359.3394 (Phone)
904.306.5325 (Fax)
Jonathan_MacArthur@csx.com

2. Neither Agency nor Contractor may begin work on the Project until it has received CSXT's written approval of the required insurance.

Project: Richmond, Virginia - Proposed repairs on RMTA Bridge 64 ramp between SB I-95 and Downtown Expressway (SR 195) over and adjacent to CSXT; Florence Division; RMTA Bridge 65, Bridge 66, Bridge 67 and Bridge 68 ramps between I-95 and Downtown Expressway (SR 195) over and adjacent to CSXT; C&O Division; RMTA Bridge 8, carrying Powhite Parkway (SR76) over the James River over and adjacent to CSXT; C&O Division; and RMTA Boulevard Bridge carrying SR 161 over the James River over and adjacent to CSXT; C&O Division; CSXT OP# (*TBD*)

SCHEDULE I

CONTRACTOR'S ACCEPTANCE

To and for the benefit of CSX Transportation, Inc. ("CSXT") and to induce CSXT to permit Contractor on or about CSXT's property for the purposes of performing work in accordance with the Agreement dated _____ between the RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY and CSXT, Contractor hereby agrees to abide by and perform all applicable terms of the Agreement, including, but not limited to Exhibits C and F to the Agreement, and Sections 3, 9 and 11 of the Agreement.

Contractor: _____

By: _____

Name: _____

Title: _____

APPENDIX

CSX Transportation

CONSTRUCTION SUBMISSION CRITERIA

Public Projects Group
Jacksonville, FL
Date Issued: May 8, 2009

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INTRODUCTION

The information in this document is intended to improve communication and clarify the CSXT criteria related to construction submissions that may involve CSXT property. All work must be performed in a manner as to not adversely impact existing CSXT operations. Please note that there are other standards associated with construction that must be adhered to including but not limited to the CSXT Special Provisions, CSXT Insurance Requirements as well as governing local, county, state and federal requirements. This document and other CSXT standards are subject to change without notice, and future revisions will be available at the CSXT website www.csx.com.

I. DEFINITIONS

Agency – The project sponsor.

AREMA – American Railway Engineering and Maintenance Association – the North American railroad industry standards group.

Construction Submission – The Agency or its representative shall submit six (6) sets of plans, supporting calculations, and detailed means and methods procedures for the specific proposed activity. All plans and supporting calculations shall be signed/sealed by a Professional Engineer as defined below.

Controlled Demolition – Removal of the existing structure or subcomponents in a manner that prevents any portions from falling onto CSXT employees, equipment or property. The proposed procedures shall be detailed in the means and methods submission for CSXT review and acceptance.

Contractor – The Agency's or CSXT's representative retained to perform the project work.

Engineer – CSXT Engineering Representative or a GEC authorized to act on the behalf of CSXT.

GEC – General Engineering Consultant who has been authorized to act on the behalf of CSXT.

Professional Engineer – An engineer who is licensed in state or commonwealth (if required by the Agency) in which the project is to occur. The drawings and calculations shall be prepared by the Professional Engineer and shall bear his seal and signature.

Submission Review Period - **a minimum of 30 days in advance of start of work.** Up to 30 days will be required for the initial review response. Up to an additional 30 days may be required to review any/all subsequent submissions or resubmission.

Theoretical Railroad Live Load Influence Zone – A 1½ horizontal to 1 vertical theoretical slope line starting 1'-6" below top of rail elevation and 12'-0" from the centerline of the nearest track.

II. DEMOLITION PROCEDURE

The Agency or its contractor shall submit, as defined above, a detailed procedure for demolition of the structure over railroad tracks.

A. The Agency or its Contractor shall submit the detailed procedure for demolition of existing structures over or adjacent to CSXT's tracks or right-of-way. This procedure shall include a plan showing the locations of cranes, horizontally and vertically, operating radii, with loading or disposal locations shown, with all dimensions referenced from the center line of the near track, including beam placement on ground or truck loading staging plan. The plan shall also include the location, with relevant dimensions, of all tracks, other railroad facilities; wires, poles, adjacent structures, or buried utilities that could be affected, showing that the proposed lifts are clear of these obstructions. No crane or equipment may be set on the CSXT rails or track structure and no material may be dropped on CSXT property.

B. Also included with this submittal the following information:

1. Computations showing weight of picks must be submitted. Computations shall be made from field verified plans of the existing structure beams being removed and those plans or sections thereof shall also be included in the submittal; the weight shall include the weight of concrete or other materials including lifting rigging.

2. If the sponsor can prove to CSXT that plans do not exist and weights must be calculated from field measurements, the field measurements are to be made under the supervision of the Professional Engineer submitting the procedure and shall include sketches and estimated weight calculations with the procedure. If possible, field measurements shall be taken with a CSXT representative present.

3. Crane rating sheets showing cranes to be adequate for 150% of the actual weight of the pick. A complete set of crane charts, including crane, counterweight, maximum boom angle, and boom nomenclature is to be submitted. Safety factors that may have been "built in" to the crane charts are not to be considered when determining the 150% Factor of Safety.

4. A data sheet shall be prepared listing the type, size and arrangements of slings, shackles, or other connecting equipment. Include copies of a catalog or information sheets for specialized equipment. All specific components proposed for use shall be clearly identified and highlighted in the submitted documents. The safe working load capacity of the connecting equipment shall be 150% above the calculated weight of the pick.

5. A complete written procedure is to be included that describes the sequence of events, indicating the order of lifts and any repositioning or rehitching of the crane or cranes.

6. A time schedule for each of the various stages must be shown as well as a schedule for the entire lifting procedure. The proposed time frames for all critical subtasks (i.e., torch/saw cutting various portions of the superstructure or substructure, dismantling splices, installing temporary bracing, etc.) shall be furnished so that the potential impact(s) to CSXT operations may be assessed and eliminated or minimized.

7. The names and experience of the key Contractor personnel involved in the operation shall be included in the Contractor's means and methods submission.

8. Design and supporting calculations prepared by the Professional Engineer for items including the temporary support of components or intermediate stages shall be submitted for review. A guardrail will be required to be installed in a track where a temporary bent is located within twelve (12) feet from the centerline of that track. The guardrail will be installed by CSXT forces at the expense of the Agency or its contractor.

9. Existing, obsolete, bridge piers shall be removed to a minimum of 3'-0" below the finished grade, final ditch line invert, or as directed by the Engineer.

10. A minimum quantity of 25 tons of CSXT approved track ballast may be required to be furnished and stockpiled on site by the Contractor, or as directed by the Engineer.

11. CSXT's tracks, signals, structures, and other facilities shall be protected from damage during demolition of existing structure or replacement of deck slab.

NOTE: On-track or ground level debris shields such as crane mats are prohibited for use by CSXT.

C. Overhead Demolition Debris Shield - Shall be installed prior to the demolition of the bridge deck or other relevant portions of the superstructure.

1. The demolition debris shield shall be erected from the underside of the bridge over the track area to catch all falling debris.

2. The Contractor shall include the demolition debris shield installation/removal means and methods as part of the proposed Controlled Demolition procedure submission.

3. The demolition debris shield shall provide 23'-0" minimum vertical clearance or maintain the existing vertical clearance if the existing clearance is less than 23'-0" as approved by CSXT. Horizontal clearance to the centerline of the track should not be reduced unless approved by the Engineer.

4. The vertical clearance ATR (above top of rail) is measured from the top of rail to the lowest point on the overhead shielding system measured within a distance of 6'-0" out from each side of the track centerline.

5. The demolition debris shield design and supporting calculations, all signed/sealed by a Professional Engineer, shall be submitted for review and acceptance.

6. The demolition debris shield shall have a **minimum** design load of 50 pounds per square foot **plus** the weight of the equipment, debris, personnel, and other loads to be carried.

7. The Contractor shall include the proposed bridge deck removal procedure in its demolition means and methods and shall verify that the size and quantity of the demolition debris generated by the procedure does not exceed the shield design loads.

8. The contractor shall clean the demolition debris shield daily or more frequently as dictated either by the approved design parameters or as directed by the Engineer.

D. Vertical Demolition Debris Shield – This type of shield may be required for substructure removals in close proximity to CSXT track and other facilities, as determined by the Engineer.

1. Prior to commencing the demolition activity, the Contractor shall install a ballast protection system consisting of geotextile to keep the railroad ballast from becoming fouled with construction or demolition debris and fines. The geotextile ballast protection system shall be installed and maintained by the Contractor for the project duration in accordance with the attached plan, or with additional measures as directed by the Engineer.

2. The Agency, or its Contractor, shall submit detailed plans, with detailed calculations, prepared and submitted by a Professional Engineer of the protection shield and ballast protection systems for approval prior to the start of demolition.

3. Blasting will not be permitted to demolish a structure over or within CSXT's right-of-way.

E. The Controlled Demolition procedure must be approved by the Engineer prior to undertaking work on the project.

F. The Contractor shall provide timely communication to the Engineer when scheduling the demolition-related work so that the Engineer may be present during the entire demolition procedure.

G. At any time during demolition activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances that may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

III. ERECTION PROCEDURE

The Agency or its Contractor shall submit a detailed procedure for performing erection on/about CSXT property, as defined above.

A. The Agency or its Contractor shall submit six (6) copies of the detailed procedure for erection of the proposed structures over or adjacent to CSXT's tracks or right-of-way. This procedure shall include a plan showing the locations of cranes, horizontally and vertically, operating radii, with staging locations shown, including beam placement on ground or truck unloading staging plan. Plan should also include the location of all tracks, other railroad facilities; wires, poles, adjacent structures, or buried utilities that could be affected, showing that the proposed lifts are clear of these obstructions. No crane or equipment may be set on the CSXT rails or track structure.

B. Also included with this submittal the following information:

1. As-built Bridge Seat Elevations - All as-built bridge seats and top of rail elevations shall be furnished to the Engineer for review and verification at least 30 days in advance of construction or erection, to ensure that minimum vertical clearances as approved in the plans will be achieved.

2. Computations showing weight of picks must be submitted. Computations shall be made from plans of the structure beams being erected, and those plans or sections thereof shall also be included in the submittal; the weight shall include the weight of concrete or other materials including lifting rigging.

3. Crane rating sheets showing cranes to be adequate for 150% of the actual weight of the pick. A complete set of crane charts, including crane, counterweight, maximum boom angle, and boom nomenclature is to be submitted. Safety factors that may have been "built in" to the crane charts are not to be considered when determining the 150% Factor of Safety.

4. A data sheet shall be prepared listing the type, size and arrangements of slings, shackles, or other connecting equipment. Include copies of a catalog or information sheets for specialized equipment. All specific components proposed for use shall be clearly identified and highlighted in the submitted documents. The safe working load capacity of the connecting equipment shall be 150% above the calculated weight of the pick.

5. A complete written procedure is to be included that describes the sequence of events, indicating the order of lifts and any repositioning or rehitching of the crane or cranes.

6. A time schedule for each of the various stages must be shown as well as a schedule for the entire lifting procedure. The proposed time frames for all critical sub tasks (i.e., performing aerial splices, installing temporary bracing, etc.) shall be furnished so that the potential impact(s) to CSXT operations may be assessed and eliminated or minimized.

7. The names and experience of the key Contractor personnel involved in the operation shall be included in the Contractor's means and methods submission.

8. Design and supporting calculations prepared by the Professional Engineer for items including the temporary support of components or intermediate stages shall be submitted for review. A guardrail will be required to be installed in a track where a temporary bent is located within twelve (12) feet from the centerline of that track.

C. The proposed Erection procedure must be approved by the Engineer prior to undertaking work on the project.

D. The Contractor shall provide timely communication to the Engineer when scheduling the erection-related work so that the Engineer may be present during the entire erection procedure.

E. At any time during construction activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances that may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

IV. EXCAVATION AND SHORING

The Agency or its contractor shall submit, as defined above, a detailed procedure for the installing sheeting/shoring adjacent to Railroad Tracks.

A. Shoring protection shall be provided when excavating adjacent to an active track or railroad facility or as determined by CSXT. Shoring will be provided in accordance with AREMA *Manual for Railway Engineering,* Chapter 8, Part 28, except as noted below.

B. Shoring may not be required if all of the following conditions are satisfied:

1. Excavation does not encroach upon a 1½ horizontal: 1 vertical theoretical slope line starting 1'-6" below top of rail and at 12'-0" minimum from centerline of the track (live load influence zone).

2. Track is on level ground or in a cut section and on stable soil.

3. Excavation does not adversely impact the stability of a CSXT facility (i.e., signal bungalow, drainage facility, undergrade bridge, building, etc.).

4. Shoring is not required by any governing construction code.

C. When the track is on an embankment, excavating the toe of the embankment without shoring may affect the stability of the embankment. Therefore, excavation of the embankment toe without shoring will not be permitted.

D. Trench boxes are prohibited for use on CSXT within the theoretical railroad live load influence zone.

E. The required protection is the cofferdam type that completely encloses the excavation. Where dictated by conditions, partial cofferdams with open sides away from the track may be used. Cofferdams shall be constructed using steel sheet piling, or when approved by the Engineer, steel soldier piles with timber lagging. Wales and struts shall be provided and designed as needed. The following shall be considered when designing cofferdams:

1. Shoring shall be designed to resist a vertical live load surcharge of 1,880 lbs. per square foot, in addition to active earth pressure. The surcharge shall be assumed to act on a continuous strip, 8'-6" wide. Lateral pressures due to surcharge shall be computed using the strip load formula shown in AREMA *Manual for Railway Engineering,* Chapter 8, Part 20.

2. Allowable stresses in materials shall be in accordance with AREMA *Manual for Railway Engineering,* Chapter 7, 8, and 15.

3. A construction procedure for temporary shoring shall be shown on the drawing.

4. All shoring systems on or adjacent to CSXT right-of-way shall be equipped with railings or other approved fall protection.

5. A minimum horizontal clearance of 10'-0" from centerline of the track to face of nearest point of shoring shall be maintained, provided a 12'-0" roadbed is maintained with a temporary walkway and handrail system.

F. The contractor shall submit the following drawings and calculations (all shall be signed/sealed by a Professional Engineer) for CSXT's review and approval.

1. Six (6) sets of detailed drawings of the shoring systems showing sizes of all structural members, details of connections, and distances from centerline of track to face of shoring. Drawing shall show a section showing height of shoring and track elevation in relation to bottom of excavation.

2. Six (6) sets of calculations of the shoring design.

   The drawings and calculations shall be prepared by a Licensed Professional Engineer in the state (if required by the Agency) where the shoring is to be constructed and shall bear his seal and signature. Shoring plans shall be approved by CSXT's construction engineering and inspection representative.

3. For sheeting and shoring within 18'-0" of the centerline of the track, the live load influence zone, and in slopes, the contractor shall use interlocked steel sheeting (sheet pile).

4. Sheet pile installed in slopes or within 18'-0" of the centerline of track shall not be removed.

5. Sheet piles shall be cut off a minimum of 3'-0" below the finished grade, ditch line invert, or as directed by the Engineer. The ground shall be backfilled and compacted immediately after sheet pile is cut off.

6. A procedure for cutting off the sheet pile and restoring the embankment shall be submitted to the Engineer for review and acceptance.

G. Blasting is not permitted on or adjacent to CSXT right-of-way without prior written approval from the Engineer. Mechanical and chemical means of rock removal must be explored before blasting is considered. If written permission for the use of explosives is granted, the Agency or Contractor must comply with all of the following:

1. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of the Agency or Contractor.

2. Electronic detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.

3. No blasting shall be done without the presence of an authorized representative of CSXT. Advance notice to the Engineer as required by the CSXT Special Provisions is required to arrange for the presence of an authorized CSXT representative and any flagging that CSXT may require.

4. Agency or Contractor must have at the project site adequate equipment, labor and materials, and allow sufficient time, to clean up debris resulting from the blasting and correct any misalignment of tracks or other damage to CSXT property resulting from the blasting. Any corrective measures required must be performed as directed by the Engineer at the Agency's or Contractor's expense without any delay to trains. If Agency's or Contractor's actions result in the delay of any trains including passenger trains, the Agency or Contractor shall bear the entire cost thereof.

5. The Agency or Contractor may not store explosives on CSXT property.

6. At any time during blasting activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances that may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

V. TRACK MONITORING

The Agency or its Contractor shall submit, for CSXT review and approval, a detailed track monitoring program to detect both horizontal and vertical movement of the CSXT track and roadbed, a minimum of 30 days in advance of start of work.

A. For the installation of temporary or permanent shoring systems, including but not limited to soldier piles and lagging, and interlocked steel sheeting on or adjacent to CSXT's right-of-way, the contractor may be required to submit a detailed track monitoring program for CSXT's approval prior to performing any work near CSXT's right-of-way.

B. The program shall specify the survey locations, the distance between the location points, and frequency of monitoring before, during, and after construction. CSXT reserves to the right to modify the survey locations and monitoring frequency as necessary during the project.

C. The survey data shall be collected in accordance with the approved frequency and immediately furnished to the Engineer for analysis.

D. If any movement has occurred as determined by the Engineer, CSXT will be immediately notified. CSXT, at its sole discretion, shall have the right to immediately require all contractor operations to be ceased, have the excavated area immediately backfilled and/or determine what corrective action is required. Any corrective action required by CSXT or performed by CSXT including the monitoring of corrective action of the contractor will be at project expense.

SPECIAL PROVISION
AGGREGATES

DESCRIPTION

This work shall consist of placing aggregate material at designated locations as directed by the Engineer. The contractor shall submit the source of supply for Engineers approval.

MATERIALS

ITEM	VDOT SECTION
CRUSHER RUN AGGREGATE NO. 25 OR 26	205
COARSE AGGREGATE NO.57	203

PROCEDURES

Prior to placing stone the contractor shall prepare the area by removing grass, roots, litter and foreign material. An approved herbicide shall be sprayed on the entire area to prevent future vegetation growth. Contractor shall place aggregate in a uniform manner at a minimum depth of 1.5" inches.

LOCATIONS:

Police Turnaround near Cherry St.	CRUSHER RUN AGGR. NO. 25 OR 26
Police Turnaround near 2nd St. Bridge	CRUSHER RUN AGGR. NO. 25 OR 26
WB SR 146 Entrance Ramp Under Grant St. Bridge	NO. 57 STONE
EB SR 146 Exit Ramp Under Grant St. Bridge	NO. 57 STONE
EB DTE Entrance Ramp under Allen Ave. Bridge	NO. 57 STONE
Cumberland St. Entrance Ramp to WB DTE Plaza	NO. 57 STONE

EB DTE Exit Ramp near Belvidere St.	NO. 57 STONE
EB DTE Entrance Ramp under 2nd St. Bridge	NO. 57 STONE
WB DTE Exit Ramp under 2nd St. Bridge	NO. 57 STONE
EB DTE Entrance Ramp at 10th St.	NO. 57 STONE
WB DTE Exit Ramp to 10th Street	NO. 57 STONE

Engineer shall determine additional locations if necessary.

MEASUREMENT AND PAYMENT

The aggregates shall be measured in tons and will be paid for at the contract unit price. This price shall include all equipment, labor, material, removal and disposal of materials, and incidentals required to complete the work.

Pay Item	Pay Unit
CRUSHER RUN AGGREGATE NO. 25 OR 26	TON
COARSE AGGREGATE NO.57	TON

SPECIAL PROVISION
IMPACT ATTENUATOR SERVICE

DESCRIPTION

This work shall consist of removing, salvaging, and replacing existing permanent impact attenuators and installing new impact attenuators, in accordance with this provision, manufacturer's instructions and as directed by the Engineer.

MATERIALS

Impact attenuator shall be Trinity 90" QuadGuard II System with Tension Strut Backup TL-3. Side panels may be required to completely transition to barrier wall.

PROCEDURES

Contractor shall remove, salvage and store existing Impact Attenuators in area designated by the Engineer.

Installation of the new impact attenuator anchor bolts shall be such that existing deck rebar will not be damaged.

No fixed objects, including but not limited to bridge parapet wall, piers, blunt ends, and sign structures, shall be left unprotected. The Contractor shall use an approved NCHRP 350 truck mounted attenuator to protect traffic from the fixed object.

LOCATIONS

Bridge 64……..... 1
Bridge 65…….. 1

MEASUREMENT AND PAYMENT

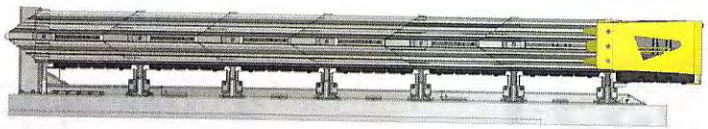
Impact Attenuator Service will be measured in units of each and will be paid for at the contract unit price. This price shall include costs of furnishing the new impact attenuators and shipping, removal of the existing units, providing a truck mounted attenuator to protect motorists from the fixed object, salvaging the existing units to the RMTA storage yard, equipment required, labor, and any incidentals required to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Impact Attenuator Service	Each

Crash Cushions

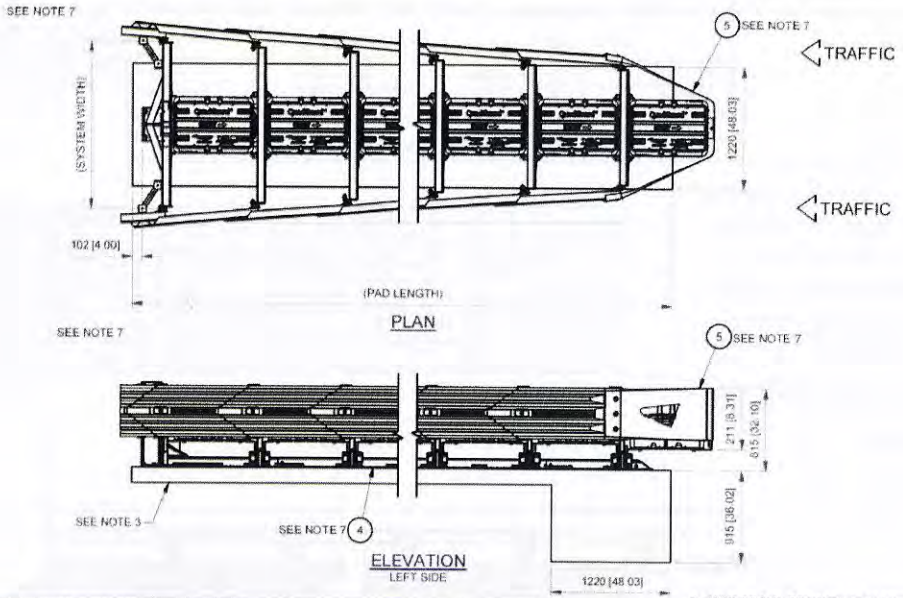
QuadGuard® II



TRINITY HIGHWAY

Ahead of the Curve™

DWG QF2TSCVR-U



BAYS	1753 [69"] WIDTH	2286 [90"] WIDTH	SYSTEM LENGTH		EFFECTIVE LENGTH		PAD LENGTH		MAX DESIGN SPEED		NO. OF CARTRIDGES	
**	MODEL #	MODEL #	m	ft-in	m	ft-in	m	ft-in	Km/h	[MPH]	TYPE I	TYPE II
3	QG27069	QG27090	3.96	[13'-0"]	3.66	[11'-8"]	3.66	[12'-0"]	70	[43]	2	2
4	QG28069	QG28090	4.88	[16'-0"]	4.47	[14'-8"]	4.57	[15'-0"]	80	[50]	3	2
5	QG210069	QG210090	5.79	[19'-0"]	5.38	[17'-8"]	5.49	[18'-0"]	100	[62]	3	3
6	QG210569	QG210590	6.71	[22'-0"]	6.30	[20'-8"]	6.40	[21'-0"]	105	[65]	4	3
7	QG211069	QG211090	7.62	[25'-0"]	7.21	[23'-8"]	7.32	[24'-0"]	110	[68]	4	4
8	QG211569	QG211590	8.53	[28'-0"]	8.13	[26'-8"]	8.23	[27'-0"]	115	[71]	4	5
9	QG212069	QG212090	9.45	[31'-0"]	9.04	[29'-8"]	9.14	[30'-0"]	120	[75]	4	6

NOTES:
1. IN COMPLIANCE WITH THE AASHTO 2002 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 762 [30.00] MIN.
3. 150 [6.00] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 200 [8.00] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY, MEASURING AT LEAST 3.66 m [12'-0"] WIDE BY 15.24 m [50'-0"] LONG.
4. SEE THE "QUADGUARD II SYSTEM PRODUCT MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323-6374.
5. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY AN ADEQUATE TRANSITION FROM THE QUADGUARD II SYSTEM TO THE OBJECT BEING SHIELDED.
6. UNITS OF MEASUREMENT ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
7. BACKUP, MONORAIL, AND NOSE ASSEMBLIES ARE NOT INCLUDED IN MODEL NUMBER. ORDER SEPARATELY.
8. THE QUADGUARD II HAS BEEN FULLY TESTED TO NCHRP 350 TL-3.

UNIDIRECTIONAL

KEY
1. CARTRIDGE
2. DIAPHRAGM
3. FENDER PANEL
4. MONORAIL
5. NOSE ASSEMBLY
6. BACKUP

Revision	Date	Rev	By	Chk	App
REPLACED EXISTING TABLE WITH MODEL TABLE	5/19/09	B	DDS	STT	RCB
REVISED SYSTEM LENGTH AND DESIGN SPEED COMBINS	6/31/09	C	DK	JME	RCB
UPDATED TABLE	10/23/09	D	DDS	JME	FJP

REFERENCES

SERIAL NO.	DIAPHRAGM ASSY	607173
SALES ORDER	DIAPHRAGM SHIM KIT	614050
EH PROJECT	NOSE ASSY	611583
NO. OF UNITS	FENDER PANEL ASSY	608241
NOSE COLOR	BACKUP ASSY	3540390-0000
	MONORAIL ASSY	35-40-75
	CONCRETE PAD	35-40-76

DESIGN: D. Kohfeld	DATE: 4/6/2009
DRAWN: M. Buehler	DATE: 12/30/2008
CHECKED: JME	DATE: 4/27/2009
APPROVED: R. Brougher	DATE: 4/22/2009
FILE: QF2TSCVR-U idw	

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® II SYSTEM
WITH TENSION STRUT BACKUP

SCALE:	DRAWING NO.:	SHEET:	REV:
	QF2TSCVR-U	1 of 1	D

QuadGuard® II System w/Tension Strut Backup Wide

SPECIAL PROVISION
CONCRETE SLAB COATINGS

DESCRIPTION

This work shall consist of cleaning and coating the approach slabs at the Downtown Expressway Toll Plaza. The intent of this work is to provide a properly prepared concrete surface that is suitable for application and adhesion of the specified protective coating system.

MATERIALS

All cleaned surfaces shall receive two coats of the following coating, or Engineer approved equal:

A. PPG Perma-Crete 4-4210 series acrylic concrete stain. An acrylic concrete stain that is film forming, tintable, water borne and fast drying.

PROCEDURES

Contractor shall repair all delaminations, spalls and cracks and allow proper curing as per manufacturer's recommendations before applying coating. Surface Preparation will be in accordance with SSPC SP-13 guidelines with minimum high-pressure water cleaning of 3000 PSI. Detergent water cleaning and steam cleaning may be used to remove oils and grease from concrete.

A minimum of two coats will be required to achieve 1.6-1.9 mils Recommended Dry Film Thickness. Application will be by brush and roller only. No spraying will be permitted.

LOCATIONS

EB DTE Plaza..……..... 1593 square yards
WB DTE Plaza…… 403 square yards

MEASUREMENT AND PAYMENT

Concrete Slab Coating will be measured in units of square yards of surface area and will be paid for at the contract unit price. This price shall include costs of any necessary surface preparation, equipment required, labor, environmental protection, proper disposal of material offsite, and any incidentals required to complete the work.

Maintenance of Traffic items for Concrete Slab Coatings will be paid for as per MOT Special Provision SP-B and the supplemental specifications.

Payment will be made under:

Pay Item	Pay Unit
Concrete Slab Coating	Square Yards