



State of West Virginia  
Department of Administration  
Purchasing Division  
2019 Washington Street East  
Post Office Box 50130  
Charleston, WV 25305-0130

## Solicitation

NUMBER

02140354

PAGE

1

ADDRESS CORRESPONDENCE TO ATTENTION OF:

CRYSTAL RINK  
304-558-2402

RFQ COPY

TYPE NAME/ADDRESS HERE

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DIVISION OF HIGHWAYS  
DISTRICT TWO EQUIPMENT SHOP

1029 9TH STREET WEST  
HUNTINGTON, WV  
25704-2550 528-5625

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DATE PRINTED

05/12/2014

BID OPENING DATE: 06/18/2014

BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	201	EA		210-16		
	INTERIOR 17" PRESTRESSED CONCRETE BOX BEAMS 3' WIDE					
	REQUEST FOR QUOTATION (ONE-TIME PURCHASE)					
	THE WEST VIRGINIA STATE PURCHASING DIVISION FOR THE AGENCY, THE WEST VIRGINIA DIVISION OF HIGHWAYS, IS SOLICITING BIDS FOR THE ONE-TIME PURCHASE OF PRESTRESSED CONCRETE BEAMS AND ACCESSORIES FOR THE HENRY FRANCE BRIDGE REPLACEMENT PROJECT PER THE ATTACHED SPECIFICATIONS.					
0002	67	EA		210-16		
	EXTERIOR BEAM 17" PRESTRESSED CONCRETE BOX BEAM					
0003	32	EA		210-16		
	ELASTOMETER BEARING PADS					
SIGNATURE						
TITLE				TELEPHONE		DATE
FEIN				ADDRESS CHANGES TO BE NOTED ABOVE		

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



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25704-2550 528-5625

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DATE PRINTED
05/12/2014

BID OPENING DATE: 06/18/2014

BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0004	16	EA		210-16		
	1" DIAMETER X 2'-0" ANCHOR BOLT OR NO 8 GALV DEFORME					
0005	12	EA		210-16		
	GUARDRAIL ATTACHMENT ASSEMBLY FOR BOX BEAMSW/STUDS					
0006	4	EA		210-16		
	1" DIAMETER POST - TENSIONING BAR W/NUTS					
0007	6	EA		210-16		
	9"X9"X1" BEARING PLATES					
0008	1	LS		210-16		
	THICK SPONGE RUBBER PREFORMED JOINT FILLER					

SIGNATURE		TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE	

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'





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1029 9TH STREET WEST  
HUNTINGTON, WV  
25704-2550 528-5625

DATE PRINTED

05/12/2014

BID OPENING DATE: 06/18/2014

BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0009	85	LF		210-16		
	GUARDRAIL					
***** THIS IS THE END OF RFQ 02140354 ***** TOTAL:						

SIGNATURE

TELEPHONE

DATE

TITLE

FEIN

ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

## INSTRUCTIONS TO VENDORS SUBMITTING BIDS

1. **REVIEW DOCUMENTS THOROUGHLY:** The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.
2. **MANDATORY TERMS:** The Solicitation may contain mandatory provisions identified by the use of the words "must," "will," and "shall." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.
3. **PREBID MEETING:** The item identified below shall apply to this Solicitation.
  - ☒ A pre-bid meeting will not be held prior to bid opening.
  - ☐ A NON-MANDATORY PRE-BID meeting will be held at the following place and time:
  
  - ☐ A MANDATORY PRE-BID meeting will be held at the following place and time:

All Vendors submitting a bid must attend the mandatory pre-bid meeting. Failure to attend the mandatory pre-bid meeting shall result in disqualification of the Vendor's bid. No one person attending the pre-bid meeting may represent more than one Vendor.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. The State will not accept any other form of proof or documentation to verify attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing. Additionally, the person attending the pre-bid meeting should include the Vendor's E-Mail address, phone number, and Fax number on the attendance sheet. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

All Vendors should arrive prior to the starting time for the pre-bid. Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in, but are charged with knowing all matters discussed at the pre-bid.

Questions submitted at least five business days prior to a scheduled pre-bid will be discussed at the pre-bid meeting if possible. Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

- 4. VENDOR QUESTION DEADLINE:** Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions must be submitted on or before the date listed below and to the address listed below in order to be considered. A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are non-binding.

Question Submission Deadline: May 28, 2014 at 5:00 PM EST



Submit Questions to:

Crystal Rink



2019 Washington Street, East

Charleston, WV 25305

Fax: (304) 558-4115

*(Vendors should not use this fax number for bid submission)*

Email: [crystal.g.rink@wv.gov](mailto:crystal.g.rink@wv.gov)

- 5. VERBAL COMMUNICATION:** Any verbal communication between the Vendor and any State personnel is not binding, including that made at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.
- 6. BID SUBMISSION:** All bids must be signed and delivered by the Vendor to the Purchasing Division at the address listed below on or before the date and time of the bid opening. Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason. The Purchasing Division will not accept bids, modification of bids, or addendum acknowledgment forms via e-mail. Acceptable delivery methods include hand delivery, delivery by courier, or facsimile. The bid delivery address is:

Department of Administration, Purchasing Division  
2019 Washington Street East  
Charleston, WV 25305-0130

The bid should contain the information listed below on the face of the envelope or the bid may not be considered:

SEALED BID: \_\_\_\_\_  
 BUYER: \_\_\_\_\_  
 SOLICITATION NO.: \_\_\_\_\_  
 BID OPENING DATE: \_\_\_\_\_  
 BID OPENING TIME: \_\_\_\_\_  
 FAX NUMBER: \_\_\_\_\_

In the event that Vendor is responding to a request for proposal, the Vendor shall submit one original technical and one original cost proposal plus n/a convenience copies of each to the Purchasing Division at the address shown above. Additionally, the Vendor should identify the bid type as either a technical or cost proposal on the face of each bid envelope submitted in response to a request for proposal as follows:

BID TYPE: ☐ Technical  
☐ Cost

7. **BID OPENING:** Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when time stamped by the official Purchasing Division time clock.

Bid Opening Date and Time: June 18, 2014 at 1:30 PM EST

Bid Opening Location: Department of Administration, Purchasing Division  
 2019 Washington Street East  
 Charleston, WV 25305-0130

8. **ADDENDUM ACKNOWLEDGEMENT:** Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgment Form, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.
9. **BID FORMATTING:** Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

**GENERAL TERMS AND CONDITIONS:**

1. **CONTRACTUAL AGREEMENT:** Issuance of a Purchase Order signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.
2. **DEFINITIONS:** As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.
  - 2.1 **"Agency" or "Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.
  - 2.2 **"Contract"** means the binding agreement that is entered into between the State and the Vendor to provide the goods and services requested in the Solicitation.
  - 2.3 **"Director"** means the Director of the West Virginia Department of Administration, Purchasing Division.
  - 2.4 **"Purchasing Division"** means the West Virginia Department of Administration, Purchasing Division.
  - 2.5 **"Purchase Order"** means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the successful bidder and Contract holder.
  - 2.6 **"Solicitation"** means the official solicitation published by the Purchasing Division and identified by number on the first page thereof.
  - 2.7 **"State"** means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.
  - 2.8 **"Vendor" or "Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. **CONTRACT TERM; RENEWAL; EXTENSION:** The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☐ **Term Contract**

**Initial Contract Term:** This Contract becomes effective on

and extends for a period of \_\_\_\_\_ year(s).

**Renewal Term:** This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal must be submitted to the Purchasing Division Director thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Renewal of this Contract is limited to \_\_\_\_\_ successive one (1) year periods. Automatic renewal of this Contract is prohibited. Notwithstanding the foregoing, Purchasing Division approval is not required on agency delegated or exempt purchases. Attorney General approval may be required for vendor terms and conditions.

**Reasonable Time Extension:** At the sole discretion of the Purchasing Division Director, and with approval from the Attorney General's office (Attorney General approval is as to form only), this Contract may be extended for a reasonable time after the initial Contract term or after any renewal term as may be necessary to obtain a new contract or renew this Contract. Any reasonable time extension shall not exceed twelve (12) months. Vendor may avoid a reasonable time extension by providing the Purchasing Division Director with written notice of Vendor's desire to terminate this Contract 30 days prior to the expiration of the then current term. During any reasonable time extension period, the Vendor may terminate this Contract for any reason upon giving the Purchasing Division Director 30 days written notice. Automatic extension of this Contract is prohibited. Notwithstanding the foregoing, Purchasing Division approval is not required on agency delegated or exempt purchases, but Attorney General approval may be required.

**Release Order Limitations:** In the event that this contract permits release orders, a release order may only be issued during the time this Contract is in effect. Any release order issued within one year of the expiration of this Contract shall be effective for one year from the date the release order is issued. No release order may be extended beyond one year after this Contract has expired.

☐ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within \_\_\_\_\_ days.



☒ **One Time Purchase:** The term of this Contract shall run from the issuance of the Purchase Order until all of the goods contracted for have been delivered, but in no event shall this Contract extend for more than one fiscal year.

☐ **Other:** See attached.

4. **NOTICE TO PROCEED:** Vendor shall begin performance of this Contract immediately upon receiving notice to proceed unless otherwise instructed by the Agency. Unless otherwise specified, the fully executed Purchase Order will be considered notice to proceed

5. **QUANTITIES:** The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

☐ **Open End Contract:** Quantities listed in this Solicitation are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

☐ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

☒ **One Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

6. **PRICING:** The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification.

7. **EMERGENCY PURCHASES:** The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One Time Purchase contract.

8. **REQUIRED DOCUMENTS:** All of the items checked below must be provided to the Purchasing Division by the Vendor as specified below.

- ☐ **BID BOND:** All Vendors shall furnish a bid bond in the amount of five percent (5%) of the total amount of the bid protecting the State of West Virginia. The bid bond must be submitted with the bid.
- ☐ **PERFORMANCE BOND:** The apparent successful Vendor shall provide a performance bond in the amount of . The performance bond must be issued and received by the Purchasing Division prior to Contract award. On construction contracts, the performance bond must be 100% of the Contract value.
- ☐ **LABOR/MATERIAL PAYMENT BOND:** The apparent successful Vendor shall provide a labor/material payment bond in the amount of 100% of the Contract value. The labor/material payment bond must be issued and delivered to the Purchasing Division prior to Contract award.

In lieu of the Bid Bond, Performance Bond, and Labor/Material Payment Bond, the Vendor may provide certified checks, cashier's checks, or irrevocable letters of credit. Any certified check, cashier's check, or irrevocable letter of credit provided in lieu of a bond must be of the same amount and delivered on the same schedule as the bond it replaces. A letter of credit submitted in lieu of a performance and labor/material payment bond will only be allowed for projects under \$100,000. Personal or business checks are not acceptable.

- ☐ **MAINTENANCE BOND:** The apparent successful Vendor shall provide a two (2) year maintenance bond covering the roofing system. The maintenance bond must be issued and delivered to the Purchasing Division prior to Contract award.
- ☐ **WORKERS' COMPENSATION INSURANCE:** The apparent successful Vendor shall have appropriate workers' compensation insurance and shall provide proof thereof upon request.
- ☐ **INSURANCE:** The apparent successful Vendor shall furnish proof of the following insurance prior to Contract award and shall list the state as a certificate holder:

☐ **Commercial General Liability Insurance:**

or more.

☐ **Builders Risk Insurance:** builders risk – all risk insurance in an amount equal to 100% of the amount of the Contract.

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The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether or not that insurance requirement is listed above.

- ☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section entitled Licensing, of the General Terms and Conditions, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits prior to Contract award, in a form acceptable to the Purchasing Division.

☐
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The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications prior to Contract award regardless of whether or not that requirement is listed above.

- 9. LITIGATION BOND:** The Director reserves the right to require any Vendor that files a protest of an award to submit a litigation bond in the amount equal to one percent of the lowest bid submitted or \$5,000, whichever is greater. The entire amount of the bond shall be forfeited if the hearing officer determines that the protest was filed for frivolous or improper purpose, including but not limited to, the purpose of harassing, causing unnecessary delay, or needless expense for the Agency. All litigation bonds shall be made payable to the Purchasing Division. In lieu of a bond, the protester may submit a cashier's check or certified check payable to the Purchasing Division. Cashier's or certified checks will be deposited with and held by the State Treasurer's office. If it is determined that the protest has not been filed for frivolous or improper purpose, the bond or deposit shall be returned in its entirety.
- 10. ALTERNATES:** Any model, brand, or specification listed herein establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand should clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items may be grounds for rejection of a Vendor's bid.
- 11. EXCEPTIONS AND CLARIFICATIONS:** The Solicitation contains the specifications that shall form the basis of a contractual agreement. Vendor shall clearly mark any exceptions, clarifications, or

other proposed modifications in its bid. Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

- 12. LIQUIDATED DAMAGES:** Vendor shall pay liquidated damages in the amount  
2% of release order amt assessed daily for delivery delays beyond 60 working days

This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy.

- 13. ACCEPTANCE/REJECTION:** The State may accept or reject any bid in whole, or in part. Vendor's signature on its bid signifies acceptance of the terms and conditions contained in the Solicitation and Vendor agrees to be bound by the terms of the Contract, as reflected in the Purchase Order, upon receipt.

- 14. REGISTRATION:** Prior to Contract award, the apparent successful Vendor must be properly registered with the West Virginia Purchasing Division and must have paid the \$125 fee if applicable.

- 15. COMMUNICATION LIMITATIONS:** In accordance with West Virginia Code of State Rules §148-1-6.6, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

- 16. FUNDING:** This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available.

- 17. PAYMENT:** Payment in advance is prohibited under this Contract. Payment may only be made after the delivery and acceptance of goods or services. The Vendor shall submit invoices, in arrears, to the Agency at the address on the face of the purchase order labeled "Invoice To."

- 18. UNIT PRICE:** Unit prices shall prevail in cases of a discrepancy in the Vendor's bid.

- 19. DELIVERY:** All quotations are considered freight on board destination ("F.O.B. destination") unless alternate shipping terms are clearly identified in the bid. Vendor's listing of shipping terms that contradict the shipping terms expressly required by this Solicitation may result in bid disqualification.

- 20. INTEREST:** Interest attributable to late payment will only be permitted if authorized by the West Virginia Code. Presently, there is no provision in the law for interest on late payments.

- 21. PREFERENCE:** Vendor Preference may only be granted upon written request and only in accordance with the West Virginia Code § 5A-3-37 and the West Virginia Code of State Rules. A Resident Vendor Certification form has been attached hereto to allow Vendor to apply for the preference. Vendor's

failure to submit the Resident Vendor Certification form with its bid will result in denial of Vendor Preference. Vendor Preference does not apply to construction projects.

- 22. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES:** For any solicitations publicly advertised for bid on or after July 1, 2012, in accordance with West Virginia Code §5A-3-37(a)(7) and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women-owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the same preference made available to any resident vendor. Any non-resident small, women-owned, or minority-owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to submission of its bid to receive the preferences made available to resident vendors. Preference for a non-resident small, women-owned, or minority-owned business shall be applied in accordance with W. Va. CSR § 148-22-9.
- 23. TAXES:** The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
- 24. CANCELLATION:** The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-7.16.2.
- 25. WAIVER OF MINOR IRREGULARITIES:** The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.6.
- 26. TIME:** Time is of the essence with regard to all matters of time and performance in this Contract.
- 27. APPLICABLE LAW:** This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code or West Virginia Code of State Rules is void and of no effect.
- 28. COMPLIANCE:** Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendors acknowledge that they have reviewed, understand, and will comply with all applicable law.
- 29. PREVAILING WAGE:** On any contract for the construction of a public improvement, Vendor and any subcontractors utilized by Vendor shall pay a rate or rates of wages which shall not be less than the fair minimum rate or rates of wages (prevailing wage), as established by the West Virginia Division of Labor under West Virginia Code §§ 21-5A-1 et seq. and available at <http://www.sos.wv.gov/administrative-law/wagerates/Pages/default.aspx>. Vendor shall be responsible for ensuring compliance with prevailing wage requirements and determining when prevailing wage



requirements are applicable. The required contract provisions contained in West Virginia Code of State Rules § 42-7-3 are specifically incorporated herein by reference.

- 30. ARBITRATION:** Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.
- 31. MODIFICATIONS:** This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary, no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). **No Change shall be implemented by the Vendor until such time as the Vendor receives an approved written change order from the Purchasing Division.**
- 32. WAIVER:** The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.
- 33. SUBSEQUENT FORMS:** The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.
- 34. ASSIGNMENT:** Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments. Notwithstanding the foregoing, Purchasing Division approval may or may not be required on certain agency delegated or exempt purchases.
- 35. WARRANTY:** The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.
- 36. STATE EMPLOYEES:** State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.
- 37. BANKRUPTCY:** In the event the Vendor files for bankruptcy protection, the State of West Virginia may deem this Contract null and void, and terminate this Contract without notice.



**38. [RESERVED]**

**39. CONFIDENTIALITY:** The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/default.html>.

**40. DISCLOSURE:** Vendor's response to the Solicitation and the resulting Contract are considered public documents and will be disclosed to the public in accordance with the laws, rules, and policies governing the West Virginia Purchasing Division. Those laws include, but are not limited to, the Freedom of Information Act found in West Virginia Code § 29B-1-1 et seq.

If a Vendor considers any part of its bid to be exempt from public disclosure, Vendor must so indicate by specifically identifying the exempt information, identifying the exemption that applies, providing a detailed justification for the exemption, segregating the exempt information from the general bid information, and submitting the exempt information as part of its bid but in a segregated and clearly identifiable format. Failure to comply with the foregoing requirements will result in public disclosure of the Vendor's bid without further notice. A Vendor's act of marking all or nearly all of its bid as exempt is not sufficient to avoid disclosure and WILL NOT BE HONORED. Vendor's act of marking a bid or any part thereof as "confidential" or "proprietary" is not sufficient to avoid disclosure and WILL NOT BE HONORED. In addition, a legend or other statement indicating that all or substantially all of the bid is exempt from disclosure is not sufficient to avoid disclosure and WILL NOT BE HONORED. Vendor will be required to defend any claimed exemption for nondisclosure in the event of an administrative or judicial challenge to the State's nondisclosure. Vendor must indemnify the State for any costs incurred related to any exemptions claimed by Vendor. Any questions regarding the applicability of the various public records laws should be addressed to your own legal counsel prior to bid submission.

**41. LICENSING:** In accordance with West Virginia Code of State Rules §148-1-6.1.7, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

**42. ANTITRUST:** In submitting a bid to, signing a contract with, or accepting a Purchase Order from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired

by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

- 43. VENDOR CERTIFICATIONS:** By signing its bid or entering into this Contract, Vendor certifies (1) that its bid was made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, person or entity submitting a bid for the same material, supplies, equipment or services; (2) that its bid is in all respects fair and without collusion or fraud; (3) that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; and (4) that it has reviewed this RFQ in its entirety, understands the requirements, terms and conditions, and other information contained herein. Vendor's signature on its bid also affirms that neither it nor its representatives have any interest, nor shall acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency.

The individual signing this bid on behalf of Vendor certifies that he or she is authorized by the Vendor to execute this bid or any documents related thereto on Vendor's behalf; that he or she is authorized to bind the Vendor in a contractual relationship; and that, to the best of his or her knowledge, the Vendor has properly registered with any State agency that may require registration.

- 44. PURCHASING CARD ACCEPTANCE:** The State of West Virginia currently utilizes a Purchasing Card program, administered under contract by a banking institution, to process payment for goods and services. The Vendor must accept the State of West Virginia's Purchasing Card for payment of all orders under this Contract unless the box below is checked.

☐

Vendor is not required to accept the State of West Virginia's Purchasing Card as payment for all goods and services.

- 45. VENDOR RELATIONSHIP:** The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, *etc.* and the filing of all necessary documents, forms and returns pertinent to all of the foregoing. Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

- 46. INDEMNIFICATION:** The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered

by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

**47. PURCHASING AFFIDAVIT:** In accordance with West Virginia Code § 5A-3-10a, all Vendors are required to sign, notarize, and submit the Purchasing Affidavit stating that neither the Vendor nor a related party owe a debt to the State in excess of \$1,000. The affidavit must be submitted prior to award, but should be submitted with the Vendor's bid. A copy of the Purchasing Affidavit is included herewith.

**48. ADDITIONAL AGENCY AND LOCAL GOVERNMENT USE:** This Contract may be utilized by and extends to other agencies, spending units, and political subdivisions of the State of West Virginia; county, municipal, and other local government bodies; and school districts ("Other Government Entities"). This Contract shall be extended to the aforementioned Other Government Entities on the same prices, terms, and conditions as those offered and agreed to in this Contract. If the Vendor does not wish to extend the prices, terms, and conditions of its bid and subsequent contract to the Other Government Entities, the Vendor must clearly indicate such refusal in its bid. A refusal to extend this Contract to the Other Government Entities shall not impact or influence the award of this Contract in any manner.

**49. CONFLICT OF INTEREST:** Vendor, its officers or members or employees, shall not presently have or acquire any interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

**50. REPORTS:** Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

- ☐ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.
- ☐ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at [purchasing.requisitions@wv.gov](mailto:purchasing.requisitions@wv.gov).

**51. BACKGROUND CHECK:** In accordance with W. Va. Code § 15-2D-3, the Director of the Division of Protective Services shall require any service provider whose employees are regularly employed on the grounds or in the buildings of the Capitol complex or who have access to sensitive or critical information

to submit to a fingerprint-based state and federal background inquiry through the state repository. The service provider is responsible for any costs associated with the fingerprint-based state and federal background inquiry.

After the contract for such services has been approved, but before any such employees are permitted to be on the grounds or in the buildings of the Capitol complex or have access to sensitive or critical information, the service provider shall submit a list of all persons who will be physically present and working at the Capitol complex to the Director of the Division of Protective Services for purposes of verifying compliance with this provision.

The State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check.

Service providers should contact the West Virginia Division of Protective Services by phone at (304)558-9911 for more information.

**52. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS:** Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

- a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
- b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process.

The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:

- a. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
- b. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.



**53. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL:** In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a “substantial labor surplus area”, as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products.

This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

**CERTIFICATION AND SIGNATURE PAGE**

By signing below, I certify that I have reviewed this Solicitation in its entirety, understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

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(Company)

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(Authorized Signature)

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(Representative Name, Title)

---

(Phone Number)

(Fax Number)

---

(Date)



**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: 02140354**

**Instructions:** Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

**Acknowledgment:** I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

**Addendum Numbers Received:**

(Check the box next to each addendum received)

<input type="checkbox"/> Addendum No. 1	<input type="checkbox"/> Addendum No. 6
<input type="checkbox"/> Addendum No. 2	<input type="checkbox"/> Addendum No. 7
<input type="checkbox"/> Addendum No. 3	<input type="checkbox"/> Addendum No. 8
<input type="checkbox"/> Addendum No. 4	<input type="checkbox"/> Addendum No. 9
<input type="checkbox"/> Addendum No. 5	<input type="checkbox"/> Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

\_\_\_\_\_  
Company

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

**SPECIFICATIONS**

1. **PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Division of Highways to establish a contract for the one time purchase of pre-stressed concrete box beams and accessories to be used on the Henry France Bridge replacement project on County Route 43 in Cabell County. Project# S306-43-12.29.
2. **DEFINITIONS:** The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.
  - 2.1 **“Contract Item”** means 8 each, 17” X 36” prestressed concrete box beams at 33’-6” long for a total of 268 linear feet with accessories.
  - 2.2 **“Pricing Page”** means the pages upon which Vendor should list its proposed price for the Contract Items in the manner requested. The Pricing Page is either included on the last page of this RFQ or attached hereto as Exhibit A.
  - 2.3 **“RFQ”** means the official request for quotation published by the Purchasing Division and identified as RFQ# 02-14-0354.
3. **GENERAL REQUIREMENTS:**
  - 3.1 **Mandatory Contract Item Requirements:** Contract Item must meet or exceed the mandatory requirements listed below.
    - 3.1.1 **Contract Item #1 Interior Beams**
      - 3.1.1.1 Interior Beams must be 17” depth by 36” width by 33’-6” overall length (32’-0” c-c bearing anchor bolt holes)
    - 3.1.2 **Contract Item #2 Exterior Beams**
      - 3.1.2.1 Exterior Beams must be 17” depth by 36” width by 33’-6” overall length. (32’-0” c-c bearing anchor bolt holes)
      - 3.1.2.2 Exterior Beams must be shipped complete, with all guardrail, inserts, guardrail posts, and guardrail attached.

**3.1.3 Contract Item #3 Elastomeric Bearing Pads**

3.1.3.1 Elastomeric Bearing Pads must be 1 1/4" thick by 4 3/4" length by varied width.

**3.1.4 Contract Item #4 Preformed Anchor Bolts**

3.1.4.1 Preformed Anchor Bolts must be No. 8 Grade 60 bar, 1" diameter by 2'-0 length.

**3.1.5 Contract Item #5 Guardrail Attachment Assembly**

3.1.5.1 Guardrail Attachment Assembly to be attached to exterior beams at marked locations.

3.1.5.2 Guardrail Attachment Assembly must have included hardware such as studs, nuts, and washers for assembly.

**3.1.6 Contract Item #6 Post Tensioning Bars**

3.1.6.1 Post Tensioning Bars must be 1" diameter by varied length.

3.1.6.2 Post Tensioning Bars must be threaded and supplied with all plates, hex nuts, and other hardware as required in the plans.

**3.1.7 Contract Item #7 Bearing Plates**

3.1.7.1 Bearing Plates must be 9" x 9" x 1"

**3.1.8 Contract Item #8 Rubber Preformed Joint Filler**

3.1.8.1 Preformed Joint Filler must be 1" thick by 17" width

**3.1.9 Contract Item #9 Guardrail**

3.1.9.1 Guardrail to be attached to Guardrail Attachment Assembly for a total of 82 feet of Guardrail

**3.2 Mandatory Requirements:** Vendor must meet or exceed the mandatory requirements as shown below:

**3.2.1** The following sections of the West Virginia Department of Transportation, Division of Highways Standard Specifications Road and Bridges, adopted 2010 as modified by any Supplemental Specifications shall apply to the administration of this requisition: Sections 101, 102.4, 102.5, 105.1, 105.3, 105.4, 105.10, 105.11, 105.12, 105.13, 106.4, 106.5, 106.7, 106.9, 107.1, 107.2, 107.3, 107.14, 107.19, 107.20, 108.8, 108.9, 109.1, 109.2, and 109.20.

All items supplied under this requisition shall meet the requirements of the "West Virginia Department of Transportation, Division of Highways Standard Specifications Road and Bridges, adopted 2010, as modified by any Supplemental Specifications. A copy of the above listed Sections and Section 603 of the West Virginia Division of Highways Standard Specifications Road and Bridges, adopted 2010 and 2014 Supplemental Specifications is either included on the last pages of this RFQ or attached hereto as Exhibit B.

**3.2.2** All Prestressed Concrete Box Shaped Beams shall be manufactured in accordance with the attached West Virginia Department of Transportation, Division of Highways Standard Bridge Plan Sheets dated 10/13 for State Project No. S306-43-12.29 as follows:

<u>Item Description</u>	<u>Standard Sheet No.</u>	<u>Revision Date</u>
17" Box Beam	BR-B17A & BR-B17B	10/13
Beam Details	BR-B100, BR-B101, BR-B102A, BR-B102B, & BR-B104	10/13
Post-Tensioning Details	BR-B103	10/13

A copy of the Standard Bridge Plan Sheets dated 10/13 for State Project No. S306-43-12.29 is either attached on the last page of the RFQ or attached hereto as Exhibit C.

3.2.2 Alternates to the above Division of Highways standards will be permitted if approved by the District Two (2) Bridge Engineer. Alternate designs must be submitted for approval based on the Design Data Charts provided as a part of this requisition and must be approved

prior to award of this requisition purchase order. In addition to the design criteria contained on the Division of Highways Standard Bridge Plan Sheets referenced above, all alternate designs must be based on the following criteria:

- 3.2.3.1 Two land bridge with a deck width of 24'-5 1/4" out to out width including the 3/4" spacing between each beam and 23'-5 1/4" rail to rail width including the 3/4" spacing between each beam.
- 3.2.3.2 Guardrail superimposed dead load of 30 pounds per linear foot assumed to be applied equally to all beams.
- 3.2.3.3 Live loading of 1.2 X HS20-44 (HS25)
- 3.2.4 The terms "Contractor" and "Vendor" used in the above specification or this requisition are interchangeable. Contract shall mean Vendor and Vendor shall mean Contractor
- 3.2.5 West Virginia Department of Transportation, Division of Highways Standard Specifications Road and Bridges, adopted 2010 and any Supplemental Specifications may be obtained from:

**WEST VIRGINIA DIVISION OF HIGHWAYS  
CONTRACT ADMINISTRATION DIVISION  
1900 KANAWHA BLVD, EAST  
BLDG. 5, ROOM A-729  
CHARLESTON, WV 25305  
PHONE: (304) 558-2871**

West Virginia Department of Transportation, Division of Highways Standard Bridge Plan Sheets may be obtained from:

**WEST VIRGINIA DIVISION OF HIGHWAYS  
DISTRICT TWO HEADQUARTERS, BRIDGE DEPT.  
801 MADISON AVENUE  
HUNTINGTON, WV 25704  
PHONE: (304) 528-5655**

**3.2.6** Cracks developing in a beam may be cause for rejection of the beam. Cracks that are not detrimental to the structural integrity of the beam, as determined by the Division of Highways may be accepted under the following conditions:

**3.2.6.1** Cracks of 0.004 inch or less shall be treated with a coat of a Division of Highways approved concrete sealer.

**3.2.6.2** Cracks more than 0.004 inch shall be treated with a second coat of a Division of Highways approved concrete sealer, or epoxy injected.

#### **4. CONTRACT AWARD:**

**4.1 Contract Award:** The Contract is intended to provide Agencies with a purchase price for the Contract Items. The Contract shall be awarded to the Vendor that provides the Contract Items meeting the required specifications for the lowest overall total cost as shown on the Pricing Pages.

**4.2 Pricing Page:** Vendor should complete the Pricing Page by giving the price per each unit in the Unit Price Box, total of all units combined in the Total Unit Price Box, and the total of all Total Unit Prices combined in the Grand Total Box. Vendor should complete the Pricing Page in full as failure to complete the Pricing Page in its entirety may result in Vendor's bid being disqualified.

Vendor should type or electronically enter the information into the Pricing Page to prevent errors in the evaluation.

#### **5. PAYMENT:**

**5.1 Payment:** Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia.



**6. DELIVERY AND RETURN:**

**6.1 Shipment and Delivery:** Vendor shall ship the Contract Items immediately after being awarded this Contract and receiving a purchase order or notice to proceed. Vendor shall deliver the Contract Items within 60 working days after receiving a purchase order or notice to proceed. Contract Items must be delivered to the job site on CR 43 – Henry France Bridge, near Huntington, Cabell County WV. A copy of the location map is either included on the last page of this RFQ or attached hereto as Exhibit D.

**6.2 Late Delivery:** The Agency placing the order under this Contract must be notified in writing if the shipment of the Contract Items will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of the Contract, and/or obtaining the Contract Items from a third party.

Any Agency seeking to obtain the Contract Items from a third party under this provision must first obtain approval of the Purchasing Division.

**6.3 Delivery Payment/Risk of Loss:** Vendor shall deliver the Contract Items F.O.B. destination to the Agency's location.

**6.4 Return of Unacceptable Items:** If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable, or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.

**6.5 Return Due to Agency Error:** Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

**PRICING PAGE -BID EVALUATION PAGE**

**EXHIBIT A**

**RFQ# 02-14-0354**

Item number	Quantity	Description	Unit Price	Total Unit price
1	201	LF - Interior Beam 17" prestressed concrete box beam (3ft. Wide) 6 beams x 33.5		
2	67	LF - exterior Beam 17" prestressed concrete box beam (3ft. Wide) 2 beams x 33.5		
3	32	EA - Elastomeric Bearing Pads		
4	16	EA -1" Diameter x 2'-0" Anchor bolt or No. 8 galv. deformed rebar		
5	12	EA -Guardrail Attachment Assembly for box beam w/ studs, nut and washers		
6	4	EA - 1" Diameter Post- Tensioning Bar w/nuts		
7	6	EA - 9"x9"x1" Bearing Plates		
8	1	LS - Thick sponge rubber Preformed joint filler		
9	85	LF - Guardrail		
		<b>Grand Total Price =</b>		

Items for Project S306-43-12.29, Henry France

## EXHIBIT B

SECTION 101  
DEFINITION OF TERMS

## 101.1-ABBREVIATIONS:

Whenever the following abbreviations are used in these Specifications, Plans or Contract Documents, they are to be construed the same as the respective expressions represented:

AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
AIA	American Institute of Architects
AISC	American Institute of Steel Construction, Incorporated
AISI	American Iron and Steel Institute
AMA	Automotive Manufacturer's Association
AMS	Aerospace Material Specification
ANSI	American National Standards Institute
ARA	American Railway Association
AREA	American Railway Engineering Association
AREMA	American Railway Engineering and Maintenance of Way Association
ASCE	American Society of Civil Engineers
ASD	Aluminum Standards & Data-Aluminum Association
ASLA	American Society of Landscape Architects
ASTM	American Society for Testing and Materials
ATSSA	American Traffic Safety Services Association
AWWA	American Water Works Association
AWS	American Welding Society
FHWA	Federal Highway Administration
FSS	Federal Specifications and Standards, General Services Administration
IEEE	Institute of Electronic and Electrical Engineers
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
MIL	Military Specification
MP	Materials Procedure (see 101.2 in definition)
NBFU	National Board of Fire Underwriters
NEC	National Electric Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
PEI-ALS	Porcelain Enamel Institute: Aluminum Standards
UL	Underwriters Laboratories
SAE	Society of Automotive Engineers
SSPC	Society for Protective Coatings
TTE-TTP	Federal Specifications and Standards

**101.2-DEFINITIONS:**

~ A ~

**ACCESS CONNECTION**-Any roadway facility by means of which vehicles enter or leave arterial highways.

**ADVERTISEMENTS**-The public announcement, as required by law, inviting bids for work to be performed, or material to be furnished.

**ARTERIAL HIGHWAY**-A general term denoting a highway primarily for through traffic.

**AUXILIARY LANE**-The portion of the roadway adjoining the traveled way for parking, speed-change or other purposes supplementary to through traffic movement.

**AWARD**-The acceptance by the Division of a bid.

~ B ~

**BASE COURSE**-A layer or layers of specified material of designated thickness placed on a subbase or a subgrade to support a surface course or courses.

**BIDDER**-An individual, firm, corporation, or combination thereof, acting directly or through a duly authorized representative, and prequalified according to the requirements and provisions of the Division, submitting a bid for the proposed work.

**BRIDGE**-A structure, including supports, erected over a depression or an obstruction, such as water, a highway or railway and having a track or passageway for carrying traffic or other moving loads and having a length measured along the center of roadway of more than 20 ft. (6.1 meters) between undercopings of abutments or extreme ends of openings for multiple boxes.

The length of a bridge structure is the overall length measured along the line of survey stationing back to back of abutments if present, otherwise, end to end of the bridge floor, but in no case less than the total clear opening of the structure. Roadway width is the clear width measured at right angles to the longitudinal centerline of the bridge between the bottom of curbs.

~ C ~

**CALENDAR DAY**-Every day shown on the calendar.

**EXHIBIT B**

**CERTIFIED TECHNICIAN**-A Certified Technician is an individual who has been examined by the joint Industry-Division Certification Board and deemed competent in the particular technical field for which the individual has been examined. This competency is documented by written notification and issuance of a certificate to the individual and remains in effect for a given period of time as determined by the regulations of the Board. Should any questions develop concerning the status of an individual, verification may be made through the Training section of the Personnel Division of the Division.

**CHANGE ORDER**-A general term referring to force account work orders, supplemental agreements, and work orders of the Contract.

**CHANNEL**-A natural or artificial water course.

**CITY, TOWN OR DISTRICT**-A subdivision of the county used to designate or identify the location of the proposed work.

**COMMISSIONER**-West Virginia Commissioner of Highways.

**CONSTRUCTION LIMITS**-The physical limits of construction as described by designated lines drawn on the Plans.

**CONTRACT**-The written agreement between the Division and the Contractor covering the performance of the work, the furnishing of labor, equipment and materials, and the basis of payment. The Contract includes the invitation of bids, proposal, contract form, contract bond, specifications, supplemental specifications, special provisions, plans, notice to proceed, any change orders and supplemental agreements that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

**CONTRACT BOND**-The approved form of security, executed by the Contractor and their surety, guaranteeing completion of the work and payment of all legal debts pertaining to the construction of the project.

**CONTRACT PERIOD**-The period from the specified date of commencement of work to the specified date of completion of the work, both dates inclusive, as is specified in the Contract.

**CONTRACT TIME**-The number of work or calendar days specified in the proposal, indicating the time allowed for the completion of the work contemplated, including authorized time extensions.

**CONTRACTOR**-The individual, firm or corporation, party of the second part to the Contract, acting directly or through their agents, employees, or subcontractors.

**CONTROL OF ACCESS, FULL**-The condition where the right of owners or occupants of abutting land or other persons to access, light, air or view in connection with a highway is fully controlled by public authority. The authority to control access is exercised to give preference to through traffic by providing access connections with selected public roads only and by prohibiting crossings at grade or direct driveway connections.

**CONTROL OF ACCESS, PARTIAL**-The condition where the right of owners or occupants of abutting land or other persons to access, light, air or view in connection with a highway is partially controlled by public authority. The authority to control access is exercised to give preference to through traffic to a degree that, in addition to access connections with selected public roads, there may be some crossings at grade and some private driveway connections.

**COUNTY**-The County or Counties of West Virginia in which the work is to be done.

**CULVERT**-Any structure not classified as a bridge which provides an opening under the roadway.

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**DEPARTMENT**-West Virginia Department of Transportation.

**DIVISION**-West Virginia Division of Highways

**DIVIDED HIGHWAY**-A highway with separated roadways for traffic in opposite directions.

~ E ~

**EASEMENT**-A right acquired by one party to use land belonging to another party for a specified purpose.

**EMBANKMENT**-The structure of soils, soils aggregate and broken rock between the embankment foundation and the subgrade.

**EMBANKMENT FOUNDATION**-The material below the original ground surface whose physical characteristics affect the support of the embankment.

**EMPLOYEE**-Any person working on behalf of the project who is under the direction of the Contractor or any subcontractor.

**ENGINEER**-The State Highway Engineer of the Division, or an authorized representative, limited by the scope of duties assigned.



## EXHIBIT B

**EQUIPMENT**-All machinery and equipment, together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of the work.

**ESTIMATES**-The official written itemization of the value of materials in place and work performed.

**EXPRESSWAY**-A divided arterial highway for through traffic with full or partial control of access and generally with grade separations at intersections.

**EXTRA WORK**-An item of work not provided for in the contract as awarded, but found essential to the satisfactory completion of the Contract within its intended scope. See further 104.3.

~ F ~

**FORCE ACCOUNT WORK ORDER**-An order signed by the Engineer or an authorized representative, directing additional work to be performed, with payments based on labor, materials used, equipment cost, plus specified percentages.

**FREEWAY**-An expressway with full control of access.

**FRONTAGE STREET OR ROAD**-A local street or road auxiliary to and located on the side of an arterial highway for service to abutting property and adjacent areas, and for control of access.

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**HIGHWAY**-The entire improvement comprising the entire right-of-way. See definition for Road in Section 101.

**HIGHWAY GRADE SEPARATION**-Any structure carrying highway or street traffic over or under another highway or street.

**HOLIDAYS**-Official holidays are New Year's Day, Martin Luther King, Jr. Day, President's Day, Memorial Day, West Virginia Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Day, and any day in which an election (Primary or General) is held through the State and such other days as the President, Governor, or other duly constituted authority shall proclaim to be holidays. If a holiday falls on Sunday, the following Monday shall be observed in lieu thereof. If a holiday falls on a Saturday, the previous Friday shall be observed in lieu thereof.

**EXHIBIT B**

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**INSPECTOR**-The Engineer's authorized representative assigned to make any or all necessary inspection of the work as further described in 105.10.

**INSTRUCTIONS TO BIDDERS**-The notice to Contractors containing all necessary information as to provisions, requirements, date and time of submitting Proposals.

**INVITATION FOR BIDS**-The advertisement for bids, as required by law, inviting bids for work to be performed or material to be furnished.

**ITEM**-A specifically described unit of work for which a price is provided in the contract.

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**LABORATORY**-The testing laboratories of the Division or any other testing laboratory designated by the Division.

**LOT**-A lot is an isolated quantity of specified material from a single source or a measured amount of specified construction assumed to be produced by the same process.

~ M ~

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

**MATERIALS PROCEDURE**-A procedure defining standard methods or guidelines for the inspection, sampling, testing, evaluation, and documentation of the Material's Division activities relative to the quality assurance program for materials, products, and processes. Each Materials Procedure is identified by the letters MP followed by seven digits, (i.e. MP XXX.XX.XX).

**MEDIAN**-The portion of a divided highway separating the traveled ways for traffic in opposite directions.

**MEDIAN LANE**-A speed-change lane within the median to accommodate left-turning vehicles.

**EXHIBIT B**

**MULTIPLE DEFICIENCY**-A multiple deficiency is defined as a failure to meet specified requirements involving more than one characteristic of a material within the same lot.

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**NOTICE TO PROCEED**-Written notice to the Contractor to proceed with the contract work including, when applicable, the date of beginning of contract time.

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**PARKING LANE**-An auxiliary lane primarily for the purpose of vehicular parking.

**PARKWAY**-An arterial highway for non-commercial traffic, with full or partial control of access, and usually located within a park or a ribbon of parklike development.

**PAVEMENT STRUCTURE**-The combination of subbase, base course, and surface course placed on a subgrade to support the traffic load and distribute it to the roadbed.

**PLANS**-The approved Plans, profiles, typical cross sections, working drawings, standard drawings, and supplemental drawings, or exact reproductions thereof, which show the location, character, dimensions and details of the work to be done.

**PRE-CONSTRUCTION CONFERENCE**-A conference normally called by the District Engineer, following award and prior to start of construction, to be attended by Division officials and by the responsible officials of the Contractor and other affected parties.

**PRE-QUALIFICATION STATEMENT**-The approved form or forms upon which Contractors shall furnish information as to their ability to perform work, their experience, personnel, equipment and financial condition.

**PROFILE GRADE**-The trace of a vertical plane intersecting the top surface of the proposed wearing surface, usually along the longitudinal centerline of the roadway. Profile grade means either elevation or gradient of such trace according to the context.

**PROJECT**-The specific section of the highway, together with all appurtenances and construction to be performed, under the Contract.

**PROJECT ENGINEER OR PROJECT SUPERVISOR**-The representative of the Engineer on a project. See further 105.9.

**PROPOSAL**-The offer of a bidder, on the prescribed form, to perform the work and to furnish the labor and material at the prices quoted.

**PROPOSAL FORM**-The approved form on which the Division requires a bid to be prepared and submitted for the work.

**PROPOSAL GUARANTY**-The security furnished with a bid to guarantee that the bidder will enter into the Contract if their bid is accepted.

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**RAILWAY-HIGHWAY SEPARATION**-Any structure carrying highway traffic over or under the tracks of any railway.

**RAMP**-A connecting roadway between two intersecting highways, usually at a highway grade separation.

**RIGHT-OF-WAY**-A general term denoting land, property, or interest, usually in a strip, acquired for or devoted to a highway.

**ROAD**-A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way, or needed for the maintenance of travel. See West Virginia Code, Chapter 17, Article 1, Section 3.

**ROADBED**-The grade portion of a highway, within top and side slopes, prepared as a foundation for the pavement structure and shoulders.

**ROADSIDE**-A general term denoting the area adjoining the outer edge of the roadway. Extensive areas between the roadways of a divided highway may also be considered roadside.

**ROADSIDE DEVELOPMENT**-Those items necessary to the complete highway which provide for the preservation of landscape materials and features; the rehabilitation and protection against erosion of all areas disturbed by construction through seeding, sodding, mulching and the placing of other ground covers; such suitable planting and other improvements as may increase the effectiveness and enhance the appearance of the highway.

**ROADWAY**-The portion of the highway within limits of construction.

## EXHIBIT B

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**SEASONAL RESTRICTIONS**-Limitations imposed on the work which prohibit the Contractor from performing certain types of work during specific seasons of the year.

**SHOULDERS**-The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.

**SIDEWALK**-That portion of the roadway primarily intended for the use of pedestrians.

**SINGLE DEFICIENCY**-A single deficiency is defined as a failure to meet specified requirements involving one characteristic of a material.

**SPECIAL PROVISIONS**-Additions and revisions to the Standard and Supplemental Specifications covering conditions peculiar to an individual project.

**SPECIALTY ITEM**-An item of work designated as "Specialty Item" in the proposal that is limited to work which requires highly specialized knowledge, craftsmanship, or equipment that is not ordinarily available in contracting organizations prequalified to bid and is usually limited to minor components of the overall Contract.

**SPECIFICATIONS**-A general term applied to all directions, provisions, and requirements pertaining to performance of the work.

**STATE**-The State of West Virginia.

**STREET**-A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

**STRUCTURES**-Bridges, culverts, catch basins, drop inlets, retaining walls, cribbing, manholes, endwalls, buildings, sewers, service pipes, underdrains, foundation drains, and other features which may be encountered in the work and not otherwise classed.

**SUBBASE**-The layer or layers of specified or selected materials of designed thickness placed on a subgrade to support a base course.

**SUBCONTRACTOR**-An individual, firm, or corporation to whom the Contractor sublets part of the Contract.

**SUBGRADE**-The upper portion of a roadbed upon which the pavement structure and shoulders are constructed.

**EXHIBIT B****SUBSTANTIAL COMPLETION or SUBSTANTIALLY COMPLETE-**

The work on the Contract will be considered substantially complete when the Project could be opened continuously for the safe, convenient, and unimpeded use of the traveling public, or the Project has met the intention of the plans, as reasonably determined by the Engineer.

**SUBSTRUCTURE-**All that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls, and wing protection railings.

**SUPERINTENDENT-**The Contractor's authorized representative in responsible charge of the work.

**SUPERSTRUCTURE-**The entire structure except the substructure.

**SUPPLEMENTAL AGREEMENT-**A modification of the Contract covering changes in the Plans or quantities, or both, and establishing the basis of payment and time adjustment for the work necessitated by reason of the modification, requiring the signature of the Commissioner, the Contractor, and the Surety, or their authorized representatives.

**SUPPLEMENTAL SPECIFICATIONS-**Additions to and revisions of the Standard Specifications that are approved subsequent to issuance of the printed book. Supplemental Specifications prevail over Standard Specifications when in conflict therewith.

**SURETY-**The corporation, partnership, or individual, other than the Contractor, executing a bond furnished by the Contractor.

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**TEMPORARY STRUCTURE-**A structure required for the use of traffic or other purpose while construction is in progress and not to be retained as a part of the improvement.

**TITLES-**The titles or headings of the sections and subsections are intended for convenience of reference and shall not be considered as having any bearing on their interpretation except those titles and headings used in conjunction with the definition of terms.

**TRAFFIC LANE-**The portion of the roadway for the movement of a single line of vehicles.

**TRAVELED WAY-**The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.



**EXHIBIT B**

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**WORK-Work** shall mean the furnishing of all labor, materials, equipment, and other incidentals necessary or convenient to the successful completion of the project and the carrying out of all duties and obligations imposed by the contract.

**WORKING DAY**-Every day shown on the calendar, exclusive of Saturdays, Sundays, and Holidays as set forth in definitions for Holidays in Section 101, on which weather and other conditions not under the control of the Contractor will permit construction operations to proceed for a minimum of five hours with normal working forces engaged in performing the controlling item or items of work.

**WORKING DRAWINGS**-The Contractor shall submit to the Engineer all stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplemental plans or similar data for the Engineer's use.

**WORK ORDER**-A written order, signed by the Engineer, requiring certain performance by the Contractor without negotiation. Such order shall not change quantities of major items beyond the twenty-five percent (25%) limitations, shall not create new items, nor make revisions to item prices.

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**101.3-INTERPRETATIONS:**

In order to avoid cumbersome and confusing repetition of expressions in these Specifications, it is provided that whenever anything is, or is to be done, if, as, or, when, or where "contemplated, required, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, acceptable, unacceptable, suitable, accepted, satisfactory, unsatisfactory, sufficient, insufficient, rejected, or condemned," it shall be understood as if the expression were followed by the words "by the Engineer" or "to the Engineer".

The Division may at its discretion issue to a Contractor a Proposal requiring prequalification in excess of the amount allotted the Contractor provided it considers that this Contractor is particularly fitted by reason of their experience or equipment, or both, to perform work of this type involved in an amount exceeding their prequalification limits and further provided that the prospective bidder furnish the Division with a letter from a reputable Surety advising of their willingness to furnish bond to the Contractor for the project.

When more than one project is advertised, Proposals will be issued on as many projects as the Contractor requests, providing the Contractor is qualified as above for each individual project, but no contracts will be awarded exceeding the permissible limit of the Contractor's prequalification rating except as otherwise provided in 103.1.

#### **102.4-INTERPRETATION OF APPROXIMATE ESTIMATES:**

The quantities appearing in the proposal form are approximate only and are prepared for the comparison of bids. Payment to the Contractor will be made only for the work accepted, or for materials furnished in accordance with the Contract. If upon completion of the construction the actual quantities show either increase or decrease, the unit bid prices offered in the Proposal will prevail except as further provided.

#### **102.5-EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE OF WORK:**

The bidder is required to examine carefully the Plans, Specifications, Supplemental Specifications, contract forms, and the site of the work contemplated. The submission of a bid shall be considered prima facie evidence that the bidder has made such examination and has judged for and satisfied themselves as to the character, quality, and quantity of work to be performed and material required to be furnished under the Contract.

#### **102.6-PREPARATION OF PROPOSAL:**

The bidders Proposal must be submitted through the Division's Bid Express Website. The bidder must furnish a unit price or a lump sum price as called for in the Proposal, in numerical figures, for each pay item listed, except that in the case of alternates, the bid may be made on only one alternate if so desired.

The Contractor or qualified and authorized agent shall use a digital signature as provided at law for the Proposal submission.

The proposal shall comply with West Virginia Contractor Licensing Act, Chapter 21, Article 11 Code of West Virginia, except that on Federal-Aid Projects a Contractor's license is not required at time of bid, but will be required before work can begin.

#### **102.7-IRREGULAR PROPOSALS:**

Proposals will be considered irregular and will be rejected for any of the following reasons:

## SECTION 105 CONTROL OF WORK

### 105.1-AUTHORITY OF THE ENGINEER:

The Engineer will decide all questions which may arise as to the quantity, quality, and acceptability of materials furnished and work performed, and as to the rate of progress of the work; all questions which may arise as to the interpretation of the Plans and Specifications; and all questions as to the acceptable fulfillment of the Contract on the part of the Contractor. The decision of the Engineer will be final.

The Engineer will have the authority to suspend the work wholly or in part due to the failure of the Contractor to correct conditions unsafe for the employees or the general public, for failure to carry out orders, for such periods as the Engineer may deem necessary due to unsuitable weather, for conditions considered unsuitable for the prosecution of the work, or for any other condition or reason deemed to be in the public interest. All such suspension orders will be directed to the Contractor in writing.

The Engineer is not authorized to increase the obligation of the Division to any Contract except as provided.

### 105.2-PLANS AND WORKING DRAWINGS:

Approved Plans will show the location, profile, typical cross section, structures, except as specified, incidental items, and a summary of all items appearing in the Proposal. Any deviations which may be required by the exigencies of the construction will be determined by the Engineer and authorized by the Engineer in writing. The Contractor shall keep one set of approved Plans available on the work at all times.

Plans will show such details as are necessary to give a comprehensive idea of the construction contemplated. Any information which may be shown on drawings regarding results obtained from test piles or borings will be a record of conditions encountered at the place where such test piles were driven or borings were made, as nearly as these conditions could be interpreted by the Engineer observing the operations. The Contractor shall interpret the data in the light of their own experience. The Contractor is not bound to accept or rely on the data shown on the drawings, but may make such additional borings and investigations, including test piles, as the Contractor may desire in order to satisfy themselves concerning the lengths of piles and the conditions governing or entering into the construction of foundations.

The Plans will show the foundation depths and dimensions on which the estimate of quantities is based. These depths and foundation dimensions, however, are subject to such variations as may be necessary to secure a foundation satisfactory to the Engineer, and the right is expressly reserved to increase or diminish the dimensions and depths of the foundations as the Engineer may determine.

The Contractor shall submit to the Engineer all stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplemental plans or similar data for the Engineers use.

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any submittal which does not comply with the requirements of this Special Provision. The verification and distribution or rejection of Contractor approved shop drawings will normally require seven (7) calendar days after receipt of the drawings.

Additional certifications and/or slightly different wording of the above tow certification may be used if approval is given by the Legal Division. This approval must be obtained prior to any submission of contractor approved shop drawings. This approval may take up to thirty (30) days to be obtained. If this approval is obtained, a copy of the approval letter must be submitted with the first submission of shop drawings for distribution.

The Division shall reserve the right to review any submission of shop drawings or catalog sheets. This review shall not delay the contractor in the construction project or delay the distribution of the approved shop drawings or catalog sheets.

### **105.3-CONFORMITY WITH PLANS AND SPECIFICATIONS:**

All work performed and all materials furnished shall be in reasonably close conformity with the lines, grades, cross sections, dimensions and material requirements, including tolerances, shown on the Plans or indicated in the Specifications.

Should the Engineer determine the materials, or the finished product do not conform to the Specifications or the Plans, the Engineer will then make a determination if the work will be accepted and remain in place in accordance with 106.3.1 and 106.7. In this event, the Engineer will document the basis of acceptance by contract modification which will provide for an adjusted payment. All nonconforming material or construction judged to be inadequate for the use intended shall be either reworked or removed and replaced at no expense to the Division.

Each supplemental agreement containing an adjusted price will also have added the sum of Two Hundred Dollars to each adjusted price, for the Divisions administration costs, to be deducted from monies due the Contractor.

### **105.4-COORDINATION OF PLANS, SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS, AND SPECIAL PROVISIONS:**

These Specifications, the Supplemental Specifications, the Plans, Special provisions, and all Supplementary Documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; Supplemental Specifications will govern over Specifications; Plans will govern over Specifications and Supplemental Specifications; Special Provisions will govern over Specifications, Supplemental Specifications and Plans. When the plans provide that new work is to connect with existing structures, the Contractor must verify all dimensions with the Engineer before proceeding with the work.

The Specifications, Supplemental Specifications, and Special Provisions are in dual units. The first Primary unit is in English with the Metric unit



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following in parentheses "()". The Metric values are considered replacements for the English units and they are not conversions.

The Contractor shall take no advantage of any apparent error or omission in the Plans or Specifications. In the event the Contractor discovers such an error or omission, the Contractor shall immediately notify the Engineer. The Engineer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the Plans and Specifications.

**105.5-COOPERATION BY CONTRACTOR:**

The Contractor will be furnished One (1) complete set of plans and profile sheets, and one (1) set of Cross Sections upon request, without charge. The Contractor shall maintain on the Project at all times one complete set of Plans, Specifications, and Special Provisions.

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the Engineer, their inspectors, other Contractors, and utilities in every way possible.

The Contractor shall have on the work at all times, as an agent, a competent superintendent capable of reading and thoroughly understanding the Plans and Specifications, and thoroughly experienced in the type of work being performed, who shall receive instructions from the Engineer or an authorized representative. The Superintendent shall have full authority to execute orders or directions of the Engineer without delay, and to promptly supply such materials, equipment, tools, labor, and incidentals as may be required. Such superintendence shall be furnished irrespective of the amount of work sublet.

The Contractor shall furnish to the Engineer a list of addresses and telephone numbers of their personnel who may be reached in case of emergency during hours when no work is to be performed. On weekends, holidays, during suspensions of work, and during storms the Contractor shall alert certain of their personnel to stand by and shall inform the Engineer of arrangements so made.

The Contractor shall provide all reasonable facilities and furnish the Division the information, assistance and samples required by the Engineer and Inspector for proper inspecting or testing of materials and workmanship.

On some contracts it may be necessary, to insure proper coordination between the work of the Contractor and the work of various utilities, to hold a pre-construction utility meeting. The Division will arrange for the affected utilities to be present. The Contractor or their representative, authorized to make decisions for them in regard to the scheduling of the proposed work, is required to attend the meeting. A report of the pre-construction utility meeting will be prepared and distributed by the Engineer to all represented at the meeting.

**105.6-COOPERATION WITH UTILITIES:**

The Division will notify all utility companies, all pipe line owners, or other parties affected, and endeavor to have all necessary adjustments of the public or private utility fixtures, sewers, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

Water lines, gas lines, wire lines, sewer lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners

**EXHIBIT B**

with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

In the event the Engineer finds further coordination effort is necessary, the Engineer shall call a meeting of the Contractors involved. After the meeting has been held, the Engineer may notify the Contractors of the action required of each and the Engineer's decision shall be final.

**105.8-CONSTRUCTION STAKES, LINES AND GRADES:**

Except when "Construction Layout Stakes", is included in the Contract, the Engineer will set construction stakes establishing lines, slopes and continuous profile-grade, together with necessary reference stakes and bench marks. The Engineer will set sufficient right-of-way stakes to define the right-of-way limits. The Engineer will set stakes to mark centerline and establish bench marks for bridges and special structures as may be considered necessary.

The stakes and marks in the paragraph above shall constitute field control by and in accordance with which the Contractor shall establish all additional stakes and marks necessary to secure a correct layout of all the work. All stakes, except those set by the Engineer, shall be furnished by the Contractor. The Contractor shall not engage the services of any person or person in the employ of the Division for the performance of any of the Contractor's layout work.

The Contractor shall be responsible for having the finished work in reasonably close conformity with the lines, grades, elevations, and dimensions called for on the Plans or established by the Engineer. The Contractor shall be held responsible for the preservation of stakes, marks, and references, and shall have them reset at the Contractor's expense when they are damaged, lost, displaced, or removed.

**105.9-AUTHORITY AND DUTIES OF THE PROJECT ENGINEER OR PROJECT SUPERVISOR:**

The project Engineer or Supervisor has immediate charge of the engineering details of each construction project. The Engineer or Supervisor are responsible for the administration and satisfactory completion of the project.

The Project Engineer or Supervisor has the authority to reject defective material and to suspend any work that is being improperly performed.

The Project Engineer or Supervisor will have the authority to suspend the work wholly or in part due to the failure of the Contractor to correct conditions unsafe for the employees or the general public; for failure to carry out provisions of the Contract; for failure to carry out orders; for such periods as they may deem necessary due to unsuitable weather. All such suspension orders will be directed to the Contractor in writing. The suspension of the work for the above reasons does no relieve the Contractor of their responsibility according to 107.16.

**105.10-AUTHORITY AND DUTIES OF THE INSPECTOR:**

Inspectors employed by the Division will be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication or manufacture of the materials to be used. The Inspector is not authorized to alter or waive the provisions of the Contract. The Inspector is authorized to call the attention of the Contractor to any failure of the work or materials to conform to the Specifications and Contract.



The Inspector is authorized to reject materials which do not meet specification requirements or suspend the portion of the work involved until any question at issue can be referred to the Project Engineer or Project Supervisor. The Inspector is not authorized to issue instructions contrary to the Plans and Specifications. The Inspector shall not act as foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter.

#### **105.11-INSPECTION OF WORK AND MATERIALS:**

All materials and each part or detail of the work shall be subject to inspection by the Engineer. The Engineer or a representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection. To facilitate the inspection of materials, all delivery tickets shall contain as a minimum the information required in MP 700.00.01.

At the Engineer's request, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the Specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed shall be at the Contractor's expense.

Any work done or materials used without supervision or inspection by an authorized Division representative may be ordered removed and replaced at the Contractor's expense. Failure to reject any defective material or work shall not in any way prevent later rejection when such defects are discovered, nor obligate the Division to final acceptance.

When any unit of government or political subdivision or any railroad corporation is to pay a portion of the cost of the work covered by this Contract, its respective representatives shall have the right to inspect the work. Such inspection shall in no sense make any unit of government or political subdivision or any railroad corporation a party to this Contract, and shall in no way interfere with the rights of either party hereunder.

No work shall be done at night, Saturdays, Sundays, or Holidays without documented prior approval of the Engineer.

#### **105.12-REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK:**

Except as provided in 105.3, all work which does not conform to the requirements of the Contract will be considered as unacceptable work.

Unaccepted work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner.

Unacceptable material shall be removed from the job site.

No work shall be done without lines and grades having been given or approved by the Engineer. Work done contrary to the instructions of the Engineer, work done beyond the lines shown on the Plans, or as given, except as specified, or any extra work done without authority, will be considered as

unauthorized and will not be paid for under the provisions of the Contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply promptly with any order of the Engineer, made under the provisions of this Subsection, the Engineer will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed, and to deduct the costs from any monies due or to become due the Contractor.

#### **105.13-LOAD RESTRICTIONS:**

The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads. A special permit will not relieve the Contractor of liability for damage which may result from the moving of equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or the roadway or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base or structure before the expiration of the curing period. In no case shall legal load limits be exceeded unless permitted in writing. The Contractor shall be responsible for all damage done by their own equipment.

#### **105.14-MAINTENANCE DURING CONSTRUCTION:**

The Contractor shall maintain the work during construction and until the project is accepted except as otherwise provided in 105.16.1. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway and structures are kept in satisfactory condition at all times.

In the case of a Contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All cost of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various pay items, and the Contractor will not be paid an additional amount for such work except as otherwise provided in 104.5.

#### **105.15-FAILURE TO MAINTAIN ROADWAY OR STRUCTURE:**

If the Contractor, at any time, fails to comply with the provisions of 105.14, the Engineer will immediately notify the Contractor of such non-compliance. If the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer may immediately proceed to maintain the project, and the entire cost of maintenance will be deducted from monies due or to become due the Contractor on their Contract.

#### **105.16-ACCEPTANCE:**

**105.16.1-Partial Acceptance:** If at any time during the prosecution of the project, the Contractor completes a unit or portion of the project, such as a structure, an interchange, or a section of road or pavement, the Contractor may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection that the unit has been completed in compliance with the

as provided in 652 without additional compensation. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so they will not be visible from the highway.

In accordance with the agreement between the Division of Highways and the Division of Environmental Protection, the Contractor cannot furnish material from borrow areas outside the right of way for any other public or private use.

#### **106.3-SAMPLES, TESTS, CITED SPECIFICATIONS:**

All materials will be inspected, tested and approved prior to incorporation into the work. Any work which incorporates materials prior to the above evaluation shall be performed at the Contractor's risk, and may subsequently be considered as unacceptable. Unless otherwise specified, the materials shall meet the applicable Standard or Interim Specifications of the American Association of State Highway and Transportation Officials, the Standard or Tentative Specifications of the American Society for Testing and Materials, or Standards adopted by other specifying agencies, with preference given in the same order in which the above agencies are listed. The specification which is current at the time of advertisement for bids shall govern, except that, with the approval of the Engineer, subsequent revisions or adoptions may govern. All materials being used are subject to inspection, testing or rejection at any time prior to final acceptance of the completed work.

The Contractor shall be responsible for the quality of construction and materials incorporated. When called for in the Specifications, the Contractor shall perform all necessary process control inspection, sampling and testing. All materials will be approved for acceptance through the Division's acceptance procedures. The Division has the exclusive right and responsibility for determining the acceptability of the construction and materials incorporated. The Division may use the results of the Contractor's inspection, sampling and testing for acceptance purposes.

Lot or subplot sizes will normally be designated. In the event that operational conditions cause work to be interrupted, or only partially completed before the lot size designated has been achieved, the lot or subplot may be redefined by the Engineer as being either the amount of work accomplished within the day or that work partially completed combined with the next lot or subplot of work. It is the intent of these Specifications that the number of samples required to evaluate each lot or subplot will be unchanged even when the lot or subplot is redefined.

When an acceptance plan is cited, it shall be in accordance with 106.3.1.

#### **106.3.1-Acceptance Plans:**

**106.3.1.1-Percent Within Tolerance:** The percentage of each lot or subplot of material, product, item of construction, or completed construction within the specified tolerances will be determined by the procedures as referenced by the specification requirements. When West Virginia AP-A is referenced, it will consist of Tables 106-1 to 106-5 inclusive, published in MP 106.00.20.

**106.3.1.2-Sampling of Reworked Lots or Sublots:** It is the intent of these Specifications that lots or sublots of materials, products, items of construction or completed construction meet specification requirements at the time of submission. Lots or sublots generally will not be resampled unless reworked before submission. Sampling after reworking will be at the expense of the Contractor.

**106.4-PLANT INSPECTION:**

The Engineer may undertake the inspection of materials at the source.

In the event plant inspection is undertaken, the following conditions shall be met:

- i. The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- ii. The Engineer shall have full entry at all times to such parts of the plant as may concern the manufacture or production of the materials being furnished.
- iii. Adequate safety measures are to be provided and maintained.

The Division reserves the right to retest all materials, which have been tested and accepted at the source of supply, after the materials have been delivered to the project and prior to incorporation into the work and to reject all materials which, when retested, do not meet the requirements of these Specifications or those established for the specific project.

**106.5-STORAGE OF MATERIALS:**

Materials shall be so stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection. Approved portions of the right-of-way may be used for storage purposes and for the placing of the Contractor's plant and equipment, but any additional space required therefore must be provided by them at their expense. Private property shall not be used for storage purposes without written permission of the owner or lessee, and if requested by the Engineer, copies of such written permission shall be furnished. All storage sites shall be restored to their original condition by the Contractor at their expense. This shall not apply to the stripping and storing of topsoil, or to other materials salvaged from the work.

Care shall be exercised to protect finished concrete surfaces from being stained from storing or placing materials, including but not limited to reinforcing bars or mesh or unpainted structural steel, on same. Any such material so stored shall be adequately protected from weather. Any stains resulting from storage of materials on finished concrete surfaces shall be removed by the Contractor at their expense.

Aggregate stockpiles may be made on ground that is denuded of vegetation, hard, and well drained. If necessary, the ground shall be covered with two inch (50 mm) plank. Different kinds and sizes of aggregates shall be kept separate during transportation, handling, and storage until batched. If necessary,



partitions of suitable height and strength shall be constructed between stockpiles to prevent different materials from becoming mixed. Care must be taken to prevent segregation of the coarse and fine particles of aggregates from taking place during handling or hauling. The inclusion of foreign materials will not be permitted. Aggregates placed directly on the ground shall not be removed from the stockpiles within one foot (300 mm) of the ground until the final cleaning up of the work, and then only the clean aggregate will be permitted to be used.

#### **106.6-HANDLING MATERIALS:**

All materials shall be handled in such manner as to preserve their quality and fitness for the work. Aggregates shall be transported from the storage site to the work in tight vehicles, so constructed as to prevent loss or segregation of materials after loading and measuring, in order that there may be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded and the quantities as actually received at the place of operations.

#### **106.7-UNACCEPTABLE MATERIALS:**

**106.7.1-Acceptance or Rejection:** Following the application of the appropriate acceptance plan, the decision of the Engineer will be final as to the acceptance, rejection, or acceptance at an adjusted price of sampled lots or sublots.

**106.7.2-Disposition of Lots or Sublots:** Lots or sublots not conforming to specification requirements may be reworked or removed and replaced and resubmitted for acceptance. All nonconforming lots or sublots evaluated as unsatisfactory for the use intended shall be reworked or removed and replaced and resubmitted for acceptance. When the evaluation indicates the lots or sublots may satisfactorily remain in place, acceptance will be an adjusted price as stated in the Specifications or as directed by the Engineer.

#### **106.8-DIVISION-FURNISHED MATERIAL:**

The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Division.

Materials furnished by the Division will be delivered or made available to the Contractor at the points specified in the Contract.

The cost of handling and placing all materials after they are furnished to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

The Contractor will be held responsible for all material delivered to them, and deductions will be made from any monies due the Contractor to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges.

#### **106.9-SILENCE OF SPECIFICATIONS:**

The apparent silence of these Specifications, Supplemental Specifications, plans and Special Provisions as to any detail, or the apparent omission from them of a detailed description concerning any point shall be regarded as meaning that only material and workmanship of acceptable quality are to be used.

## **SECTION 107**

### **LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC**

#### **107.1-LAWS TO BE OBSERVED:**

The Contractor shall keep fully informed of all Federal and State laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders and decrees; and shall protect and indemnify the State and its representatives against any claim or liability arising from or based on the violation of any such laws, ordinances, regulations, orders, or decrees, whether by themselves, their subcontractors or their employees.

#### **107.2-PERMITS, LICENSES AND TAXES:**

The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

#### **107.3-PATENTED DEVICES, MATERIALS, AND PROCESSES:**

If the Contractor employs any design, devise, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the patentee or owner. The Contractor and the surety shall indemnify and save harmless the Division, and affected third party, or political subdivision from and claims for infringement by reasons of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Division for any costs, expenses, and damages which it may be obligated to pay by reason of any infringement, at any time during the prosecution or after the completion of the work.

#### **107.4-RESTORATION OF SURFACES OPENED BY PERMIT:**

The right to construct or reconstruct any utility service in the highway or street or to grant permits for same, at any time, is expressly reserved by the Division for the proper authorities of the municipality in which the work is done, and the Contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned.

Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the Division. The Contractor shall allow parties bearing such permits, and only those parties, to make openings in the highway. The Contractor shall, when ordered by the Engineer, make in an acceptable manner all necessary repairs due to such openings and such necessary work will be paid for as "Extra Work", or as provided in these Specifications, and will be subject to the same conditions as original work performed.

#### **107.5-FEDERAL-AID PROVISIONS:**

When the United States Government pays any portion of the cost of a project, the Federal Laws and the Rules and Regulations made pursuant to such laws must be observed by the Contractor, and the work shall be subject to the inspection of the appropriate Federal Agency.



## EXHIBIT B

considered necessary by the Division for such purpose may be retained for the use of the Division or, in case no money is due, their surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the Division; except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that the Contractor is adequately protected by public liability and property damage insurance.

### **107.15-OPENING SECTIONS OF PROJECT TO TRAFFIC:**

At the option of the Engineer, certain sections of the work may be opened for traffic. Such opening will not constitute acceptance of the work, or any part thereof, or a waiver of any provisions of the Contract; provided however, that on such portions of the project as are accepted for use of traffic, the Contractor shall not be required to assume any expense entailed in maintaining the roadway for traffic. Such expense will be borne by the Division or will be compensated for in the manner provided in 109.4. Any damage to the highway not attributable to traffic which might occur on such section, except slides, shall be repaired by the Contractor at their expense. The removal of slides shall be performed by the Contractor and payment will be in accordance with 104.3.

If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may order all or a portion of the project open to traffic, but in such event the Contractor shall not be relieved of their liability and responsibility during the period the work is so opened prior to final acceptance. The Contractor shall conduct the remainder of their construction operations so as to cause the least obstruction to traffic.

### **107.16-CONTRACTOR'S RESPONSIBILITY FOR WORK:**

Until final written acceptance of the project by the Engineer, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements, or from the nonexecution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault of or negligence of the Contractor, including but not restricted to acts of God, of the public enemy or governmental authorities.

In case of suspension of work from any cause whatever, the Contractor shall be responsible for the project and shall take such precautions as may be necessary to prevent damage to the project, provide for normal drainage and to erect any necessary temporary structures, signs, or other facilities at their expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under their Contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

### **107.17-CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES:**

**107.12-PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE:**

The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property marks until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in the Contractor's manner or method of executing the work, or at any time due to defective work or materials, and this responsibility will not be released until the project shall have been completed and accepted.

When or where and direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the nonexecution thereof by the Contractor, the Contractor shall restore, at their own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in as acceptable manner.

**107.13-FOREST PROTECTION:**

In carrying out work within or adjacent to State or National Forests, the Contractor shall comply with all regulations of the State Fire Marshall, Division of Natural Resources, or any other authority having jurisdiction, governing the protection of forests and the carrying out of work within forests, and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. The Contractor shall keep the areas in an orderly condition, dispose of all refuse, obtain permits for the construction and maintenance of all construction camps, stores, warehouses, residences, latrines, cesspools, septic tank, and other structures in accordance with the requirements of the Forest Supervisor.

The Contractor shall take all reasonable precaution to prevent and suppress forest fires and shall require their employees and subcontractors, both independently and at the request of forest officials, to do all reasonably within their power to prevent and suppress and to assist in preventing and suppressing forest fires and to make every possible effort to notify a forest official at the earliest possible moment of the location and extent of any fire seen by them.

**107.14-RESPONSIBILITY FOR DAMAGE CLAIMS:**

The Contractor shall indemnify and save harmless the Division, its officers and employees, from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of the Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Worker's Compensation Act," or any other law, ordinance, order, or decree; and so much of the money due the Contractor under and by virtue of their Contract as may be

At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone, and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with such authority in the restoration of service. If water service is interrupted, repair work shall be continuous until the service is restored. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

#### **107.18-FURNISHING RIGHT-OF-WAY:**

The Division will be responsible for securing all necessary right-of-way in advance of construction. Any exceptions will be indicated in the Contract.

#### **107.19-PERSONAL LIABILITY OF PUBLIC OFFICIALS:**

In carrying out any of the provisions of these Specifications, or is exercising and power or authority granted to them by or within the scope of the Contract, there shall be no liability upon the Commissioner, Engineer, or their authorized representatives, either personally or as officials of the State, it being understood that in all such matters they act solely as agents and representatives of the Division.

#### **107.20-NO WAIVER OF LEGAL RIGHTS:**

The Division shall not be precluded or estopped by any measurement, estimate, or certificate made either before or after the completion and acceptance of the work and payment therefor, from showing the true amount and character of the work performed and materials furnished by the Contractor, nor from showing that any such measurement, estimate or certificate is untrue or is incorrectly made, nor that the work or materials do not in fact conform to the Contract. The Division shall not be precluded or estopped, notwithstanding and such measurement, estimate, or certificate and payment in accordance therewith, from recovering from the Contractor or sureties, or both, such damage as it may sustain by reason of their failure to comply with the terms of the Contract. Neither the acceptance by the Division or any representative of the Division, nor any payment for or acceptance of the whole or any part of the work, nor any extension of time, nor any possession taken by the Division, shall operate as a waiver of any portion of the Contract or of any power reserved or of any right to damages. A waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach.

**EXHIBIT B****108.8-DEFAULT AND TERMINATION OF CONTRACT:**

If the Contractor:

1. fails to begin work under the Contract within the time specified in the "Notice to Proceed"; or
2. fails to perform the work with sufficient employees and equipment or sufficient materials to assure the prompt completion of the work; or
3. performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable;
4. discontinues the prosecution of the work; or
5. fails to resume work which has been discontinued within a reasonable time after notice to do so; or
6. becomes insolvent or is declared bankrupt or commits any act of bankruptcy or insolvency; or
7. allows any final judgment to stand against the Contractor unsatisfied for a period of ten (10) days; or
8. makes an assignment for the benefit of creditors; or
9. for any other cause whatsoever, fails to carry out the Contract terms in an acceptable manner;

the Engineer will give notice in writing to the Contractor and his/her Surety of such delay, neglect or default. If the Contractor or Surety, within a period of ten (10) days after such notice, shall not proceed in accordance therewith, the Division will, upon written notification from the Engineer of the fact of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority, without violating the Contract, to terminate the Contract. The Division may appropriate or use any or all materials and equipment on the ground as may be suitable and acceptable and may enter into an agreement with another contractor for the completion of the Contract according to the terms and provisions thereof, or use such other methods as in the opinion of the Engineer will be required for the completion of the Contract in an acceptable manner.

All cost charges incurred by the Division, together with the cost of completing the work under Contract, will be deducted from any money due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the Contract, then the Contractor and the surety shall be liable and shall pay to the Division the amount of such excess.

**108.9-TERMINATION OF CONTRACT FOR CONVENIENCE OF THE STATE:**

The Division may terminate the entire Contract or any portion thereof, if the Engineer determines that a termination is in the Division's interest. The Engineer will deliver to the Contractor a Notice of Termination specifying the extent of termination and the effective date.



1. **Submittals and Procedures.** After receipt of a Notice of Termination, the Contractor shall immediately proceed with the following obligations:
  - a. Stop work as specified in the notice.
  - b. Place no further subcontracts or orders for materials, services, or facilities for the terminated portion of the Contract.
  - c. Terminate all subcontracts that relate to the work terminated.
  - d. Settle all outstanding liabilities and termination settlement proposals arising from the termination of the contract or portion thereof.
  - e. Transfer title and deliver to the Division (1) fabricated, partially fabricated, or unfabricated parts, work in process, completed work, supplies, and other material produced or acquired for the work terminated, and (2) the completed or partially completed plans, drawings, information, and other property that, if the Contract had been completed, would be required to be furnished to the Division.
  - f. Complete performance of the work not terminated.
  - g. Acceptable materials obtained by the Contractor for the Project that have not been incorporated in the work shall be inventoried in conjunction with the Engineer at a date identified by the Engineer.
  - h. Take any action necessary, or that the Engineer may direct, for the protection and preservation of the property related to the Contract that is in the possession of the Contractor and in which the Division has or may acquire an interest.
2. **Settlement Provisions.** When the Division orders termination of all or a part of the Contract effective on a certain date, completed items of work as of that date will be paid for at the Contract bid price. Payment for partially completed work will be made either at agreed prices or under the provisions below. Items that are eliminated in their entirety by such termination shall be paid for as provided in Subsection 109.5.
  - a. **Additional Costs.** Within sixty working days of the effective termination date, the Contractor shall submit a claim for additional damages or costs not covered above or elsewhere in the Contract. Such claim may include such cost items as reasonable idle equipment time, mobilization efforts, bidding and project investigative costs, overhead expenses attributable to the project terminated, legal and accounting charges involved in claim preparation, subcontractor costs not otherwise paid for, actual idle labor cost if work is stopped in advance of termination date, guaranteed payments for private land usage as part of the original Contract, and any other cost or damage for which the Contractor feels reimbursement should be made.



The Contractor and the Division may agree upon the whole or any part of the amount to be paid because of the termination. The amount may include a reasonable allowance for profit on work done. Anticipated profits will not be considered as part of any settlement. The agreed amount may not exceed the total Contract price as reduced by the amount of payments previously made, and the Contract price of work not terminated. The Contract shall be amended, and the Contractor paid the agreed amount.

b. **Additional Cost Review.** If the Contractor and the Division fail to agree on the whole amount to be paid the Contractor because of the termination of work, the Division will pay the amounts determined as follows, but without duplication of any amounts agreed upon above:

i. For Contract work performed before the effective date of termination, the total (without duplication of any items) of:

- 1) The cost of work performed;
- 2) The cost of settling and paying termination settlement Proposals under terminated subcontracts that are properly chargeable to the termination portion of the Contract if not included in subparagraph 1 above; and
- 3) A sum, as profit on (1) above determined by the Division to be fair and reasonable. The Division shall allow no profit under this subdivision if the Contractor's costs incurred on work performed exceed the bid item payments made.

ii. The reasonable costs of settlement of the work terminated, including:

- 1) Accounting, legal, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and support data;
- 2) The termination and settlement of subcontracts (excluding the amounts of such settlements); and
- 3) Storage, transportation, and other costs incurred, reasonably necessary for the preservation, protection, or disposition of the termination inventory.

iii. Except for normal spoilage, and to the extent that the Division expressly accepts the risk of loss, Division will

- exclude from the fair value, all that is destroyed, lost, stolen, or damaged so as to become undeliverable to the Division or to the buyer.
- iv. In arriving at the amount due the Contractor under this clause, there will be deducted the following:

- 1) All unliquidated advance or other payments to the Contractor under the terminated portion of the Contract;
- 2) Any claim that the Division has against the Contractor under the Contract; and
- 3) The agreed price for or the proceeds from the sale of materials, supplies, or other things acquired and sold by the Contractor not recovered by or credited to the Division.

If termination is partial, the Contractor may file a Proposal with the Division for an equitable adjustment of the price(s) of the continued portion of the Contract. The Division will make any equitable adjustment agreed upon. Any Proposal for an equitable adjustment under this clause shall be requested within sixty (60) working days from the effective date of termination unless extended in writing by the Engineer.

The Division may, under the terms and conditions it prescribes, make partial payments and payments against costs incurred by the Contractor for the termination portion of the Contract, if these payments will not exceed the amount to which the Contractor is entitled.

The Contractor shall maintain and make available all project cost records to the Division for audit to the extent necessary to determine the validity and amount of each item claimed. This includes all books and other evidence bearing on the Contractor's costs and expenses under the Contract. These records and documents shall be made available to the Division at the Contractor's office, at all reasonable times, without any direct charge. If approved by the Division, photographs, microphotographs, or other authentic reproductions may be maintained instead of original records and documents.

Termination of the Contract or portion thereof shall not relieve the Contractor of contractual responsibilities of the work completed, nor shall it relieve the Surety of its obligation for and concerning any just claim arising out of the work performed.

#### **108.10-FIELD OFFICE OVERHEAD:**

The Division may consider compensating the Contractor for Field office overhead costs as long as the Contractor can provide documentation that the field office overhead costs are not covered by the project bid items.

#### **108.11-HOME OFFICE OVERHEAD:**

The Department shall consider payment to the Contractor for any unabsorbed or extended home office overhead costs for which payment is not previously provided for if all of the following criteria are met:

## SECTION 109 MEASUREMENT AND PAYMENT

### 109.1-MEASUREMENT OF QUANTITIES:

All work completed under the Contract will be measured by the Engineer according to United States standard measure.

The method of measurement and computations to be used in determining of quantities of materials furnished and of work performed under the Contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise indicated, the requirements prescribed shall govern.

Earthwork will be computed by the average end area method, using the horizontal length measured along the centerline as the distance between sections, applying corrections for curvature where the apparent error exceeds 25 percent of the volume in any one cut. Other acceptable methods may be used.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally and no deductions will be made for individual fixtures having an area of nine square feet (one square meter) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the Plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the Plans or as altered to fit field conditions.

All items which are measured by the linear foot (meter), such as pipe culverts, guardrail, underdrains, etc., will be measured parallel to the base or foundations upon which such structures are placed.

The term "gage" when used in connection with the measurements of plates, will mean the U.S. Standard Gage.

The galvanized sheet thicknesses to be used in the manufacture of metal cribbing, corrugated steel culvert pipe, underdrain pipe, plate pipe, pipe arches, plate pipe arches and plate arches shall be as specified in AASHTO M 36 or AASHTO M 167. The sheet thicknesses to be used in the manufacture of corrugated aluminum alloy culvert pipe, underdrain pipe, plate pipe, pipe arches, plate pipe arches and plate arches shall be as specified in AASHTO M 196 or AASHTO M 219.

The "size number" used in the measurement of wire will be as specified in AASHTO M 32 or AASHTO M 225.

The term ton will mean the short ton consisting of 2,000 lb (The term megagram is defined as a mass of 1,000 kg). All materials which are measured or proportioned by weight shall be weighed on approved scales by competent, qualified personnel. Scales for weighing shall be of either the beam type, springless-dial type or digital recorder type. All plant and truck scales and metering devices shall be inspected, approved and sealed in accordance with the requirements of the West Virginia Division of Labor, Bureau of Weights and Measures, or other appropriate agencies of the State or its political subdivisions. Poles shall be designed to be locked in any position to prevent unauthorized changes. When the beam type scales are used, provisions for a "telltale" dial shall be made for indicating to the operator that the required load in the weighing hopper is being approached. A device on the weighing beams shall clearly indicate the critical position.

Truck scales shall be provided by the producer or Contractor, except that truck scales are not required where the material is weighed at properly calibrated automatic batching plant facilities which are equipped with digital print-out equipment. The scales shall be of sufficient size and capacity to weigh the heaviest loaded trucks that are used for delivery of the material. All truck scales shall be mounted on solid foundations which will ensure their remaining plumb and level.

A weigh person shall be provided by the producer. The weigh person shall certify that the weight of the material, as determined either by the truck scales or from the digital print-out of the weights, is correct. To signify the certification of weight the weigh person must either sign their full name on each ticket, or if the ticket printer prints the weigh person's full name they must at least initial each ticket.

Each truck shall be weighed empty prior to each load, except at automatic batch plants approved to operate without truck scales. A digital recorder shall be required on all truck scales. The digital recorder shall produce a printed record of the gross, tare and net weights, and the time, date, truck identification and project number. Provision shall be made for constant zero compensation and further provision shall be made so that the scales may not be manually manipulated during the printing process. The system shall be interlocked so as to allow printing only when the scale has come to rest.

In case of a breakdown of the automatic equipment, the Engineer may permit manual operation for a reasonable time, normally not to exceed 48 hours, while the equipment is being repaired.

If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants.

Devices, used to meter or measure component or other materials in a simultaneous manner, shall be located so as to be readily accessible and visible to a single Inspector, unless otherwise directed by the Engineer.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

When approved by the Engineer, material specified to be measured by the cubic yard (meter) may be weighed and these weights converted to cubic yard (meter)s for payment purposes. Further, when it is impractical to measure the material by weighing, or in its original position, the material will be measured in its final position and adjusted by a volume change factor. These conversion factors will be determined by the Engineer and shall be agreed to by the Contractor before these methods of measurement are used.

When bituminous material is measured by volume, the measured volume at loading temperature shall be converted to volume at 60° F (15° C) using the temperature correction factors in 705 for asphaltic materials and 706 for tar materials, except that when volume is measured by an approved temperature compensated metering device, no further volume correction for temperature shall be required. When bituminous material is measured by weight, the actual specific



gravity, API gravity, or weight per gallon (liter) of the material shall be used to convert the measured weight to volume at 60° F (15° C). The Contractor shall furnish all information necessary as determined solely by the Division to determine the amount of bituminous material actually incorporated into the project.

Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When bituminous materials are shipped by truck or transport, net certified weights or volume, subject to correction for loss or foaming may be used for computing quantities.

Cement will be measured by the cwt (hundredweight = 100 lb) (kilogram). For the purpose of determining the total amount used in the mixture, one bag of cement shall be considered as weighing 0.94 cwt (42.64 kg), and one barrel of cement shall be considered as weighing 3.76 cwt (175.55 kg).

Timber will be measured by the thousand feet board measure (mfbm) (cubic meters) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the Contract.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

#### 109.2-SCOPE OF PAYMENT:

The Contractor shall receive and accept compensation provided for in the Contract as full payment for furnishing all materials and for performing all work under the Contract in a complete and acceptable manner and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of 107.20.

If the "Basis of Payment" clause in the Specifications relating to any unit price in the bid schedule requires that the unit price cover and be considered compensation for certain work or material essential to the item, this work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the Specifications, except as provided in 104.6.

When the Contract specifies payment of an item or a portion of an item on a plan quantity basis, the quantities for payment will be those shown on the Plans with deductions from or additions to such quantities resulting from authorized deviations from the Plans.



If the Contractor believes that a quantity which is specified for payment on a plan quantity basis is incorrect, the Contractor may request the Division in writing to check the questionable quantity. The request shall be accompanied by calculations, drawing, or other evidence indicating why the plan quantity is believed to be in error. If the plan quantity is found to be in error, payment will be made in accordance with the corrected plan quantity.

The Division reserves the right to check the quantity of an item which is specified for payment on a plan quantity basis if there is reason to believe that it is inaccurate. If the quantity is found to be in error, payment will be made in accordance with the corrected plan quantity.

Should the Division determine during construction that conditions have varied from those anticipated in design to the extent that actual measurement of a plan quantity item is warranted, the Division will make such measurement, and payment will be based in lieu of the plan quantity.

#### **109.2.1-General Basis of Adjusted Payment:**

**109.2.1.1-Single Deficiency:** In the case of the single characteristic deficiency, the resulting deficiency shall be used directly to determine an adjusted price.

**109.2.1.2-Multiple Deficiency:** In the case of a multiple deficiency, the related adjusted percentage of contract price as determined by the acceptance plan for each characteristic shall be determined and the resulting percent of contract price to be paid shall be the product of these related adjusted percentages.

**109.2.2-Basis of Charges for Additional Testing:** When additional acceptance testing is performed by the Division for reworked lots or sublots in accordance with 106.3.1.2, the cost of such testing will be deducted on current estimates from the amount due the Contractor by the Division. The cost of such testing will be determined in accordance with the unit costs per test as shown in Table 9-1, published in MP 109.00.20.

#### **109.3-COMPENSATION FOR ALTERED QUANTITIES:**

When the accepted quantities of work vary from the quantities in the bid schedule, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract unit price for the accepted quantities of work done. No allowance except as provided in 104.2 will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly from such alterations or indirectly from unbalanced allocation among the contract items of overhead expense on the part of the bidder and subsequent loss of expected reimbursements therefore or from any other cause.

Increased work involving supplemental agreements will be paid for as stipulated in such agreements. The Contractor shall furnish substantiating data required in the preparation of these agreements.

The "C" values given per gallon of Liquid Asphalt Material is based on the use of an emulsion which is assumed to contain 65% asphalt material and a gallon of emulsion weights 8.43 pounds of a liter of emulsion weights 1.00 kg. If a cut-back asphalt is used "C" as given in the above table must be multiplied by 1.54 to arrive at a modified "C" factor for use in the formula. No change will be made in the Adjustable Material Cost (C) for variations between these assumptions and actual factors.

The adjustable materials costs ( $C_1$ ) and ( $C_2$ ) are based on the approved job mix formula for the specific asphalt mixture being placed in accordance with the following formulae:

$$(C_1) = I_b \times A_c \times 1 \text{ ton or } [(C_1) = I_b \times A_c \times 1 \text{ megagram}]$$

Where  $A_c$  equals the approved asphalt content expressed in decimals, i.e. 5.8% asphalt content equals 0.058. When reclaimed asphalt pavement (RAP) is used in the mix,  $A_c$  is the % virgin or new asphalt added to the mix.

$$(C_2) = I_b \times A_c \times 1.6 \text{ tons/cy or } [(C_2) = I_b \times A_c \times 1.9 \text{ mg/m}^3 \times 1 \text{ meter}]$$

where  $A_c$  equals approved asphalt content expressed in decimals and it is assumed that a cubic yard of asphalt treated open-graded free draining base weights 1.6 tons or 1.9 Mg. No change will be made in  $C_2$  for variations between this assumption and the actual factor.

#### 109.11 THROUGH 109.19-BLANK:

#### 109.20-LOAD LIMIT VIOLATIONS AND WEIGH TICKETS:

The Allowable Gross Weight for any vehicle being used to haul materials on publicly maintained highways under the terms of this contract shall be as follows.

Title 23 Code of Federal Regulations, Section 658.17, establishes maximum allowable gross weight on the Interstate System. The maximum allowable gross weight on WV and US Routes will be as established in Chapter 17C, Articles 17 and 17A of the Official Code of West Virginia, as amended. The Public Service Commission, Weight Enforcement Section is responsible for the enforcement of these provisions.

A weigh ticket shall be required with each load of material from a commercial source which would normally have truck scales. This includes, but is not limited to, all asphalt paving materials and all aggregates regardless of the contract pay unit. The weigh ticket shall include gross, tare, and net weights, time and date of loading, Item Number or Description of Materials, Contract Number or Project Number, number of axles on haul unit, license number of haul unit, and signature of the weigher certifying that all information on the ticket is correct. If the weigher's name is printed by the computer on the ticket, then it only needs to be initialed by the weigher.

For material from a commercial source or a batch plant, which would not normally have truck scales, a weigh ticket documenting the tare weight, number of axles on the haul unit, license number of haul unit, date weighed, location of

scales, and signature of the weigher certifying that all information on the ticket is correct, may be supplied for each haul unit as an alternate to the ticket required in the previous paragraph. The tare weight ticket shall be supplied for each contract on a yearly basis and when modifications are made to the vehicle or combination of vehicles. The weight of the material delivered shall be calculated and furnished by the vendor/supplier shipping the material to the project site or DOH facility. This includes, but is not limited to, concrete, structural steel, piling, reinforcing steel and all prepackaged material of known weight, such as cement, grout, fertilizer, lime, abrasives, etc.

If the haul unit is a combination of vehicles, the license number shall be supplied for each component. The tare weight shall be for the complete haul unit.

All weighing shall be done on scales approved and sealed by the West Virginia Division of Labor, Bureau of Weights and Measures. If the scales are moved or upon the request of the Engineer, the scales shall be reapproved and sealed. The Engineer shall be notified of any scale malfunctions. The Division of Highways may, at its option, accept inspection and sealing by out of state agencies when the material is being loaded outside West Virginia.

Any material, covered by this provision, which is delivered without the proper weigh ticket shall not be accepted by the Division of Highways.

Nothing in this provision relieves any party from compliance with the State Law on load limits or any fines which may be assessed for violation of said law.

## SECTION 603

### PRESTRESSED CONCRETE MEMBERS

#### 603.1-DESCRIPTION:

This work consists of the construction of precast/prestressed concrete members, pretensioned in accordance with these specifications and in conformity with the plan details and notes. This work shall include manufacturing, inspection, handling, storing, transporting and erecting of structural members of precast/prestressed concrete, and, when specified, shall also include precast concrete members which do not contain pretensioning steel components.

Concrete floors, curbs, parapets, curtain walls, and diaphragms shall be cast in place on the project unless otherwise provided for on the plans. When the above elements are specified as precast members, they shall be manufactured in accordance with this specification.

#### 603.2-MATERIALS:

**603.2.1 Materials Details:** Materials shall meet the requirements specified in the following Sections/Subsections:

Precast/Prestressed Concrete Materials	Sections/Subsections
Cement	ASTM C150, 701.3
#Fine Aggregates	702.1
*Coarse Aggregates	703.1, 703.2, & 703.3
+Admixtures:	
Air Entraining Admixtures	707.1
Retarding Admixtures	707.2
Water Reducing Admixtures	707.3
**Pozzolonic Additives	707.4
Mixing Water	715.7
Reinforcing Steel	709.1
Prestressing Steel	709.2
Hot-Poured Elastic Type Concrete Joint Sealer	708.3
Preformed Expansion Joint Filler	708.1
Elastomeric Bearing Pads	715.14
Welded Wire Fabric	709.4
Steel Bolts and Nuts	709.23
Concrete Sealant	707.12
Shear-Key Grout	715.5

- # When the top surface of a prestressed member is designed as the bridge wearing surface
- \* The maximum size of coarse aggregate shall not exceed the minimum horizontal or vertical clear spacing between pretensioned or reinforcing steel elements divided by 1.33. Lightweight aggregates shall not be used unless their use is permitted by the Engineer in writing.
- \*\* The use of a Pozzolonic additive is not permitted when a blended hydraulic cement is used. Unless otherwise permitted by the Engineer, only one source of a Pozzolonic additive shall be used.
- + Calcium chloride or any admixture containing chloride ion in excess of 0.1 percent by weight shall not be used in prestressed concrete members.

**603.2.2-Inspection and Testing:** A representative of the Engineer shall have free entry at all times, while the work on the Contract is being performed, to all parts of the manufacturer's works which concern the manufacture of the materials ordered. The manufacturer shall afford the representative of the Engineer, without charge, all reasonable facilities to satisfy themselves that the material is being furnished in accordance with these specifications.

### **603.3-PLANT REQUIREMENTS AND APPROVAL:**

**603.3.1-Plant Approval:** All fabricators of prestressed concrete members shall be certified in the appropriate Group and Category in accordance with the Precast/Prestressed Concrete Institute (PCI) Plant Certification Program. Fabricators shall be certified in Group B3 or B4 for manufacture of prestressed straight strand bridge members. For prestressed draped strand bridge members, the fabricator shall be certified in Group B4. The Engineer or his authorized representative shall approve all plants manufacturing prestressed and precast reinforced concrete bridge members before manufacture of the members may be started. Requests for such approvals shall be submitted to the Engineer at least three weeks prior to the date of manufacture of the members. Requests shall include details of the plant facilities, materials, and the production methods the manufacturer intends to use.

The manufacturer shall have an established quality control program in effective operation at the plant. This program shall be submitted to the Engineer for approval at least 30 days prior to the start of the production.

If a contractor/fabricator is found to consistently deviate from PCI guidelines, the contractor/fabricator will be required to use independent laboratory quality control testing and inspection until it can be shown that conformity with PCI guidelines has been reestablished. The laboratory used is subject to the approval by the Engineer. The cost of the independent laboratory is to be borne by the contractor/fabricator.

**603.3.2-Supervision:** The contractor/fabricator shall provide a PCI Level II certified technician, skilled in the use of the system of prestressing to be used, who shall supervise the work and give the Engineer or his representative such assistance as may be considered necessary.

### **603.3.3-Equipment and Tools:**

**603.3.3.1-General:** All equipment, tools and machinery used in the work shall be adequate for the purpose for which it is to be used and shall be maintained in a satisfactory working condition. The use of portable pretensioning beds for the manufacture of prestressed concrete members is not acceptable.

The contractor/fabricator shall provide all other equipment and tools necessary for the construction and the prestressing.



**603.3.3.2-Equipment:** The jacks shall be equipped with instruments for monitoring the hydraulic pressure. Electronic pressure transducers with digital indicators may be used. All pressure gauges or electronic pressure indicators shall indicate the load directly to one (1) percent of the maximum gauge or sensor/indicator capacity or (2) two percent of the maximum load applied, whichever is smaller.

Each jack and its gauge shall be calibrated as a unit with the cylinder extension in the approximate position that it will be at final jacking force. The calibration of the jack and gauge shall be done while the jack is in the identical configuration as will be used on the site, e.g., same length hydraulic lines. An independent laboratory shall furnish certified calibration charts with each jack and gauge used in the work. Certified calibration of each ram shall be made prior to the start of stressing operations and every six (6) months thereafter, or as requested by the Engineer. Any repair of the rams, such as replacing seals, changing length of hydraulic lines, changing type of pump or using gauges which have not been calibrated with the ram, shall be cause for recalibration of the jack and gauge with a load cell. No extra compensation will be allowed for the initial or subsequent ram calibrations.

**603.3.3.3-Forms and Casting Beds:** Forms and casting beds shall be subject to the approval of the Engineer. Unless otherwise approved, only metal forms on concrete founded casting beds shall be used. The forms and casting beds shall be well constructed, carefully aligned, substantial and firm, securely braced and fastened together, sufficiently tight to prevent leakage of mortar and strong enough to withstand the action of mechanical vibrators. The forms shall be constructed to permit movement of the members without damage during release of the prestressing force or movement caused by thermal expansion during curing. The casting beds and all form work will be approved before any concrete is placed, but such approval shall not relieve the contractor/fabricator of responsibility for the results obtained.

#### **603.4-WORKING DRAWINGS:**

**603.4.1-General:** The contractor/fabricator shall expressly understand that the Engineer's approval of the working drawings submitted by the contractor/fabricator covers the requirements for "strength and detail," and that the Engineer assumes no responsibility for errors in dimensions.

Working drawings must be approved prior to performance of the work involved and such approval shall not relieve the contractor/fabricator of any responsibility under the contract for the successful completion of the work.

All working drawings shall be in English units. Use of dual (metric and English) units is not allowed.

**603.4.2-Shop Drawings:** The contractor/fabricator shall submit copies of the detailed shop drawings to the Engineer for approval. Shop drawings shall be submitted sufficiently in advance of the start of the work to allow time for review by the Engineer and corrections by the contractor/fabricator without

delaying the work. The size of the original drawings shall be 22 inches x 34 inches (559 mm x 864 mm) including margins, unless otherwise permitted. The shop drawings submitted for approval may be reduced.

Shop drawings for concrete structures shall give full detailed dimensions and sizes of component parts of the structure and details of all miscellaneous parts. Design camber for all members shall be shown on the shop drawings.

**603.4.3-Erection Drawings:** The contractor shall submit drawings illustrating fully their proposed method of erection. The drawings shall show details of all falsework bents, bracing, guys, dead-men, lifting devices, and attachments to the bridge members: sequence of erection, location of cranes and barges, crane capacities, location of lifting points on the bridge members, and weights of the members. The plan and drawings shall be complete in detail for all anticipated phases and conditions during erection. Design calculations, sealed by a Registered Professional Engineer, shall be submitted by the contractor/fabricator to the Engineer for approval which will demonstrate that allowable stresses for falsework and concrete members being erected are not exceeded and that member capacities and final geometry shall be correct.

When the designated concrete deck overhang exceeds 30 inches (760 mm), the erection drawings submitted by the contractor/fabricator shall include complete details of the forming and bracing for the overhang and shall transmit the concrete deck dead load to an area of the beam or stringer which will prevent distortion. All forming and bracing procedures are subject to approval of the Engineer.

#### **603.5-REINFORCEMENT:**

All reinforcing bars and welded wire fabric shall meet all requirements of Section 602 and shall be free of frost, loose rust, grease, dirt, oil, paint, mill scale, corrosion or other deleterious substances. Any steel which cannot be satisfactorily cleaned shall not be used.

When splicing is required, all reinforcing bars shall be lapped for a length of at least 30 bar diameters.

Reinforcing bars, welded wire fabric and other embedded fixtures shall be accurately placed as indicated on the Plans and shall be maintained in their correct position during the manufacture of the unit. Reinforcement shall not be held in position by tack welding.

The minimum concrete cover for reinforcing steel shall be as follows, unless otherwise shown on the Plans:

Main Reinforcement .....	1½ inches (40 mm)
Slab Reinforcement, top of slab .....	1½ inches (40 mm)
Slab Reinforcement, bottom of slab .....	1 inch (25 mm)
Stirrups and Ties.....	1 inch (25 mm)

The longitudinal or main wires of welded wire fabric shall be placed transverse to the longitudinal axis of the unit. Laps of welded wire fabric shall be a minimum of 6 inches (150 mm) unless otherwise approved by the Engineer.

**603.6 CONCRETE:**

**603.6.1-General:** The composition, proportioning, and mixing of concrete shall be such so as to produce a homogeneous concrete mixture of a quality that will conform to the test and design requirements specified and as noted on the Plans. Concrete for all prestressed members shall have a minimum compressive strength as may be specified on the plans or in the special provisions. Materials used to form voids in the members shall be fabricated from form material acceptable to the Engineer or from cardboard, which has been treated with a waterproofing agent. Any void made from more than one piece of material shall be glued and banded to prevent separation during concreting operations. Any evidence of separation will be cause for rejection. All concrete materials including admixtures shall meet requirements specified in subsection 603.2 and/or as indicated in the plans.

**603.6.2-Mix Design:** Concrete mixtures must be established initially by methods in accordance with ACI 318, Chapter 5. Mixes may be designed either by a commercial laboratory or by PCI certified concrete plant personnel. Prior to adoption of a mix design as a plant standard, it shall be field tested by use of the production plant batching and mixing equipment, construction methods, and curing to be used in production of the members. The use of a previous mix design can be approved for a project if sufficient test data (30 or more tests) are available from the past year for evaluation (ACI 301, Chapter 3, method).

All design mixes shall be developed using the type of cement, the type and gradation of aggregates, and admixtures proposed for use in plant mixes. The mix design shall also include either compressive strength tests or a penetration resistance test (in accordance with ASTM C 403) that verify the amount of time it takes to achieve a compressive strength of 500 psi (3.5 Mpa). The Engineer shall approve the mix design. When any of these variables are changed, or after a three-year time period, the mix shall be re-evaluated and submitted to the Engineer for approval.

**603.6.3-Proportioning of Concrete:** Materials shall be proportioned by weight, unless otherwise authorized by the Engineer. The concrete shall contain the minimum amount of water per sack of cement required to obtain satisfactory workability and the specified minimum strength, but in no case shall this amount exceed five gallons per sack (0.44 liter per kg) of cement, including the free water in the aggregate, and /or admixtures. The minimum cement factor shall be seven bags per cubic yard (390 kg per m<sup>3</sup>) of concrete. Concrete for all members shall be air-entrained with a target air content of seven percent. A working tolerance of plus or minus two percentage points will be allowed. When the ambient temperature is 90 °F (32° C) or higher, a retarding admixture shall be added to the concrete mixture. The Engineer may permit the use of retarding or water-reducing admixture when necessary. Slump shall not exceed 8 inches (200 mm) with the use of high range water reducers

**603.6.4-Sampling and Test Methods:**

Sampling Freshly Mixed Concrete	AASHTO T 141
Slump of Hydraulic-Cement Concrete	AASHTO T 119
Unit Weight and Yield of Concrete	AASHTO T 121
	AASHTO T 152
Air Content of Freshly Mixed Concrete	or
	AASHTO T 196
Making and Curing Concrete Test Specimens in the Field	AASHTO T 23
Compressive Strength of Cylindrical Concrete Specimens	AASHTO T 22
Temperature of Concrete	ASTM C 1064

Cylinders shall be manipulated and cured by methods identical to those used in curing the concrete members.

Slump, Temperature, and Air Content tests shall be conducted on the first batch of concrete each day and every time that cylinders are fabricated. Slump, Temperature, and Air Content tests shall also be conducted whenever Quality Control Personnel or the Inspector see a variation in the mix.

Unit Weight and Yield tests shall be conducted on the first batch of concrete each day and thereafter, as deemed necessary by Quality Control or Quality Assurance Personnel.

The Fabricator's Quality Control Personnel shall maintain records of the beam number(s) into which each batch of concrete is placed.

**603.6.5-Strength of Concrete:** Each strength test (i.e. strand release and 28-day) shall consist of the average strength of a minimum of two compressive strength test cylinders fabricated from a single randomly selected batch of concrete, as it is being placed in the forms.

A minimum of one set of cylinders shall be fabricated (at random) for each member cast in a form, with a maximum of one set of cylinders per batch of concrete. These cylinders, molded during fabrication, shall be the same size specimens as were used in the approved mix design.

Any member, for which the average concrete compressive strength at 28-days is less than the 28-day design compressive strength value, may be rejected at the option of the Contractor. If the Contractor elects to use such a member, it will be evaluated as to its adequacy for the use intended. Any member evaluated as unsatisfactory will be rejected by the Division, and the Contractor shall fabricate another member to replace the one which was evaluated as unsatisfactory. When the evaluation indicates that the member will be satisfactory for its intended use, the Engineer will provide for an appropriate price adjustment under the provisions of 603.14.2.1.

**603.6.6-Batching and Mixing:** Concrete batching plants and their operation shall be in conformance with ASTM C 94, "Specifications for Ready-Mix Concrete". Concrete batch plants shall be capable of producing concrete of the quality required and they shall be adequately equipped and properly operated. Concrete supplied to the plant by an outside batch plant shall meet the same requirements of batch plant facilities. Evidence of

conformance will be certification of the outside plant by the National Ready-Mix Concrete Association (NRMCA).

Fine and coarse aggregates and cement shall be measured by weight. Water and liquid admixture may be measured by either weight or volume. Measurement of the various components of concrete, and measuring equipment shall be in accordance with ASTM C 94.

Concrete shall be mixed by one of the following methods:

1. Central mixed concrete-concrete mixed in a central stationary mixer and delivered to the casting area by appropriate methods.
2. Shrink mixed concrete-concrete that is partially mixed in a stationery mixer, then mixed completely and delivered to the casting site in a truck mixer.
3. Truck mixed concrete-concrete that is completely mixed in a truck mixer as it is delivered to the casting site.

Mixing times shall be established by uniformity tests in accordance with procedures in ASTM C 94.

**603.6.7-Placing Concrete:** Suitable means shall be used for placing concrete without segregation. The concrete mixture shall not be dropped from a distance of more than 4 feet (1.2 meters), relative to the top of the form or the reinforcement. Special care shall be taken to deposit the concrete in its final position in each part of the form. Working of flowing concrete along the forms from the point of deposit will not be permitted. Care must be taken to work the concrete under and around the prestressing strands and reinforcement. The plastic concrete shall be consolidated in place by either external or internal vibration, or both when necessary. The vibrators shall be of a type and design approved by the Engineer, and the size of the vibrating head will be governed by the spacing of the prestressing cables and reinforcement. Vibrators may be used only to consolidate the concrete after it has been properly placed.

Internal vibrators shall be operated vertically and shall be slowly pushed into and pulled out of the concrete and shall not be held in one spot long enough to cause segregation. Concrete segregated by the vibrator shall be removed and discarded. Partially hardened layers of concrete shall not be penetrated or disturbed by the vibrator. Transmission of vibration into prestressing cable or reinforcement embedded in partially hardened concrete by the vibrating equipment will not be permitted.

**603.6.8-Cold Weather Production:** In addition to the requirements of Subsection 601.9.1, the following requirements shall apply to outdoor casting operations. When ambient temperatures below 40° F (4° C) are anticipated, the following shall be used as necessary to keep the temperature of concrete within the prescribed limits:

1. Minimum concrete temperature shall be 50° F (10° C) after placement.



2. Concrete shall not be placed on cold forms, steel, or appurtenances. When the temperature of these facilities are below 40° F (4° C), steam heat or other means shall be provided to maintain the temperature to at least 50° F (10° C) unless concrete is delivered above 60° F (15° C) and no frost, snow or ice is present in the form.
3. Placing concrete under covers or in suitable enclosures.
4. Use of heated mixing water.
5. Avoidance of the use of frozen aggregate or aggregate containing frost, snow or ice.
6. Use of insulated forms.

**603.6.9-Hot Weather Production:** In addition to the requirements of Subsection 601.9.2, the following requirements shall apply to outdoor casting operations:

When the ambient temperature is above 100° F (38° C), or other adverse weather conditions are present, it is recognized that plastic shrinkage of concrete, or loss of strength below specification requirements, or both may occur. If such conditions do occur, the following procedures or combination of procedures shall be used as necessary to correct these deficiencies:

1. Water fog spraying of forms, prior to placement of concrete. Forms exposed to direct sunlight can be misted for cooling prior to placement of concrete.
2. Shaded storage for aggregates.
3. Burying, insulating or shading water supply facilities.
4. Sprinkling or fog spraying of aggregates.
5. Use of shaved or crushed ice for a portion of the mixing water. Only so much ice shall be used as will be entirely melted at the completion of the mixing period.
6. Use of cold water in batching. Water can be chilled and stored in an insulated tank or pulled from a source if temperatures are low enough to aid mix temperature reduction.
7. Application of wet burlap or mats or fog spraying as soon as the water sheen disappears from the concrete. This is especially important for hot, windy, exposed locations.
8. Use of white pigmented curing compound for its heat-reflective properties except on composite surfaces.
9. Use of self-retarding admixtures.
10. Avoidance of the use of cement with temperatures over 170° F (77° C).
11. Shading of product surface during and after casting to avoid heat buildup in direct sunlight.

Concreting operations shall be discontinued when concrete temperatures exceed 100° F (38° C) at the time of placing.

**603.7-PRESTRESSING:**

**603.7.1-Protection of Prestressing Steel:** All prestressing steel shall be protected against physical damage and rust at all times during storage and manufacturing. Prestressing steel shall also be free of deleterious material such as grease, oil, wax, or paint, except where called for on the plans. Prestressing steel that has sustained physical damage at any time shall be rejected. The use of prestressing reinforcement having kinks, bends, nicks, or other defects will not be permitted. The development of pitting, other than slight rusting shall be cause for rejection.

Prestressing steel shall be packaged in containers or shipping forms for the protection of the strand against physical damage and corrosion during shipping and storage. A corrosion inhibitor which prevents rust or other results of corrosion shall be incorporated in a corrosion inhibitor carrier type packaging material, or when permitted by the Engineer, may be applied directly to the steel. The corrosion inhibitor shall have no deleterious effect on the steel or concrete or bond strength of steel to concrete.

The shipping package or form shall be clearly marked with a statement that the package contains high strength prestressing steel, and the type of corrosion inhibitor used, including the date packaged.

All anchorages, end fittings, couplers, and exposed strands, which will not be encased in concrete or grout in the completed work, shall be permanently protected against corrosion.

If an anti-bonding agent is used on the forms to facilitate member removal, every precaution shall be taken to protect the prestressing strands against any degree of coating by the anti-bonding agent.

**603.7.2-Storing of Prestressing Steel:** Prestressing steel shall be stored in a protected area which includes a roof (and sides if necessary) to keep moisture off the strand. In addition the cover must have a floor or at least the strand must be placed on supports to keep it out of mud and water until it is to be used. It shall not be removed from its protective packaging until immediately prior to installation in the forms and placement of concrete. Openings in the packaging shall be resealed as necessary to protect the unused steel. While exposed, the steel shall be protected to prevent corrosion.

**603.7.3-Placement of Prestressing Steel:** Prestressing shall be accurately installed in the forms and held in place by the stressing jack or temporary anchors and, when tendons are to be draped, by hold-down devices. The hold down devices used at all points of change in slope of tendon trajectory shall be of a low-friction type.

**603.7.4-Safety Measures:** Effective safety measures shall be taken to prevent injuries to personnel due to the breakage of strands or failure of anchorage devices during the tensioning operations. The protection provided shall be adequate and shall permit the inspector to perform his normal duties. When the safety precautions, in the opinion of the Engineer, are inadequate the contractor will revise the procedures or equipment to the satisfaction of the

Engineer. The inspector will abide by the safety rules established by the producer.

#### **603.7.5-Stressing Requirements:**

**603.7.5.1-General:** The provisions set forth in this section refer to the application and measurement of stresses to prestressed concrete members manufactured by the process of pretensioning. Prestressing forces shall not be transferred to any member nor shall end anchors be released before the concrete has attained a minimum compressive strength as specified on the plans or in the special provisions as determined by tests of standard cylinders cured identically as the member.

An initial force shall be applied to each strand such as to develop a load of approximately 10% of the final prestressing load as shown on the plans. A record shall be maintained of the jacking force and elongations thereby. Several prestressed members may be cast in one continuous line and stressed at one time.

Forms shall be removed and members detensioned immediately after steam curing or heat curing is discontinued while the concrete is still warm and moist. The elements shall be cut or released in an order such that lateral eccentricity of prestress forces will be a minimum.

**603.7.5.2-Tensioning of Strands:** In all methods of tensioning, stress induced in the strands shall be determined by monitoring applied force and independently by measurement of elongation. Applied force may be monitored by direct measurement using a pressure gauge piped into the hydraulic pump and jack system. The elongation measurements shall agree with their computed theoretical values within a tolerance of  $\pm 5\%$ . If discrepancies are in excess of 5 % between the calculated forces, determined by elongation measurement and gauge reading, the tensioning operation shall be suspended and the source of error determined, evaluated, and corrected by qualified personnel before proceeding.

Calculations for elongation and gauge readings must include appropriate allowances for friction in the jacking system, strand seating, movement of bulkheads, bed shortening if under load, thermal corrections, and any other compensation for the setup.

**603.7.5.3-Methods of Stress Measurement:** Methods of measurement of the stressing force consist of pressure gauges to measure force from the pressure applied to hydraulic jacks or any other method approved by the Engineer.

**603.7.5.4-Gauging Systems:** Hydraulic gauges shall conform to the provisions set forth in Section 603.3.3. All gauges measuring the stressing load shall be graduated so they can be read within a tolerance of  $\pm 2\%$ .

Tensioning methods employing hydraulic gauges shall have appropriate bypass valve snubbers and fittings so that the gauge pointer will not fluctuate but will remain steady until the jacking load is released.

**603.7.5.5-Control of Jacking Force:** Pressure bypass valves may be used for stopping the jack at the required load or for manually stopping the load with the valve. The accuracy of setting of automatic cutoff valves shall be verified by running to the desired cutoff load whenever there is reason to suspect improper results, and at a minimum, at the beginning of the operation each day.

**603.7.5.6-Wire Failure in Strands:** Failure of wires in a pretensioning strand is acceptable provided the total area of wire failure is not more than 2 % of the total area of strands in a member, and providing the breakage is not symptomatic of a more extensive distress condition. Failure of any individual wire prior to placing concrete will require replacement of the strand.

**603.7.5.7-Calibration Records For Jacking Equipment:** All jacking and load measuring equipment shall be calibrated as specified in Section 603.3.3. Calibration records should show the following data.

1. Date of calibration.
2. Agency, laboratory or registered Professional Engineer (PE) supervising the calibration.
3. Method of calibration; i.e. proving ring, load cell, testing machine, etc., and its calibration reference.
4. The full range of calibration with gauge readings indicated against actual load.

Calibration records for all tensioning systems being used shall be available for preparing theoretical tensioning values. Personnel involved in preparing tensioning calculations shall have a copy of these records for reference.

**603.7.6-Pretensioning and Strand Debonding:** Pretensioning shall conform to the provisions set forth in Article 2.2, "Pretensioning" of the latest edition of the PCI Quality Control Manual MNL-116.

Plastic sheathing shall be used for strand debonding and shall be approved by the Engineer prior to use. Items such as animal fat, reactive greases, or PVC pipes shall not be used. Any other material shall be approved by the Engineer prior to use.

**603.7.7-Detensioning:** Detensioning shall conform to the provisions set forth in Article 2.3, "Detensioning" of the latest edition of the PCI Quality Control Manual MNL-116.

**603.7.8-Concrete Cover:** Minimum concrete cover for prestressing steel shall be 1 ½ inches (40 mm) unless otherwise shown on the plans.

**603.8-CURING:**

**603.8.1 General:** Careful attention shall be given to the proper curing of concrete. Prior to placing of concrete, the contractor shall submit the proposed curing methods and procedures to the Engineer for approval. Elevated temperature curing facilities shall be tested prior to approval. Approved equipment and materials for curing shall be available for use prior to casting.

Inadequate curing facilities or lack of attention to the proper curing of concrete shall be sufficient cause for the Engineer to stop all concrete placement until approved curing is provided. Inadequate curing may be cause for rejection of the member. All test cylinders shall be cured in the same environment as the precast/prestressed concrete members.

Curing shall be commenced prior to the formation of surface shrinkage cracks. The curing mats, sheets, or blankets shall be carefully placed in contact with the concrete member to avoid damage to the freshly finished concrete.

The following curing requirements shall apply for precast/prestressed members. Any other special method of curing shall meet with the approval of the Engineer. Concrete shall not be exposed to temperatures below freezing until the specified minimum strength as shown in plan notes has been attained.

All concrete shall be cured by water curing, accelerated temperature curing, or any other method approved by the Engineer.

**603.8.2-Water Curing:** All exposed surfaces of the concrete shall be kept wet continuously for the required curing time. The water used for curing shall meet the requirements of 603.2. Water curing shall be permitted as follows:

**603.8.2.1-Wet Mat Method:** For water curing by the mat method, cotton mats, polyethylene sheeting, or polyethylene burlap blankets may be used. The mats, sheets or blankets shall be adequately anchored and weighted to provide continuous contact with all concrete surfaces. Any concrete surfaces which cannot be cured by contact shall be enclosed by mats, adequately anchored, so that outside air cannot enter the enclosure. Sufficient moisture shall be provided inside the enclosure to keep all of the surfaces of the concrete wet for the required curing time, but in no case less than 36 hours.

**603.8.2.2-Saturated Cover Curing:** The member, covered as specified for the initial phase of curing, shall be maintained on the casting bed in an approved enclosure designed and equipped to insure complete saturation of the covering. The temperature within the enclosure and that of the covering material shall be maintained to provide a uniform curing temperature at the surface of the member, within the limits of 80 °F to 130 °F (27° C) to (54° C), until the specified strength is attained, but in no case less than 36 hours. The covering shall be kept thoroughly saturated throughout the entire curing period and the temperature of the water used shall be controlled uniformly to maintain the selected curing temperature of the surface of the member.



**603.8.2.3-Water Spray Curing:** The member, covered as specified for the initial phase of curing, shall be maintained in the casting bed in an approved enclosure. When the concrete is sufficiently hardened to resist damage, the covering shall be removed and the exposed surfaces of the unit shall be subjected to a continuous fine spray of water. The temperature within the enclosure and that of the water used shall be controlled to provide a uniform curing temperature at the surface of the member, within the limits of 80 °F and 130 °F (27° C) to (54° C) until the specified member strength is attained, but in no case less than 36 hours.

**603.8.3-Accelerated Curing:** Accelerated curing of the concrete shall be done by low pressure steam curing, or radiant heat curing. Transfer of stress shall be accomplished immediately after the heat curing has been discontinued. Accelerated curing shall be applied at a controlled rate following initial set of the concrete as per ASTM C403. Accelerated curing shall be done under suitable enclosures which minimize all heat losses and maintain uniform cure conditions within the enclosed area. Members must be maintained wet during accelerated curing time.

If accelerated curing is used, the contractor/fabricator shall furnish recording thermometers showing the time-temperature relationship of the concrete throughout the entire curing period. Recording thermometers shall be kept in proper calibration and recalibrated at least annually.

**603.8.3.1-Low-Pressure Steam Curing:** Low-pressure steam curing shall be done under a suitable enclosure to contain the live steam and minimize moisture and heat losses. The concrete shall be allowed to attain its initial set before application of the live steam.

Application of live steam shall not be directed on the concrete or forms such as to cause localized high temperatures. During the initial application of live steam, the concrete temperature shall be raised at an average rate not exceeding 80 °F(27° C)/per hour, until the curing temperature is reached. The maximum sustained concrete temperature during the curing cycle shall not exceed 160° F (70° C). The maximum temperature shall be held until the concrete has reached the required release strength. The maximum peak concrete temperature during the curing cycle shall be 190 °F (88° C). The concrete temperature shall be maintained uniformly throughout the extremities of the prestressed member. At the end of curing, the concrete temperature shall be reduced at an average rate not exceeding 50° F (10° C)/per hour.

**603.8.3.2-Radiant Heat Curing:** Radiant heat may be applied by means of pipes circulating steam, hot oil or hot water, or by electric heating elements. Radiant heat curing shall be done under a suitable enclosure to contain the heat, and moisture loss shall be minimized by covering all exposed concrete surfaces with a plastic sheeting or by applying an approved liquid membrane curing compound to all exposed concrete surfaces. The heat application shall be maintained to create a uniform concrete temperature throughout the extremities of the member.

After the waiting period prior to application of the heat, the concrete temperature shall increase at an average rate not exceeding 80° F (27° C)/per hour until the curing temperature is reached. The maximum sustained concrete temperature within the curing cycle shall not exceed 160° F (70° C). The maximum temperature shall be held until the concrete has reached the required release strength as shown in plan notes. The maximum peak concrete temperature during the curing cycle shall be 190° F (88° C). The maximum cooling rate from sustained concrete curing temperature shall be 50° F (10° C)/per hour.

#### **603.9-FINISHING:**

To assure the production of well formed matching members, all surfaces of the concrete shall be finished, shall be true and even, and shall be free from rough, open, or honeycombed areas, depressions or projections. The edges shall be finished or chamfered, or both. Care shall be exercised in removing forms to avoid spalling or otherwise damaging the concrete.

Top surfaces of prestressed members shall be screeded or rough floated to bring mortar to the surface and cover all aggregate. The top surface of members that will receive cast-in-place concrete on the project site shall be finished as noted on the project plans, or if no finish is noted, they shall have either a raked or stiff broom finish. Aggregate shall not be loosened when roughening the surface. The fascia surfaces of bridge members shall be finished with a PCI Grade A Formed Finish. All other members shall be finished with a PCI Standard Grade Formed Finish. Concrete on exposed reinforcing steel and loose laitance on concrete surfaces to be in contact with cast-in-place concrete shall be removed from all members.

Fabrication holes, except box beam vent holes, in the bottom of all beams, shall be filled with nonshrink mortar and made flush with the surrounding surface. No patching is required for small holes and irregularities on the sides of adjacent box beams that are to be sandblasted prior to shipment. Care shall be taken in final cutting the ends of strands to avoid damaging the concrete surface.

#### **603.10-WORKMANSHIP:**

**603.10.1-General:** Holes and voids in the surface of concrete resulting from bolts, ties, or large air pockets shall be wetted and filled with mortar having the same proportion of fine aggregate and cement as in the concrete, after which exposed mortar surfaces shall be finished smooth and even with a wood float.

Surfaces to be repaired and finished shall be kept wet for at least one hour before hydraulic cement mortar is applied. Immediately following patching work, repaired areas shall be wet cured for at least 48 hours. The wet cure may be accomplished by the use of steam, wet burlap or continuous spray wetting. A liquid membrane-curing compound may be used on non-composite surfaces.

Beams or girders having honeycomb of such extent to affect their strength or resistance to deterioration will not be accepted.

**603.10.2-Defects and Breakage:**

Defective or damaged members which cannot be satisfactorily repaired, or which are not acceptable to the Engineer will not be incorporated into the work. All other members that sustain damage during fabrication, handling, storage or transportation shall be evaluated in accordance with Chapter three of PCI Journal Vol. 30, # 3 entitled "Fabrication and Shipment Cracks in Precast or Prestressed Beams and Columns", hereinafter referred to as "specification". This specification is to be used to determine the severity of cracks. All cracks with a width of 4 mils (0.1 mm) or less may be repaired by silane treatment if the repair section of the specification allows repairs. All cracks over 4 mils (0.1 mm) to and including 16 mils (0.4 mm) shall be repaired by epoxy injection if allowed by the specification. Members with cracks over 16 mils (0.4 mm) shall not be incorporated into the work unless approved by the Engineer.

**603.11 DIMENSIONAL TOLERANCES:**

All tolerances shall be applied with respect to the theoretical positions and dimensions shown in the plans. The tolerances listed in this article represent the total allowable tolerance that will be accepted in the finished product.

The limits of tolerance do not necessarily represent fully acceptable construction; they are the limits at which construction becomes unacceptable. In general, workmanship shall be at a level of quality that will be well within the tolerance limits. Out of tolerance dimensions shall be handled in accordance with MP 603.10.40.

**603.11.1 Prestressed Concrete I-Beams and Bulb Tee Beams:**

<i>Characteristics</i>	<i>Value</i>
Depth (flanges)	±1/4 inch (± 6 mm)
Depth (Overall)	+1/2 inch, to -1/4 inch (+15 to -6 mm)
Width (flanges)	+3/8, to -1/4 inch (+10 to -6 mm)
Width (Web)	+3/8, to -1/4 inch (+10 to -6 mm)
Length of Beam	±1/8 inch per 10 feet, ±1 inch max. (± 1 mm/m, 25 mm max)
Sweep (variation from straight line parallel to centerline of member)	± 1/8 inch per 10 ft (± 1 mm/m)
Camber variation from design camber	± 1/8 inch per 10 feet ± 1/2 inch max up to 80 feet length ± 1 inch max. over 80 length (± 1 mm/m) (± 13 mm max. up to 24 m length) (± 25 mm max. over 24 m length)
Camber variation from design camber	±3/16 inch per 12 inches ± 1 inch (±15 mm/m, ± 5 mm max)
Position of plates	± 1 inch (± 25 mm)
Position of bearing plates	± 5/8 inch (± 16 mm)
Diaphragm Inserts (spacing between centers of inserts and from centers of inserts to the ends of the beams.)	± 1/2 in (± 15 mm)
Stirrup bars ( Projection above top of beam)	± 3/4 inch (± 20 mm)
Stirrup bars ( Longitudinal spacing)	± 2 inches (± 50 mm)

<i>Characteristics</i>	<i>Value</i>
Concrete Cover	$\pm 1/4$ in ( $\pm 6$ mm)
Position of inserts for structural connections	$\pm 1/2$ in ( $\pm 15$ mm)
Position of hold-down points for draped strands	$\pm 5$ inches ( $\pm 125$ mm)
Position of Inserts	$\pm 1/2$ inch ( $\pm 15$ mm)
Position of handling devices:	
Parallel to length	$\pm 6$ inches ( $\pm 150$ mm)
Transverse to length	$\pm 1$ inch ( $\pm 25$ mm)
Prestressing strand position (vertical or horizontal).	$\pm 1/4$ inch ( $\pm 6$ mm)

**603.11.2 Precast/Prestressed Concrete Box Beams and Plank Beams:**

<i>Characteristics</i>	<i>Value</i>
Depth (Overall)	$\pm 1/4$ inch ( $\pm 6$ mm)
Depth (top flange)	$+1/2$ inch ( $+15$ mm)
Depth (bottom flange)	$+1/2$ inch to $-1/8$ inch ( $+15$ to $3$ mm)
Width (Overall)	$\pm 1/4$ inch ( $\pm 6$ mm)
Width (Web)	$\pm 3/8$ inch ( $\pm 6$ mm)
Length	$\pm 3/4$ inch ( $\pm 20$ mm)
Sweep (variation from straight line parallel to centerline of member) Up to 40 feet (12 m) length member	$\pm 1/4$ inch ( $\pm 6$ mm)
40 to 60 feet (12 to 18 m) length member	$\pm 3/8$ inch ( $\pm 10$ mm)
Greater than 60 feet (18 m) length member	$\pm 1/2$ in ( $\pm 15$ mm)
Camber variation from design camber	$\pm 1/8$ inch per 10 feet, $\pm 1/2$ inch Max. ( $\pm 1$ mm/m, $\pm 15$ mm Max)
Variation from specified end Squareness of skew:	$\pm 5/8$ inch ( $\pm 16$ mm)
Horizontal	$\pm 1/8$ inch per 12 inches $\pm 1/2$ inch Max. ( $\pm 1$ mm/100 mm, $\pm 15$ mm Max)
Vertical	$1/2$ in ( $\pm 15$ mm)
Position of tendons Individual	$\pm 1/4$ in ( $\pm 6$ mm)
Position of Inserts for structural connections	$\pm 1/2$ in ( $\pm 15$ mm)
Position of handling devices:	
Parallel to length	$\pm 6$ inches ( $\pm 150$ mm)
Transverse to length	$\pm 1$ in ( $\pm 25$ mm)
Position of stirrups:	
Longitudinal spacing	$\pm 1$ inch ( $\pm 25$ mm)
Projection above top	$+1/4$ inch ( $\pm 6$ mm), $-3/4$ inch ( $-20$ mm)
Position of dowels tubes	$\pm 5/8$ inch ( $\pm 16$ mm)
Position of hold-down points for draped strands	$\pm 5$ inch ( $\pm 125$ mm)
Position of tie rods tubes:	
Parallel to length	$\pm 1/2$ inch ( $\pm 15$ mm)
Vertical	$\pm 3/8$ inch ( $\pm 10$ mm)
Position of slab void:	
End of void to center of tie hole	$\pm 1/2$ inch ( $\pm 15$ mm)
Adjacent to end block	$\pm 1$ inch ( $\pm 25$ mm)
Concrete Cover	$\pm 1/4$ inch ( $\pm 6$ mm) $1/4$ inch per 10 feet long. Bars ( $6$ mm per $3$ m)



**603.11.3-Prestressed Concrete Deck Panels:**

<i>Characteristics</i>	<i>Value</i>
Length	$\pm 1/2$ in ( $\pm 15$ mm)
Width	$\pm 1/2$ in ( $\pm 15$ mm)
Nominal Depth	+ 1/4 inch - 1/8 in (+6 mm, -3 mm)
Horizontal Alignment – Deviation from straightness of matting edge of panels	1/8 in (3 mm)
Deviation of ends from plan dimension Horizontal Alignment	$\pm 1/2$ in ( $\pm 15$ mm)
Position of strands : Vertical Horizontal	$\pm 1/8$ ( $\pm 3$ mm) $\pm 1/2$ in ( $\pm 15$ mm)
Concrete Cover	$\pm 1/4$ inch ( $\pm 6$ mm) 1/4 inch per 10 feet long. Bars (6 mm per 3 m)

**603.12-HANDLING, STORING, TRANSPORTING, AND ERECTION:**

The Contractor shall be responsible for proper handling, lifting, storing, hauling, and erection of all members so that they are placed in the structure without damage.

Prestressed members shall be maintained in an upright position at all times and shall be handled and supported in a manner which prevents torsion. No member shall be moved from the casting yard until the member has been accepted.

Storing of members shall be done with adequate blocking so that warpage or cracking will not occur. Blocking will be such that at least 6 inches (150 mm) clearance is maintained above the surface on which the blocking is placed. Placement of the blocking from beam ends shall be at locations not greater than (3) percent of the beam length. Concrete box beams shall be supported by the solid end block area during handling, storage, hauling, and erection. Members which are improperly stored and which become cracked, warped, or otherwise damaged in storage will be subject to rejection.

Members when stacked, shall be separated by blocking capable of supporting the members. The blocking shall be arranged in vertical planes. Stacking of members shall be arranged such that lifting devices will be accessible and undamaged. Stacking shall not exceed two members high.

All concrete beams or girders when erected, shall be securely tied and/or braced unless otherwise shown on the plans. When railroad or roadway traffic must be maintained beneath girders or beams already placed, traffic shall be protected against falling objects during the erection of diaphragms and other structural members, during the placing of cast-in-place concrete, and during the erection and dismantling of forms. Protection shall consist of nets or flooring with openings not larger than 1 inch (25 mm).

When precast / prestressed concrete adjacent box beams are erected, the fit of mating surfaces will be such that excessive grout leakage will not occur. If such fit is not provided the joint shall be filled with grout or sealed with an acceptable caulking suitable to the Engineer.

#### **603.13-CONSTRUCTION OF DECK:**

The variation in heights between beams shall not be more than 1/2 in (13 mm) between adjacent box beams where there is no wearing surface. For adjacent box beam bridges with wearing surfaces, the differential shall not exceed 3/4 inches (19 mm).

Dowel bar and lifting bolt holes shall be filled with non-shrink grout. Adjacent box beam units shall be transverse post tensioned by the use of high strength threaded bars, or by other methods as shown on the Plans.

#### **603.14-MEASUREMENT AND PAYMENT:**

**603.14.1-Method of Measurement:** Precast/Prestressed concrete structural members will be measured along the member centerline in linear feet (meter). Deck panels shall be measured by area in square feet (meter) complete in place.

Precast reinforced concrete three-sided structures shall be measured along the centerline of the erected structure in linear feet (meter).

Precast reinforced concrete headwalls and wingwalls for use with precast reinforced concrete three-sided structures shall be measured in square feet (meter) as measured on the exterior face of the member.

**603.14.2-Basis of Payment:** Precast/Prestressed concrete beams, deck panels, precast reinforced concrete three-sided structures, and precast reinforced concrete headwalls and wingwalls will be paid for at the contract unit price bid for the items listed below, which price and payment shall be full compensation for furnishing all the materials and doing all the work prescribed in a workmanlike and acceptable manner including the cost of furnishing and manufacturing the concrete members; for labor, concrete, forms, conventional reinforcing steel, prestressing strands, inserts, anchorage devices, bearing pads, shims, grout, wingwalls and headwall connection hardware, joint sealing/waterproofing, and other devices, and for moving, transporting and erecting the finished product in accordance with the Plans and Specifications. For precast reinforced concrete three-sided structures where the headwall is cast integral with the end structure unit, the headwall will be paid for in square feet (meter) as if it were not integral cast. Cast-in-place concrete diaphragms, curb, parapet, railing, and reinforcing steel for cast-in-place concrete are not included in this item.

##### **603.14.2.1-Price Adjustments**

Members found not in compliance with the requirements of 603.6.5 for compressive strength, but for which the evaluation indicates may still be used, will be paid for at a reduced contract price in accordance with the following formula:

$$\text{Price Reduction} = \left( \frac{f'_c - \bar{X}}{0.5f'_c} \right) \times \text{CIC}$$

**Where:**

$f'_c$  = 28-Day Design Compressive Strength, psi (Mpa)

$\bar{X}$  = Average 28-day Compressive Strength as determined in 603.6.5

CIC = Contractor's invoiced cost of the member itself (as billed by the Fabricator)

**Note:** This cost does not include the cost of items (such as bearing pads, guardrail items, delivery charges, etc.) which are incidental to the cost of member.

**603.15-PAY ITEMS:**

ITEM	DESCRIPTION	UNIT
603016-*	"size" Prestressed Concrete Box Beam	Linear Feet (Meter)
603017-*	"size" Prestressed Concrete Plank Beam	Linear Feet (Meter)
603018-*	"size" Prestressed Concrete I Beam	Linear Feet (Meter)
603019-*	"size" Prestressed Concrete Bulb T Beam	Linear Feet (Meter)
603020-*	"size" Prestressed Concrete Deck Panel	Linear Feet (Meter)
603021-*	"size" Precast Concrete Deck Panel	Linear Feet (Meter)
603027-*	Precast Reinforced Concrete Three-Sided Structure	Linear Feet (Meter)
603028-*	Precast Reinforced Concrete Wingwall	Linear Feet (Meter)
603029-*	Precast Reinforced Concrete Headwall	Square Feet (Meter)

\* Sequence Number

## SECTION 603 PRESTRESSED CONCRETE MEMBERS

DELETE THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

### 603.14.2.1 – Price Adjustments:

Members found not in compliance with the requirements of 603.6.5 for compressive strength, but for which the evaluation indicates may still be used, will be paid for at a reduced price in accordance with the following formulas, depending on who purchased the members:

**FORMULA 1:** Use the following price reduction formula when the members are used in a project constructed by a Contractor:

$$\text{Price Reduction} = \left( \frac{f'_c - \bar{X}}{0.5f'_c} \right) \times 40\% \text{ of the Contract Unit Bid Price}$$

**FORMULA 2:** Use the following price reduction formula when the beams are used in a project constructed by the Division:

$$\text{Price Reduction} = \left( \frac{f'_c - \bar{X}}{0.5f'_c} \right) \times \text{IC}$$

Where:

$f'_c$  = 28-Day Design Compressive Strength, psi (Mpa)

$\bar{X}$  = Average 28-day Compressive Strength as determined in 603.6.5

$\text{IC}_{(\text{Formula 2 only})}$  = The invoiced cost of the member itself, as billed to the Division by the Fabricator. This cost shall not include other items associated with the member such as guardrail, bearing pads, etc.

### 603.15-PAY ITEMS

DELETE THE FOLLOWING ITEMS FROM THE TABLE:

ITEM	DESCRIPTION	UNIT
603027-*	Precast Reinforced Concrete Three-Sided Structure	Linear Feet (Meter)
603028-*	Precast Reinforced Concrete Wingwall	Linear Feet (Meter)
603029-*	Precast Reinforced Concrete Headwall	Square Feet (Meter)

## GOVERNING SPECIFICATIONS

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, ADOPTED 2003, AS AMENDED BY THE CURRENT SUPPLEMENTAL SPECIFICATIONS, THE CONTRACT PLANS AND CONTRACT SPECIAL PROVISIONS ARE THE GOVERNING PROVISIONS APPLICABLE TO THIS PROJECT.

ALL BEAMS ARE DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 1998 AS AMENDED BY THE 2003 INTERIM SPECIFICATIONS.

## DESIGN NOTES

ALL STANDARD ADJACENT PRESTRESSED CONCRETE BRIDGE BEAMS ARE DESIGNED TO MEET THE FOLLOWING CRITERIA:

## 1. DESIGN LOADS:

HL-93 LIVE LOAD IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

FUTURE WEARING SURFACE OF 80 PSF OF ROADWAY.

TYPE F PARAPET WEIGHING 321 PLF.

DIAPHRAGM DEAD LOAD, NUMBER REQUIRED BASED ON 18'-0" MAX. SPACING.

## 2. TWO LANE BRIDGE WITH AN OVERALL WIDTH OF 24'-3" (INCL. 1/4" GAP BETWEEN ADJ. BEAMS), A CURB-TO-CURB WIDTH OF 22'-0", TRANSVERSE POST-TENSIONING, AND 30 DEGREE SKEW.

## 3. DESIGN STRENGTH AND UNIT STRESSES:

MINIMUM CONCRETE STRENGTH @ STRAND RELEASE	5500 PSI
MINIMUM CONCRETE STRENGTH @ 28 DAYS	8000 PSI
TEMPORARY STRESS LIMITS IN CONCRETE BEFORE LOSSES:	
COMPRESSION STRESS LIMIT @ STRAND RELEASE	3600 PSI
TENSION STRESS LIMIT @ STRAND RELEASE	-200 PSI
COMPRESSION STRESS LIMITS IN CONCRETE @ SERVICE I AFTER LOSSES:	
① FINAL 1 (PSI-DL)	4800 PSI
② FINAL 2 (PSI-DL)	3600 PSI
③ FINAL 3 (COMBINED DL+LL)	3200 PSI
TENSION STRESS LIMIT IN CONCRETE @ SERVICE III AFTER LOSSES:	
① FINAL 1 (PSI-DL+LL)	-270 PSI
TENSION STRESS LIMIT PRIOR TO TRANSFER	202.5 KSI
TENSION STRESS LIMIT AFTER ALL LOSSES	194.4 KSI

## 4. DEBONDING OR SHIELDING OF STRANDS TO REDUCE TEMPORARY TENSILE STRESSES IS PERMITTED, HOWEVER DEBONDING IS LIMITED TO 40% PER ROW AND 25% TOTAL. IN NO INSTANCES SHALL OUTER STRANDS BE DEBONDED. DEBONDED STRANDS SHALL BE SEPARATED BY AT LEAST ONE FULLY BONDED STRAND AND SHALL BE SYMMETRICAL ABOUT THE C OF THE BEAM. SHIELDING OF STRANDS SHALL BE ACCOMPLISHED BY TAPING OR TIGHT FITTING PLASTIC TUBES TAPED AT EACH END.

## 5. THE ELASTOMERIC BEARING PADS PROVIDED IN THE STANDARD DESIGNS ARE BASED ON ZERO GRADE AND ARE LIMITED TO A MAXIMUM OF 5% GRADE. IN INSTANCES OF GRADES EXCEEDING THIS LIMIT, PADS SHALL BE SPECIFICALLY DESIGNED. INDIVIDUAL PAD DESIGNS SHALL BE IN ACCORDANCE WITH SECTION 14, AASHTO LRFD. BEVELED SOLE PLATES ARE PERMITTED.

## 6. MAXIMUM BEAM SKEW SHALL BE 30 DEGREES.

## 7. WHEN ALTERNATE DESIGNS OR SITE SPECIFIC DESIGNS ARE PROVIDED, CRITERIA SET FORTH IN THESE STANDARDS SHALL APPLY.

## 8. NEGATIVE DESIGN CAMBER AFTER ALL LOSSES IS NOT PERMITTED.

## 9. EACH BEAM PROVIDED IN THESE STANDARD DESIGNS HAS BEEN LOAD RATED IN ACCORDANCE WITH SECTION 3.1.5 OF THE WEST VIRGINIA DIVISION OF HIGHWAYS BRIDGE DESIGN MANUAL, 2004. ADDITIONALLY, LOAD RATING PROCEDURES ARE IN ACCORDANCE WITH THE AASHTO MANUAL FOR CONDITION EVALUATION AND LOAD AND RESISTANCE FACTOR RATING OF HIGHWAY BRIDGES, 2003.

## MATERIALS &amp; FABRICATION NOTES

• THE PRESTRESSED CONCRETE BEAMS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF SECTION 603 OF THE STANDARD SPECIFICATIONS.

## MILD REINFORCEMENT:

• ALL MILD REINFORCING STEEL SHALL BE GRADE 60, DEFORMED BILLET STEEL AND SHALL BE EPOXY COATED EXCEPT WHERE NOTED. ALL UNCOATED REINFORCING SHALL MEET THE REQUIREMENTS OF AASHTO M31. ALL EPOXY COATED REINFORCING SHALL MEET THE REQUIREMENTS OF AASHTO M284, EXCEPT WHERE AMENDED BY SECTION 709.1 OF THE STANDARD SPECIFICATIONS.

• ALL TENSION LAP SPLICES SHALL BE A CLASS B, CONTACT TYPE. MINIMUM LAP SPLICE LENGTHS SHALL BE AS GIVEN IN THE "LAP SPLICE TABLE", THIS SHEET. ADDITIONALLY, IF LAP SPLICING OF ET, LR, AND BT BARS IS USED, TERMINATION OF THE SPLICE SHALL BE NO CLOSER TO THE END OF THE BEAM THAN 1/10 OF THE SPAN LENGTH.

• MINIMUM BAR BENDING DIAMETER SHALL BE 6 BAR DIAMETERS, EXCEPT THAT NO. 4 AB BARS MAY HAVE A MINIMUM BEND DIAMETER OF 4 BAR DIAMETERS.

• MINIMUM CONCRETE COVER SHALL BE AS SPECIFIED IN SECTION 603.5 OF THE STANDARD SPECIFICATIONS, EXCEPT WHERE NOTED ON THE PLANS.

## PRESTRESSING STRAND:

• ALL PRESTRESSING STEEL SHALL BE 1/2" Ø, GRADE 270, 7 WIRE UNCOATED, LOW-RELAXATION STRAND MEETING THE REQUIREMENTS OF AASHTO M203, SUPPLEMENT S1.

• ALL BEAMS DESIGNED IN THESE STANDARDS UTILIZE STRANDS WITH A NOMINAL AREA OF 0.167 SQ. IN. STRANDS WITH A NOMINAL AREA OF 0.153 SQ. IN. IS PERMITTED FOR INDIVIDUAL OR ALTERNATE DESIGNS. HOWEVER THE DESIGNER IS ENCOURAGED TO USE THE LARGER STRAND FOR UNIFORMITY REASONS. IN NO CASES WILL STRESS-RELIEVED STRAND BE PERMITTED.

• ALL STRANDS SHALL BE ENCLOSED INSIDE THE STIRRUP CAGE FOR THE FULL LENGTH OF THE BEAM.

• ALL EXPOSED PRESTRESSING STRAND AT EACH BEAM END SHALL BE SHOP COATED WITH A LIQUID COLD-APPLIED BITUMINOUS ELASTOMERIC WATERPROOFING MEMBRANE. MATERIAL SHALL MEET ASTM C638-84.

## CONCRETE:

• ALL CONCRETE USED IN MANUFACTURING PRESTRESSED CONCRETE BEAMS SHALL MEET THE REQUIREMENTS OF SECTION 603.6 OF THE STANDARD SPECIFICATIONS. DESIGN STRENGTHS SHALL MEET OR EXCEED THE MINIMUM VALUES SET FORTH IN THESE PLANS.

• ALL CONCRETE USED IN PARAPETS AND CURBS SHALL BE CLASS K CONCRETE.

## ELASTOMERIC BEARING PADS:

• ALL BEARING PADS SHALL MEET THE APPLICABLE REQUIREMENTS AS SET FORTH IN SECTION 14.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, 1998 EDITION WITH CURRENT INTERIM. ALL BEARINGS SHALL BE STEEL REINFORCED LAMINATED BEARINGS.

• THE ELASTOMER MATERIAL SHALL BE 60 DUROMETERS WITH A MINIMUM LOW TEMPERATURE GRADE OF 3 (ZONE C).

• ALL STEEL REINFORCING SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 36.

## GUARDRAIL, GUARDRAIL POSTS, TUBING &amp; INSERTS:

• ALL W-BEAM GUARDRAIL AND ATTACHMENT HARDWARE SHALL BE IN ACCORDANCE WITH SECTION 712.4 OF THE STANDARD SPECIFICATIONS. GUARDRAIL POSTS, STRUCTURAL TUBING, POST ATTACHMENT INSERTS, AND HARDWARE SHALL MEET THE LISTED MATERIAL AND COATING SPECIFICATIONS:

ITEM	DESCRIPTION	MATERIAL SPEC.	COATING SPEC.
POST	W6x25	AASHTO M270, GR 36	AASHTO M311
PLATE	1/2" x 7"	AASHTO M270, GR 36	AASHTO M311
TUBING	TS 8x4x3/16	ASTM A500, GR B	AASHTO M311
CHANNEL	C7x9.8	AASHTO M270, GR 36	AASHTO M311
FERRULE	TYPE 2A 1/2" Ø x 2 1/2" MIN LEN.	ASTM A108 (1117 STEEL)	AASHTO M232
WIRE	ANCHOR 3/8"	ASTM A510 (1018 STEEL)	AASHTO M232
STUDS	1/4" Ø x 6" LONG	ASTM A108 (1045 C.D. STEEL)	AASHTO M232
NUTS	1/4" Ø	AASHTO M291, CLASS C	AASHTO M232
COUPLERS	TYPE 1A 1/4" Ø x 8" LONG	ASTM A108 (1214 STEEL)	AASHTO M232
BOLTS	1/4" Ø x 12" LONG	AASHTO M184 (TYPE 1, H40)	AASHTO M232
BOLTS	3/8" Ø x ALL LEN.	AASHTO M184 (TYPE 1, H40)	AASHTO M232
NUTS	3/8" Ø	AASHTO M291, CLASS C	AASHTO M232
WASHERS	ALL	AASHTO M293	AASHTO M232

## WELDING:

• TACK WELDING OF REINFORCEMENT IS NOT PERMITTED. REINFORCING CAGES AND LONGITUDINAL STEEL SHALL BE ADEQUATELY TIED WITH APPROVED MEANS TO PREVENT RACKING AND MISALIGNMENT.

• ALL WELDING OF FABRICATED ITEMS, AS SHOWN IN THESE PLANS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF AASHTO/AWS D1.5, 2002.

## POST-TENSIONING BARS:

• POST - TENSIONING THREAD BARS SHALL BE ONE INCH DIAMETER, 150 KSI STEEL, AND SHALL CONFORM TO AASHTO M275, TYPE II. STEEL THREAD BARS SHALL BE DESIGNED TO ALLOW THE USE OF HEAVY HEX NUTS AND COUPLERS THAT THREAD ONTO THE END OF THE DEFORMATIONS. HEAVY HEX NUTS AND COUPLERS SHALL BE OF A DESIGN AND MATERIAL RECOMMENDED BY THE BAR MANUFACTURER TO DEVELOP THE FULL TENSILE STRENGTH OF THE BAR. PROPERLY DOCUMENTED CERTIFIED MILL TEST REPORTS SHALL BE PROVIDED FOR EACH HEAT OF STEEL THREAD BARS.

• ALL POST-TENSIONING THREAD BARS, NUTS, BEARING PLATES, COUPLERS, AND ANCILLARY HARDWARE SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M311. THE GALVANIZING PLANT SHALL ADMINISTER ADEQUATE QUALITY CONTROL MEASURES TO SAFEGUARD AGAINST HYDROGEN EMBRITTLEMENT. QUALITY CONTROL MEASURES SHALL COMPLY WITH ASTM A-143. CERTIFICATION FOR HOT-DIP GALVANIZING SHALL BE PROVIDED BY THE GALVANIZING PLANT.

• ALL POST-TENSIONING BEARING PLATES SHALL CONFORM TO AASHTO M270, GRADE 36.

## SHEAR KEY GROUT:

• SHEAR KEY GROUT SHALL BE A GROUT THAT IS RECOMMENDED BY THE MANUFACTURER FOR A POURABLE GROUT APPLICATION AND THAT BASED ON THE MANUFACTURER'S TEST DATA WILL ATTAIN A MINIMUM OF 4500 PSI COMPRESSIVE STRENGTH IN 3 DAYS UNDER CONDITIONS REPRESENTATIVE OF THE CONDITIONS TO BE EXPERIENCED AT THE SITE. THE GROUT MUST BE LISTED ON THE APPROVED LIST OF GROUTS PUBLISHED BY THE WEST VIRGINIA DIVISION OF HIGHWAYS, MATERIALS CONTROL, SOIL AND TESTING DIVISION. THE CONTRACTOR SHALL PRE-TEST THE PROPOSED GROUT FOR COMPRESSIVE STRENGTH AT 3 AND 7 DAYS AND SUBMIT THE RESULTS TO THE BRIDGE PROJECT MANAGER FOR APPROVAL PRIOR TO INSTALLATION OF THE GROUT IN THE STRUCTURE. THE TESTS WILL BE BASED ON A POURABLE CONSISTENCY WITH THE SAME WATER/ROUT MIXTURE RATIO TO BE USED IN THE STRUCTURE.

• THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT FOR EACH PROJECT, THE GROUT PRE-TEST RESULTS OBTAINED IN THE NOTE ABOVE. THE CONTRACTOR SHALL BE REQUIRED TO PERFORM A NEW PRE-TEST AND SUBMISSION FOR APPROVAL UNDER ANY OF THE FOLLOWING CONDITIONS:

- A PERIOD OF 18 MONTHS HAS ELAPSED SINCE LAST PRE-APPROVAL TESTING.
- GROUT MANUFACTURER HAS REVISED OR CHANGED THE GROUT SPECIFICATIONS.
- THE CONTRACTOR ALTERS THE WATER/GROUT MIXTURE RATIO.
- THE CONTRACTOR CHANGES GROUT MANUFACTURER.

• THE CONTRACTOR IS REQUIRED TO COMPLETE THE GROUT STRENGTH TABLE ON BR-8103.

• TEST PROCEDURE FOR DETERMINING THE COMPRESSIVE STRENGTH OF GROUT SHALL USE CUBE SPECIMENS IN ACCORDANCE WITH ASTM C109, AS MODIFIED BY ASTM C107. GROUT TESTING IN ACCORDANCE WITH AASHTO T23 (STANDARD CYLINDER TEST) IS NOT ACCEPTABLE.

## PROTECTIVE SURFACE TREATMENT:

• EACH PRESTRESSED CONCRETE BEAM SHALL BE TREATED BY THE MANUFACTURER AT THE FABRICATION PLANT WITH AN APPROVED CONCRETE SEALER (ISLAND). AN APPROVED LIST OF CONCRETE SEALERS ARE ON FILE AT THE WEST VIRGINIA DIVISION OF HIGHWAYS, MATERIALS CONTROL, SOIL AND TESTING DIVISION. COVERAGE SHALL INCLUDE TOP AND BOTTOM OF INTERIOR BEAMS, AND TOP, BOTTOM AND EXTERIOR SIDE OF EXTERIOR BEAM. APPLICATION RATE SHALL BE PER TREATMENT MANUFACTURER'S RECOMMENDATION.

• AFTER COMPLETION OF THE SILANE TREATMENT BY FABRICATOR AND A MAXIMUM OF FIVE WORKING DAYS PRIOR TO SHIPMENT OF THE BEAMS, THE FABRICATOR SHALL BE RESPONSIBLE FOR ABRASIVE BLAST CLEANING TO CLEAN WHITE CONCRETE THE INTERIOR SIDES OF BEAMS FOR THE FULL LENGTH. CLEAN WHITE CONCRETE SHALL MEAN REMOVAL OF ALL DIRT, GREASE, OIL, AND LOOSE CONCRETE LANTAGE AND PROVIDE A ROUGHENED CONCRETE SURFACE. BLASTING MEDIUM SHALL BE APPROVED BY THE DIVISION OF HIGHWAYS.

## SHOP DRAWINGS:

• THE FABRICATOR SHALL BE RESPONSIBLE FOR THE PREPARATION OF SHOP DRAWINGS IN ACCORDANCE WITH THE WEST VIRGINIA DIVISION OF HIGHWAYS DOCUMENTS, D-102 AND THE STANDARD SPECIFICATIONS. ADDITIONAL INFORMATION IS PROVIDED IN SECTION 7 OF THE BRIDGE DESIGN MANUAL. SHOP DRAWINGS SHALL INCLUDE THE FABRICATOR'S DETENSIONING PLAN.

LAP SPLICE TABLE				
BAR SIZE	NO. 3	NO. 4	NO. 5	NO. 6
SPLICE LEN.	21"	28"	34"	41"

THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-817A & B THRU BR-812A & B, BR-8101, BR-8102A & B, BR-8103, BR-8104, BR-8105A & B AND BR-8106 AS APPLICABLE.

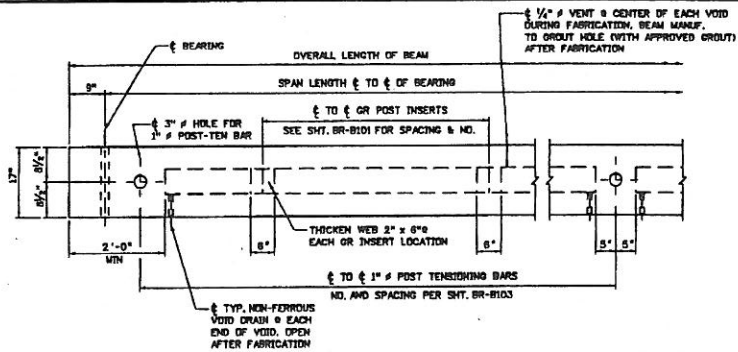
STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE DIST. NO.	COUNTY	SHEET NO.	TOTAL SHEETS
5306-43-12-29	N/A	02	CABELL	1	-

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
BRIDGE NO.: 5306-43-12-29  
OVER  
HENRY FRANCE  
ON  
CR 43  
IN  
CABELL COUNTY  
PRESTRESSED CONCRETE BEAM  
DESIGN & ASSEMBLY NOTES

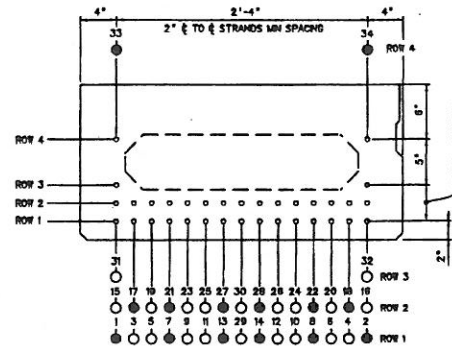
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION  
BRIDGE NO.: 5306-43-12-29  
OVER  
HENRY FRANCE  
ON  
CR 43  
IN  
CABELL COUNTY  
PRESTRESSED CONCRETE BEAM  
DESIGN & ASSEMBLY NOTES



PROJECT NUMBERS		DISTRICT	COUNTY	SHEET NO.	TOTAL
STATE	FEDERAL				
S308-43-12.28	N/A	02	CABELL	-	-

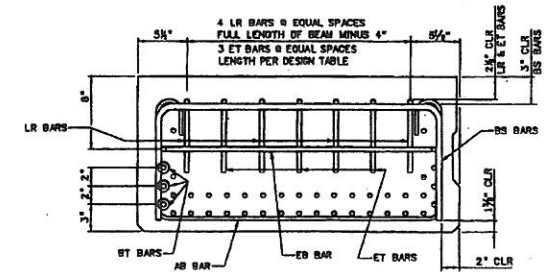


GENERAL ELEVATION VIEW

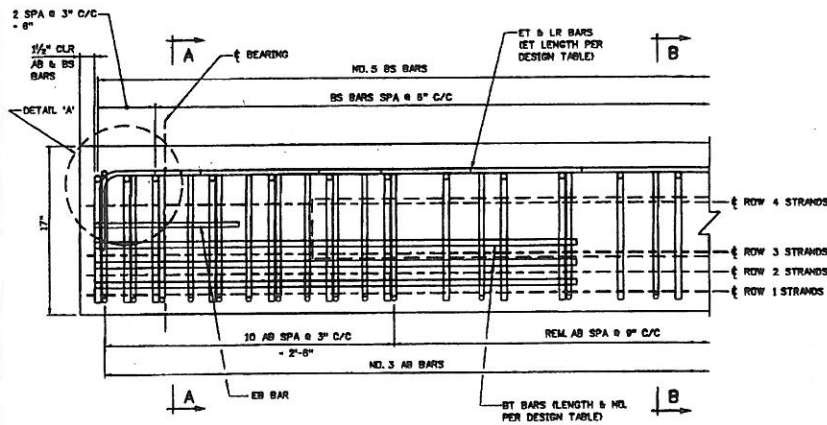


BEAM PRESTRESSING

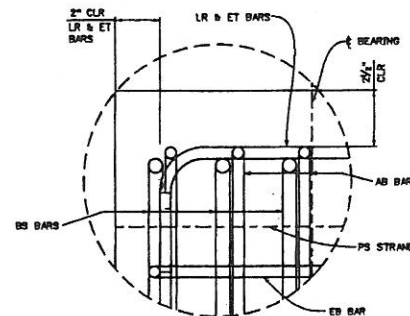
TYPICAL BEAM END &amp; MIDSPAN



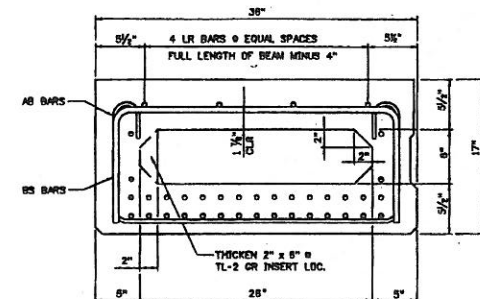
SECTION A-A



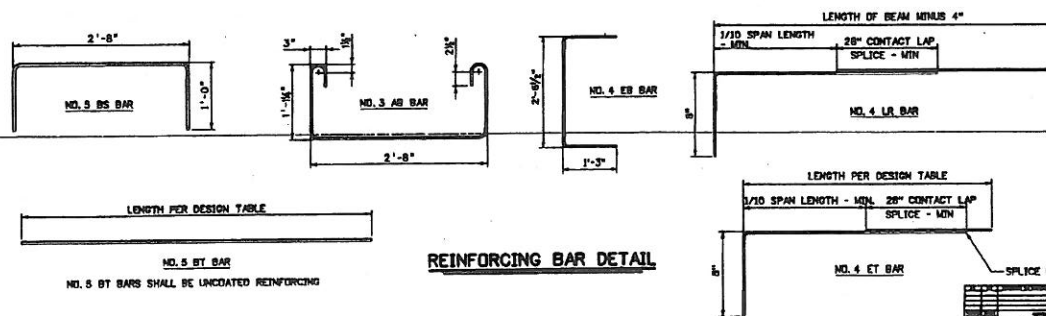
REINFORCING STEEL ELEVATION



DETAIL "A"



SECTION B-B



REINFORCING BAR DETAIL

## NOTES:

1. REFER TO SHEET BR-1102A FOR SHEAR KEY DETAILS.
2. DESIGNER SHALL USE THE FOLLOWING KEY TO INDICATE STRAND AND DESIGNING PATTERN ON "BEAM PRESTRESSING VIEW", THIS SHEET.  
 ○ ACTIVE STRAND  
 △ DESIGN STRAND, LENGTH FROM END OF BEAM  
 □ DESIGN STRAND, LENGTH FROM END OF BEAM  
 □ DESIGN STRAND, LENGTH FROM END OF BEAM
3. THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-1102A, BR-1102B, BR-1102C, BR-1102D, BR-1102E, BR-1102F, BR-1102G, BR-1102H, BR-1102I, BR-1102J, BR-1102K, BR-1102L, BR-1102M, BR-1102N, BR-1102O, BR-1102P, BR-1102Q, BR-1102R, BR-1102S, BR-1102T, BR-1102U, BR-1102V, BR-1102W, BR-1102X, BR-1102Y, BR-1102Z, BR-1102AA, BR-1102AB, BR-1102AC, BR-1102AD, BR-1102AE, BR-1102AF, BR-1102AG, BR-1102AH, BR-1102AI, BR-1102AJ, BR-1102AK, BR-1102AL, BR-1102AM, BR-1102AN, BR-1102AO, BR-1102AP, BR-1102AQ, BR-1102AR, BR-1102AS, BR-1102AT, BR-1102AU, BR-1102AV, BR-1102AW, BR-1102AX, BR-1102AY, BR-1102AZ, BR-1102BA, BR-1102BB, BR-1102BC, BR-1102BD, BR-1102BE, BR-1102BF, BR-1102BG, BR-1102BH, BR-1102BI, BR-1102BJ, BR-1102BK, BR-1102BL, BR-1102BM, BR-1102BN, BR-1102BO, BR-1102BP, BR-1102BQ, BR-1102BR, BR-1102BS, BR-1102BT, BR-1102BU, BR-1102BV, BR-1102BW, BR-1102BX, BR-1102BY, BR-1102BZ, BR-1102CA, BR-1102CB, BR-1102CC, BR-1102CD, BR-1102CE, BR-1102CF, BR-1102CG, BR-1102CH, BR-1102CI, 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BR-1102QK, BR-1102QL, BR-1102QM, BR-1102QN, BR-1102QO, BR-1102QP, BR-1102QQ, BR-1102QR, BR-1102QS, BR-1102QT, BR-1102QU, BR-1102QV, BR-1102QW, BR-1102QX, BR-1102QY, BR-1102QZ, BR-1102RA, BR-1102RB, BR-1102RC, BR-1102RD, BR-1102RE, BR-1102RF, BR-1102RG, BR-1102RH, BR-1102RI, BR-1102RJ, BR-1102RK, BR-1102RL, BR-1102RM, BR-1102RN, BR-1102RO, BR-1102RP, BR-1102RQ, BR-1102RR, BR-1102RS, BR-1102RT, BR-1102RU, BR-1102RV, BR-1102RW, BR-1102RX, BR-1102RY, BR-1102RZ, BR-1102SA, BR-1102SB, BR-1102SC, BR-1102SD, BR-1102SE, BR-1102SF, BR-1102SG, BR-1102SH, BR-1102SI, BR-1102SJ, BR-1102SK, BR-1102SL, BR-1102SM, BR-1102SN, BR-1102SO, BR-1102SP, BR-1102SQ, BR-1102SR, BR-1102SS, BR-1102ST, BR-1102SU, BR-1102SV, BR-1102SW, BR-1102SX, BR-1102SY, BR-1102SZ, BR-1102TA, BR-1102TB, BR-1102TC, BR-1102TD, BR-1102TE, BR-1102TF, BR-1102TG, BR-1102TH, BR-1102TI, BR-1102TJ, BR-1102TK, BR-1102TL, BR-1102TM, BR-1102TN, BR-1102TO, BR-1102TP, BR-1102TQ, BR-1102TR, BR-1102TS, BR-1102TT, BR-1102TU, BR-1102TV, BR-1102TW, BR-1102TX, BR-1102TY, BR-1102TZ, BR-1102UA, BR-1102UB, BR-1102UC, BR-1102UD, BR-1102UE, BR-1102UF, BR-1102UG, BR-1102UH, BR-1102UI, BR-1102UJ, BR-1102UK, BR-1102UL, BR-1102UM, BR-1102UN, BR-1102UO, BR-1102UP, BR-1102UQ, BR-1102UR, BR-1102US, BR-1102UT, BR-1102UU, BR-1102UV, BR-1102UW, BR-1102UX, BR-1102UY, BR-1102UZ, BR-1102VA, BR-1102VB, BR-1102VC, BR-1102VD, BR-1102VE, BR-1102VF, BR-1102VG, BR-1102VH, BR-1102VI, BR-1102VJ, BR-1102VK, BR-1102VL, BR-1102VM, BR-1102VN, BR-1102VO, BR-1102VP, BR-1102VQ, BR-1102VR, BR-1102VS, BR-1102VT, BR-1102VU, BR-1102VV, BR-1102VW, BR-1102VX, BR-1102VY, BR-1102VZ, BR-1102WA, BR-1102WB, BR-1102WC, BR-1102WD, BR-1102WE, BR-1102WF, BR-1102WG, BR-1102WH, BR-1102WI, BR-1102WJ, BR-1102WK, BR-1102WL, BR-1102WM, BR-1102WN, BR-1102WO, BR-1102WP, BR-1102WQ, BR-1102WR, BR-1102WS, BR-1102WT, BR-1102WU, BR-1102WV, BR-1102WW, BR-1102WX, BR-1102WY, BR-1102WZ, BR-1102XA, BR-1102XB, BR-1102XC, BR-1102XD, BR-1102XE, BR-1102XF, BR-1102XG, BR-1102XH, BR-1102XI, BR-1102XJ, BR-1102XK, BR-1102XL, BR-1102XM, BR-1102XN, BR-1102XO, BR-1102XP, BR-1102XQ, BR-1102XR, BR-1102XS, BR-1102XT, BR-1102XU, BR-1102XV, BR-1102XW, BR-1102XX, BR-1102XY, BR-1102XZ, BR-1102YA, BR-1102YB, BR-1102YC, BR-1102YD, BR-1102YE, BR-1102YF, BR-1102YG, BR-1102YH, BR-1102YI, BR-1102YJ, BR-1102YK, BR-1102YL, BR-1102YM, BR-1102YN, BR-1102YO, BR-1102YP, BR-1102YQ, BR-1102YR, BR-1102YS, BR-1102YT, BR-1102YU, BR-1102YV, BR-1102YW, BR-1102YX, BR-1102YY, BR-1102YZ, BR-1102ZA, BR-1102ZB, BR-1102ZC, BR-1102ZD, BR-1102ZE, BR-1102ZF, BR-1102ZG, BR-1102ZH, BR-1102ZI, BR-1102ZJ, BR-1102ZK, BR-1102ZL, BR-1102ZM, BR-1102ZN, BR-1102ZO, BR-1102ZP, BR-1102ZQ, BR-1102ZR, BR-1102ZS, BR-1102ZT, BR-1102ZU, BR-1102ZV, BR-1102ZW, BR-1102ZX, BR-1102ZY, BR-1102ZZ

APPROVED: *James D. Baily* 10-25-07  
 WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 DESIGN AND ASSEMBLY DETAILS  
 STANDARD SHEET BR-1107A

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION		DESIGNED BY/TW/ DRAWN BY/SV/ CHECKED BY/TW/ REVIEWED BY/TW/ DATE SCALE SHEET OF BRIDGE NO.
BRIDGE NO.: S06-43-12.29 over LONG BRANCH ON COUNTY ROUTE 43 in CABELL COUNTY		
17" PRESTRESSED BOX BEAM DESIGN AND ASSEMBLY DETAILS		

STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE DIST. NO.	COUNTY	SHEET NO.	TOTAL SHEETS
S308-43-12.29	N/A	02	CABELL	-	-

MIN. CONCRETE STRENGTH @ RELEASE	- 5500 PSI
MIN. CONCRETE STRENGTH @ 28 DAYS	- 8000 PSI
INITIAL PULL/STRAND	- 33,820 LBS
CROSS-SECTION AREA/STRAND	- 0.167 SQ. IN.

DESIGN DATA FOR 17" DEPTH ADJACENT BOX BEAM												
SPAN LENGTH $\ell$ TO $\ell$ BEARING		20'-0"	22'-0"	24'-0"	26'-0"	28'-0"	30'-0"	32'-0"	34'-0"	36'-0"	38'-0"	40'-0"
OVERALL LENGTH OF BEAM		21'-6"	23'-6"	25'-6"	27'-6"	29'-6"	31'-6"	33'-6"	35'-6"	37'-6"	39'-6"	41'-6"
NO. OF 270 KSI, $\frac{1}{2}$ " $\phi$ LOW-RELAXATION STRANDS, AREA/STRAND $\times 0.167$ SQ. IN.		10	10	10	10	12	12	14	14	16	16	16
STRAND POSITION NUMBER	ROW 1	1,2,11,12	1,2,11,12	1,2,11,12	1,2,11,12	1,2,7,11,13,14	1,2,7,11,13,14	1,2,7,11,13,14	1,2,7,11,13,14	1,2,8,11,13,14	1,2,8,11,13,14	1,2,8,11,13,14
	ROW 2	17,18,25,26	17,18,25,26	17,18,25,26	17,18,25,26	17,18,27,28	17,18,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28
	ROW 3	---	---	---	---	---	---	---	---	---	---	---
	ROW 4	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34
PRESTRESSING FORCE IMMEDIATELY AFTER STRAND RELEASE, $P_d$ , (KIPS/BEAM)		326	328	326	326	389	389	451	451	512	512	513
EFFECTIVE PRESTRESSING FORCE AFTER ALL LOSSES, $P_e$ , (KIPS/BEAM)		283	293	294	294	345	345	398	397	443	445	447
REQUIRED FACTORED MOMENT $\phi$ STRENGTH $M_u$ (FT-KIPS/BEAM)		204	231	280	269	319	349	382	415	463	491	531
FACTORED FLEXURAL RESISTANCE, $M_n$ (FT-KIPS/BEAM)		408	408	408	408	498	498	588	588	648	646	646
TOTAL NO. DEBONDED STRANDS		---	---	---	---	---	---	---	---	---	---	---
DEBONDED STRAND POSITION NUMBER & SHIELDING LENGTH FROM EACH END	ROW 1	---	---	---	---	---	---	---	---	---	---	---
	ROW 2	---	---	---	---	---	---	---	---	---	---	---
NUMBER & LENGTH #4 ET TOP TENSION BARS $\phi$ EACH END		3 - #4 $\times$ 3'-6"	3 - #4 $\times$ 3'-6"	3 - #4 $\times$ 4'-0"	3 - #4 $\times$ 4'-0"	3 - #4 $\times$ 4'-0"	3 - #4 $\times$ 4'-6"	3 - #4 $\times$ 4'-6"	3 - #4 $\times$ 5'-0"	3 - #4 $\times$ 5'-0"	3 - #4 $\times$ 5'-0"	3 - #4 $\times$ 5'-6"
NUMBER & LENGTH #5 BT BOTTOM TENSION BARS $\phi$ EACH END		2 - #5 $\times$ 4'-0"	2 - #5 $\times$ 4'-0"	2 - #5 $\times$ 4'-6"	2 - #5 $\times$ 4'-6"	2 - #5 $\times$ 4'-6"	2 - #5 $\times$ 5'-0"	2 - #5 $\times$ 5'-0"	2 - #5 $\times$ 5'-6"	2 - #5 $\times$ 5'-6"	2 - #5 $\times$ 5'-6"	2 - #5 $\times$ 6'-0"
DESIGN CAMBER $\phi$ POSITIVE (UPI) (INCHES)	$\phi$ RELEASE	0.13	0.14	0.16	0.17	0.28	0.30	0.40	0.42	0.59	0.62	0.63
	$\phi$ ERECTION	0.21	0.24	0.26	0.27	0.45	0.47	0.64	0.65	0.93	0.96	0.95
	$\phi$ FINAL	0.27	0.29	0.30	0.30	0.53	0.53	0.71	0.69	1.03	0.99	0.92
NUMBER & SPACING OF TL-2 GUARDRAIL INSERTS	NO OF INSERTS REQD.	---	---	---	---	---	---	---	---	---	---	---
	END OF BEAM TO $\ell$ OF FIRST INSERT EA END	---	---	---	---	---	---	---	---	---	---	---
SEE NOTE 8	$\ell$ OF 1st INSERT TO $\ell$ 2nd INSERT EA END	---	---	---	---	---	---	---	---	---	---	---
WEIGHT OF TYPICAL BEAM INCLUDING DIAPHRAGM (TONS)		5.8	6.1	6.8	7.1	7.6	8.1	8.8	9.1	9.6	10.1	10.8

**NOTES**

1. BEAM WEIGHTS LISTED IN THE DESIGN TABLE ARE BASED ON ZERO SKEW, 2' FT. LONG ENDBLOCK AND DIAPHRAGMS SPACED @ 15 FT C/C. WEIGHTS FOR SKEWED BEAMS, LONGER ENDBLOCKS AND ADDITIONAL DIAPHRAGMS SHOULD BE ADJUSTED ACCORDINGLY.

FOR ADDITIONAL DIAPHRAGMS, ADD 135 LBS/DIAPHRAGM.

FOR SKEW ADD 17 LBS/DEGREE OF SKEW/END.

FOR LONGER ENDBLOCK, ADD 183 LBS/LF/END.

2. DESIGNERS SHOULD NOTE THAT DATA IN STANDARD TABLE IS BASED ON EVEN SPAN LENGTHS, A TWO LANE STRUCTURE 8 BEAMS WIDE AND ZERO SKEW. SUPERIMPOSED DEAD LOADS INCLUDE TYPE F PARAPET (321 PLF) AND A FWS OF 50 PSF. FOR NON-STANDARD BRIDGES DATA SHOULD BE VERIFIED AND IF REQUIRED NEW DESIGN DATA ENTERED INTO BLANK COLUMNS. IN NO CASE SHALL THE STANDARD DESIGN TABLE BE ALTERED.

3. PREDICTED DESIGN CAMBER VALUES LISTED IN THE TABLE ARE BASED ON EMPIRICAL FORMULAS AND AS SUCH ARE APPROXIMATE. FOR MEMBERS WITH SPAN-TO-DEPTH RATIOS AT OR EXCEEDING 25, THE TOLERANCE VALUES LISTED IN APPENDIX B OF PCI MANUAL FOR QUALITY CONTROL, MHC-310, MAY NOT APPLY.

MEASUREMENT OF CAMBER FOR COMPARISON TO PREDICTED DESIGN VALUES SHOULD BE COMPLETED WITHIN 72 HOURS OF RELEASE. ADDITIONALLY, CAMBER SHOULD BE EVALUATED UNDER CONDITIONS THAT MINIMIZE THE EFFECT OF TEMPERATURE VARIATION.

4. DESIGNER, FABRICATOR, AND ERECTOR SHALL BE AWARE THAT SKEWED END BEAMS MAY TWIST OR WARP, CAUSING UNEVEN BEAM SEATING AT THE BEARINGS. THE CONTRACTOR IS REQUIRED TO CORRECT AT THE TIME OF ERECTION, BEFORE THE BEAMS ARE SECURED IN PLACE. METHOD OF CORRECTION SHALL PROVIDE AN EVEN, TOTAL BEARING AND A LEVEL TOP BEAM SURFACE. TOLERANCE, AFTER CORRECTION, SHALL BE  $(1/4) \times 1/8$  INCH. THE FABRICATOR SHALL NOTIFY THE CONTRACTOR AND DESIGNER IF CORRECTIONS ARE REQUIRED PRIOR TO SHIPMENT.

8. MAXIMUM BEAM SKEW SHALL BE 30 DEGREES.

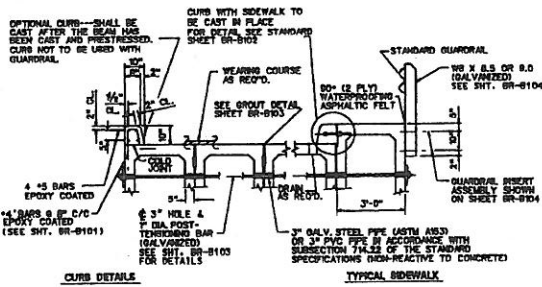
6. DESIGNER INPUT VALUES OF NUMBER OF INSERTS, DISTANCE FROM END OF BEAM TO 1<sup>ST</sup> INSERT AND 1<sup>ST</sup> INSERT TO 2<sup>ND</sup> INSERT. ABOVE VALUES SHALL BE BASED ON THE REQUIRED 6'-3" GUARDRAIL POST SPACING ACROSS THE BRIDGE.

7. SPECIAL STRAND NOTE FOR 17" BOX SECTION ONLY: WHEN TL-2 GUARDRAIL INSERTS ARE REQUIRED THE BOTTOM INSERT (TYPE 2A ANCHOR) CONFLICTS WITH STRAND NO. 15. STRANDS 15 AND 16 HAVE BEEN MOVED TO POSITIONS 17 AND 18. FOR UNIFORMITY PURPOSES, ALL BEAMS OF THE SAME DESIGN SHALL USE SAME STRAND PATTERN.

8. THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17A, BR-B100, BR-B101, BR-B102A & B, BR-B103, BR-B104, BR-B105A & B AND BR-B108 AS APPLICABLE.

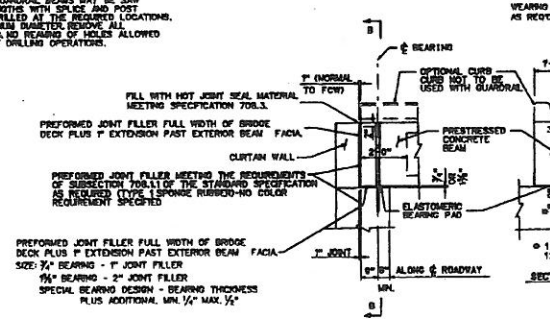
APPROVED: <i>James B. [Signature]</i> SPECIAL AGENT IN CHARGE		INDEXED 10-04-81
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS COMMERCIAL DIVISION CHECKING TABLE PER 17"		SEARCHED INDEXED SERIALIZED FILED
PRESTRESSED BOX BEAM STANDARD SHEET BR-817B		

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION	
DIVISION OF HIGHWAYS	
ENGINEERING DIVISION	
BRIDGE NO. 1 5306-43-12.29	DRAWN BY/WH
over	DESIGN BY/WH
LONG BRANCH	CHECKED BY/WH
on	REVIEWED BY/WH
CR 43	DATED
in	SOLD
CABELL COUNTY	
DESIGN TABLE FOR 17"	SHEET NO. 67
PRESTRESSED BOX BEAM	PROJECT NUMBER

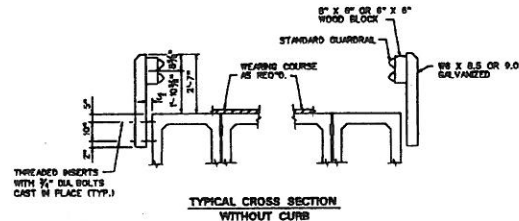


TYP. BEAM CROSS SECTION AND  
POST-TENSIONING BAR DETAILS

TO FACILITATE GUARDRAIL FABRICATION, STANDARD LENGTH GALVANIZED GUARDRAIL BEAMS MAY BE SAW CUT TO REQUIRED LENGTHS WITH SPICES, AND POST ATTACHMENT HOLES DRILLED AT THE REQUIRED LOCATIONS. HOLES TO BE 7" MINIMUM DIAMETER. REMOVE ALL BURRS AFTER GRINDING OR BEARING OF HOLES ALLOWED AFTER COMPLETION OF DRILLING OPERATIONS.



TYPICAL END BEARING DETAIL BACKWALL  
(ALONG CENTER LINE ROADWAY)



TYPICAL CROSS SECTION  
WITHOUT CURB

PUBLIC ROADS DIST. NO.	STATE DIST. NO.	PROJECT NUMBER	COUNTY	SHEET TOTAL
W.V.	22	3308-43-12.28	CABELL	NO. SHTS

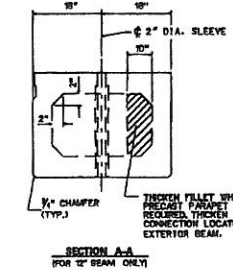
2" DIA. HOLE AT EACH END, HOLE TO BE FILLED WITH PORTLAND CEMENT MORTAR MEETING THE REQUIREMENTS OF SUBSECTION 704.1 OF THE STANDARD SPECIFICATIONS. AT FIXED END, FILL WITH BUTYRBUTYL JOINT FILLER MEETING THE REQUIREMENTS OF SUBSECTION 704.3 OF THE STANDARD SPECIFICATIONS AT THE EXPANSION END.

NOTE: ANCHOR SLEEVES MAY BE GALV. STEEL PIPE (AASHTO M253) OR PVC PIPE IN ACCORDANCE WITH SUBSECTION 714.22 OF THE STANDARD SPECIFICATIONS. ANCHOR SLEEVES SHALL BE HELD A MINIMUM OF 3" BELOW TOP SURFACE OF BEAM.

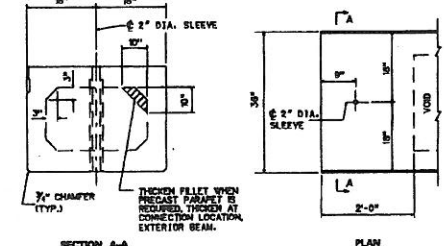
1" DIA. X 2'-0" (1'-4" FOR 12" BEAM) LONG GALV. STEEL ANCHOR BOLT OR NO. 8 GALV. DEFORMED REBAR (USE #6) FOR 12" THRU 27" BEAMS AND NO. 8 GALV. DEFORMED REBAR FOR 30" AND 42" BEAMS.

1" DIA. X 2'-0" (1'-4" FOR 12" BEAM) LONG GALV. STEEL ANCHOR BOLT OR NO. 8 GALV. DEFORMED REBAR (USE #6) FOR 12" THRU 27" BEAMS AND NO. 8 GALV. DEFORMED REBAR FOR 30" AND 42" BEAMS.

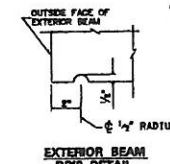
GROUT IN ACCORDANCE WITH SUBSECTION 704.5 OF THE STANDARD SPECIFICATIONS.



SECTION A-A  
FOR 12" BEAM ONLY



END BLOCK DETAILS



EXTERIOR BEAM  
DRIFT DETAIL

PREFORMED JOINT FILLER MEETING THE REQUIREMENTS OF SUBSECTION 704.1 OF THE STANDARD SPECIFICATIONS (TYPE 1 SPONGE RUBBER, NO COLOR REQUIREMENT SPECIFIED).

WATERPROOFING DETAIL  
WITHOUT BACKWALL

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION	DATE
DIVISION OF HIGHWAYS - STRUCTURES	10-24-82
PRESTRESSED CONCRETE BEAM	
DESIGN & ASSEMBLY DETAILS	
STANDARD SHEET BR-8103	

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION			
DIVISION OF HIGHWAYS - STRUCTURES			
BRIDGE NO.	3308-43-12.29	OVER	
	LONG BRANCH	ON	
	CR 43		
	CABELL COUNTY		
PRESTRESS CONCRETE BEAM			
DESIGN & ASSEMBLY DETAILS			

#### GOVERNING SPECIFICATIONS

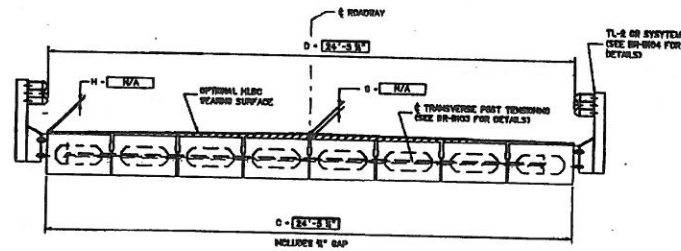
THE WEST VIRGINIA DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS FOR BRIDGES, ADOPTED 1983, AS AMENDED BY THE SUPPLEMENTAL SPECIFICATIONS OF THE WEST VIRGINIA DIVISION OF HIGHWAYS, CURRENT EDITION, THE CONTRACT PLANS AND CONTRACT DOCUMENTS ARE THE GOVERNING PROVISIONS APPLICABLE TO THE PROJECT.

THE PRESTRESSED CONCRETE BOX BEAMS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF THE SECTION 803 OF THE STANDARD SPECIFICATIONS. REINFORCING BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH SECTION 704.5 OF THE STANDARD SPECIFICATIONS.

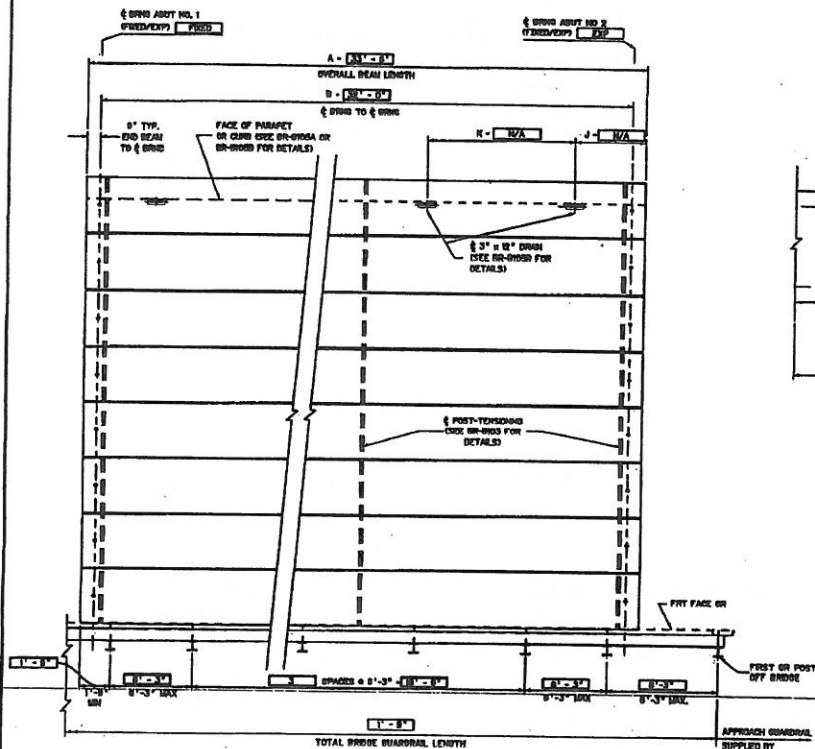
#### DESIGN AND FABRICATION NOTES

- ALL MEMBERS ARE DESIGNED FOR 12.4/10.0 (1.25) LIVE LOADING IN ACCORDANCE WITH 1993 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES AS AMENDED BY CURRENT EDITION SPECIFICATIONS. THE DESIGN PROVIDES FOR A WEARING SURFACE OF 50 POUNDS PER SQUARE FOOT OF ROADWAY. THE DESIGN ALSO PROVIDES FOR AN ADDITIONAL GUARDRAIL SUPERIMPOSED DEAD LOAD OF 30 POUNDS PER LINEAR FOOT OF BEAM AND DIAPHRAGM DEAD LOAD BASED UPON NO. 10. REBAR.
- DESIGN IS BASED ON A TWO-LANE BRIDGE WITH A DECK WIDTH OF 33'-0" AND A ROADWAY WIDTH OF 33'-0".
- COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF PRESTRESSING (F<sub>ci</sub>) SHALL NOT BE LESS THAN 4,000 PSI-17 THRU 33" BOX BEAMS, 5,000 PSI-42" BOX BEAM.
- COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS (F<sub>cd</sub>) SHALL NOT BE LESS THAN 5,000 PSI-17 THRU 33" BOX BEAMS, 6,000 PSI-42" BOX BEAM.
- PRESTRESSING STEEL SHALL BE SEVEN-WIRE UNCOATED LOW RELAXATION STRAND IN ACCORDANCE WITH ASTM A490 GRADE 270 WITH MINIMUM TENSILE STRENGTH (F<sub>tu</sub>) OF 270,000 PSI EXCEPT FOR 42" BOX BEAM, PRESTRESSING STEEL SHALL BE SEVEN-WIRE UNCOATED LOW RELAXATION OVERSIZE (US-4.97 50.81) IN ACCORDANCE WITH ASTM A490 GRADE 270 WITH MINIMUM TENSILE STRENGTH (F<sub>tu</sub>) OF 270,000 PSI.
- CALCULATED INITIAL STRESSES SHALL NOT EXCEED THE FOLLOWING ALLOWABLE TEMPORARY STRESSES BEFORE LOSSES DUE TO CREEP AND SHRINKAGE: CONCRETE COMPRESSION - 0.40 F<sub>cd</sub> CONCRETE TENSION - 200 PSI OR 3-FPS PRESTRESSING STEEL - 0.70 F<sub>ci</sub> FOR LOW RELAXATION STRAND.
- CALCULATED FINAL STRESSES SHALL NOT EXCEED THE FOLLOWING ALLOWABLE SERVICE LOAD STRESSES AFTER ALL LOSSES HAVE OCCURRED: CONCRETE COMPRESSION - 0.40 F<sub>cd</sub> CONCRETE TENSION - 3-FPS PRESTRESSING STEEL - 0.80 F<sub>cd</sub>.
- WHERE THE CALCULATED INITIAL STRESSES EXCEED THE ALLOWABLE STRESS VALUES, STRAND BEDDING OR TOP STRANDS SHALL BE PROVIDED TO REDUCE THE CALCULATED VALUES TO BELOW THE ALLOWABLE VALUES. ADDITIONALLY, BONDED NON-PRESTRESSED REINFORCEMENT SHALL BE PROVIDED TO RESIST THE TOTAL TENSION.
- ULTIMATE LOAD CAPACITY SHALL NOT BE LESS THAN  $\frac{1.30}{\phi} [D.L. + \frac{1}{2} L.L.]$  WHERE  $\phi = 1.0$  FOR FACTORY PRODUCED PRECAST PRESTRESSED MEMBERS.
- ALL ANCHOR DOWELS, NON-HEADED ANCHOR BOLTS, GUARDRAIL ATTACHMENT HARDWARE, GUARDRAIL POSTS, CONNECTION PLATES AND DRUM PLATES SHALL CONFORM TO AASHTO M253 AND SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M11 EXCEPT WHERE NOTED. ALL CAST-IN-PLACE THREADED INSERTS SHALL BE FABRICATED FROM HOT DIP GALVANIZED MEETING THE REQUIREMENTS OF AASHTO M253, ASTM A307 OR ASTM A307 GRADE 302 THRU 303 OR GRADE 304. ALL GUARDRAIL POST ATTACHMENT BOLTS, IN OR OUT OF CONCRETE, SHALL MEET AASHTO M253 OR ASTM A307. NUTS AS REQUIRED SHALL BE HEAVY HEX AND SHALL MEET AASHTO M253. WASHERS SHALL BE AS SHOWN IN TABLE 1.1 OF M253. NUTS MAY ALSO BE SUPPLIED TO AASHTO M253 GRADE 304 WASHERS SHALL BE CIRCULAR CARBON STEEL MEETING THE REQUIREMENTS OF AASHTO M253. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED TO AASHTO M253.
- ALL WELDING TO BE ACCOMPLISHED PRIOR TO GALVANIZING, EXCEPT WHEN NOTED.
- GUARDRAIL, END TIE-RODS, SECTION 803 SHALL CONFORM TO THE REQUIREMENTS AS SET FORTH BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARD DETAILS BOOK VOLUME 1, CURRENT EDITION.
- DEVELOPMENT OF STRANDS SHALL BE ACCOMPLISHED BY TAPPING OR TIGHT-FIT PLASTIC TUBING. LENGTH OF REBONDING SHALL BE MEASURED FROM END OF BEAM. REBONDING SHALL BE ACCOMPLISHED BY SHIELDING STRANDS IN A SYMMETRICAL FASHION ABOUT THE CL OF THE BEAM. NUMBER AND LENGTH OF REBONDING STRANDS FOR EACH SPAN LENGTH IS GIVEN IN THE PARTICULAR BEAMS DESIGN DATA TABLE. PLASTIC TUBING SHALL BE TAPED AT BOTH ENDS.
- WHEN ALTERNATE BEAMS ARE TO BE SUPPLIED, THEIR DESIGN SHALL BE BASED ON LOAD FACTOR DESIGN AND ALLOWABLE STRESS DESIGN AT ALL LOAD STAGES. ADDITIONALLY, ALL BEAMS SHALL BE DESIGNED TO MINIMIZE CAMBER, BUT SHALL HAVE A POSITIVE UPWARD CAMBER AFTER ALL LOSSES.
- DEFLECTIONS, JACKING FORCE/STRAND-HAL FORCE IN INDIVIDUAL STRAND BEFORE ANY LOSSES HAVE OCCURRED, AS SET FORTH BY AASHTO SPECIFICATIONS INITIAL PRESTRESS FORCE-TOTAL PRESTRESS FORCE IN BEAM AT RELEASE AFTER LOSSES DUE TO ELASTIC SHORTENING, CREEP AND SHRINKAGE HAVE BEEN DEDUCTED.
- FINAL PRESTRESS FORCE-TOTAL PRESTRESS FORCE IN BEAM AT SERVICE LOADS AFTER ALL LOSSES HAVE OCCURRED.
- BRIDGE GROUT: DUE TO THE DESIGN OF THE STANDARD ELASTOMERIC BEARING PAD, BRIDGE GROUTS SHALL BE LIMITED TO 5 PER CENT OR LESS WHEN USING THESE PADS. IN CASES WHERE THE GROUT MAY BE GREATER THAN 5 PER CENT, A SPECIALLY DESIGNED PAD WILL BE REQUIRED.
- DIMENSIONAL TOLERANCES SHALL BE AS SPECIFIED BY DIVISION VI, SECTION 8.4 OF THE P.C.I. "MANUAL FOR QUALITY CONTROL", 3RD EDITION.
- THIS SHEET TO BE USED WITH STANDARD SHEET BR-1 OR BR-1A, BR-1B, BR-1C, BR-1D, BR-1E, BR-1F, BR-1G, BR-1H, BR-1I, BR-1J, BR-1K, BR-1L, BR-1M, BR-1N, BR-1O, BR-1P, BR-1Q, BR-1R, BR-1S, BR-1T, BR-1U, BR-1V, BR-1W, BR-1X, BR-1Y, BR-1Z, BR-2A, BR-2B, BR-2C, BR-2D, BR-2E, BR-2F, BR-2G, BR-2H, BR-2I, BR-2J, BR-2K, BR-2L, BR-2M, BR-2N, BR-2O, BR-2P, BR-2Q, BR-2R, BR-2S, BR-2T, BR-2U, BR-2V, BR-2W, BR-2X, BR-2Y, BR-2Z, BR-3A, BR-3B, BR-3C, BR-3D, BR-3E, BR-3F, BR-3G, BR-3H, BR-3I, BR-3J, BR-3K, BR-3L, BR-3M, BR-3N, BR-3O, BR-3P, BR-3Q, BR-3R, BR-3S, BR-3T, BR-3U, BR-3V, BR-3W, BR-3X, BR-3Y, BR-3Z, BR-4A, BR-4B, BR-4C, BR-4D, BR-4E, BR-4F, BR-4G, BR-4H, BR-4I, BR-4J, BR-4K, BR-4L, BR-4M, BR-4N, BR-4O, BR-4P, BR-4Q, BR-4R, BR-4S, BR-4T, BR-4U, BR-4V, BR-4W, BR-4X, BR-4Y, BR-4Z, BR-5A, BR-5B, BR-5C, BR-5D, BR-5E, BR-5F, BR-5G, BR-5H, BR-5I, BR-5J, BR-5K, BR-5L, BR-5M, BR-5N, BR-5O, BR-5P, BR-5Q, BR-5R, BR-5S, BR-5T, BR-5U, BR-5V, BR-5W, BR-5X, BR-5Y, BR-5Z, BR-6A, BR-6B, BR-6C, BR-6D, BR-6E, BR-6F, BR-6G, BR-6H, BR-6I, BR-6J, BR-6K, BR-6L, BR-6M, BR-6N, BR-6O, BR-6P, BR-6Q, BR-6R, BR-6S, BR-6T, BR-6U, BR-6V, BR-6W, BR-6X, BR-6Y, BR-6Z, BR-7A, BR-7B, BR-7C, BR-7D, BR-7E, BR-7F, BR-7G, BR-7H, BR-7I, BR-7J, BR-7K, BR-7L, BR-7M, BR-7N, BR-7O, BR-7P, BR-7Q, BR-7R, BR-7S, BR-7T, BR-7U, BR-7V, BR-7W, BR-7X, BR-7Y, BR-7Z, BR-8A, BR-8B, BR-8C, BR-8D, BR-8E, BR-8F, BR-8G, BR-8H, BR-8I, BR-8J, BR-8K, BR-8L, BR-8M, BR-8N, BR-8O, BR-8P, BR-8Q, BR-8R, BR-8S, BR-8T, BR-8U, BR-8V, BR-8W, BR-8X, BR-8Y, BR-8Z, BR-9A, BR-9B, BR-9C, BR-9D, BR-9E, BR-9F, BR-9G, BR-9H, BR-9I, BR-9J, BR-9K, BR-9L, BR-9M, BR-9N, BR-9O, BR-9P, BR-9Q, BR-9R, BR-9S, BR-9T, BR-9U, BR-9V, BR-9W, BR-9X, BR-9Y, BR-9Z, BR-10A, BR-10B, BR-10C, BR-10D, BR-10E, BR-10F, BR-10G, BR-10H, BR-10I, BR-10J, BR-10K, BR-10L, BR-10M, BR-10N, BR-10O, BR-10P, BR-10Q, BR-10R, BR-10S, BR-10T, BR-10U, BR-10V, BR-10W, BR-10X, BR-10Y, BR-10Z, BR-11A, BR-11B, BR-11C, BR-11D, BR-11E, BR-11F, BR-11G, BR-11H, BR-11I, BR-11J, BR-11K, BR-11L, BR-11M, BR-11N, BR-11O, BR-11P, BR-11Q, BR-11R, BR-11S, BR-11T, BR-11U, BR-11V, BR-11W, BR-11X, BR-11Y, BR-11Z, BR-12A, BR-12B, BR-12C, BR-12D, BR-12E, BR-12F, BR-12G, BR-12H, BR-12I, BR-12J, BR-12K, BR-12L, BR-12M, BR-12N, BR-12O, BR-12P, BR-12Q, BR-12R, BR-12S, BR-12T, BR-12U, BR-12V, BR-12W, BR-12X, BR-12Y, BR-12Z, BR-13A, BR-13B, BR-13C, BR-13D, BR-13E, BR-13F, BR-13G, BR-13H, BR-13I, BR-13J, BR-13K, BR-13L, BR-13M, BR-13N, BR-13O, BR-13P, BR-13Q, BR-13R, BR-13S, BR-13T, BR-13U, BR-13V, BR-13W, BR-13X, BR-13Y, BR-13Z, BR-14A, BR-14B, BR-14C, BR-14D, BR-14E, BR-14F, BR-14G, BR-14H, BR-14I, BR-14J, BR-14K, BR-14L, BR-14M, BR-14N, BR-14O, BR-14P, BR-14Q, BR-14R, BR-14S, BR-14T, BR-14U, BR-14V, BR-14W, BR-14X, BR-14Y, BR-14Z, BR-15A, BR-15B, BR-15C, BR-15D, BR-15E, BR-15F, BR-15G, BR-15H, BR-15I, BR-15J, BR-15K, BR-15L, BR-15M, BR-15N, BR-15O, BR-15P, BR-15Q, BR-15R, BR-15S, BR-15T, BR-15U, BR-15V, BR-15W, BR-15X, BR-15Y, BR-15Z, BR-16A, BR-16B, BR-16C, BR-16D, BR-16E, BR-16F, BR-16G, BR-16H, BR-16I, BR-16J, BR-16K, BR-16L, BR-16M, BR-16N, BR-16O, BR-16P, BR-16Q, BR-16R, BR-16S, BR-16T, BR-16U, BR-16V, BR-16W, BR-16X, BR-16Y, BR-16Z, BR-17A, BR-17B, BR-17C, BR-17D, BR-17E, BR-17F, BR-17G, BR-17H, BR-17I, BR-17J, BR-17K, BR-17L, BR-17M, BR-17N, BR-17O, BR-17P, BR-17Q, BR-17R, BR-17S, BR-17T, BR-17U, BR-17V, BR-17W, BR-17X, BR-17Y, BR-17Z, BR-18A, BR-18B, BR-18C, BR-18D, BR-18E, BR-18F, BR-18G, BR-18H, BR-18I, BR-18J, BR-18K, BR-18L, BR-18M, BR-18N, BR-18O, BR-18P, BR-18Q, BR-18R, BR-18S, BR-18T, BR-18U, BR-18V, BR-18W, BR-18X, BR-18Y, BR-18Z, BR-19A, BR-19B, BR-19C, BR-19D, BR-19E, BR-19F, BR-19G, BR-19H, BR-19I, BR-19J, BR-19K, BR-19L, BR-19M, BR-19N, BR-19O, BR-19P, BR-19Q, BR-19R, BR-19S, BR-19T, BR-19U, BR-19V, BR-19W, BR-19X, BR-19Y, BR-19Z, BR-20A, BR-20B, BR-20C, BR-20D, BR-20E, BR-20F, BR-20G, BR-20H, BR-20I, BR-20J, BR-20K, BR-20L, BR-20M, BR-20N, BR-20O, BR-20P, BR-20Q, BR-20R, BR-20S, BR-20T, BR-20U, BR-20V, BR-20W, BR-20X, BR-20Y, BR-20Z, BR-21A, BR-21B, BR-21C, BR-21D, BR-21E, BR-21F, BR-21G, BR-21H, BR-21I, BR-21J, BR-21K, BR-21L, BR-21M, BR-21N, BR-21O, BR-21P, BR-21Q, BR-21R, BR-21S, BR-21T, BR-21U, BR-21V, BR-21W, BR-21X, BR-21Y, BR-21Z, BR-22A, BR-22B, BR-22C, BR-22D, BR-22E, BR-22F, BR-22G, BR-22H, BR-22I, BR-22J, BR-22K, BR-22L, BR-22M, BR-22N, BR-22O, BR-22P, BR-22Q, BR-22R, BR-22S, BR-22T, BR-22U, BR-22V, BR-22W, BR-22X, BR-22Y, BR-22Z, BR-23A, BR-23B, BR-23C, BR-23D, BR-23E, BR-23F, BR-23G, BR-23H, BR-23I, BR-23J, BR-23K, BR-23L, BR-23M, BR-23N, BR-23O, BR-23P, BR-23Q, BR-23R, BR-23S, BR-23T, BR-23U, BR-23V, BR-23W, BR-23X, BR-23Y, BR-23Z, BR-24A, BR-24B, BR-24C, BR-24D, BR-24E, BR-24F, BR-24G, BR-24H, BR-24I, BR-24J, BR-24K, BR-24L, BR-24M, BR-24N, BR-24O, BR-24P, BR-24Q, BR-24R, BR-24S, BR-24T, BR-24U, BR-24V, BR-24W, BR-24X, BR-24Y, BR-24Z, BR-25A, BR-25B, BR-25C, BR-25D, BR-25E, BR-25F, BR-25G, BR-25H, BR-25I, BR-25J, BR-25K, BR-25L, BR-25M, BR-25N, BR-25O, BR-25P, BR-25Q, BR-25R, BR-25S, BR-25T, BR-25U, BR-25V, BR-25W, BR-25X, BR-25Y, BR-25Z, BR-26A, BR-26B, BR-26C, BR-26D, BR-26E, BR-26F, BR-26G, BR-26H, BR-26I, BR-26J, BR-26K, BR-26L, BR-26M, BR-26N, BR-26O, BR-26P, BR-26Q, BR-26R, BR-26S, BR-26T, BR-26U, BR-26V, BR-26W, BR-26X, BR-26Y, BR-26Z, BR-27A, BR-27B, BR-27C, BR-27D, BR-27E, BR-27F, BR-27G, BR-27H, BR-27I, BR-27J, BR-27K, BR-27L, BR-27M, BR-27N, BR-27O, BR-27P, BR-27Q, BR-27R, BR-27S, BR-27T, BR-27U, BR-27V, BR-27W, BR-27X, BR-27Y, BR-27Z, BR-28A, BR-28B, BR-28C, BR-28D, BR-28E, BR-28F, BR-28G, BR-28H, BR-28I, BR-28J, BR-28K, BR-28L, BR-28M, BR-28N, BR-28O, BR-28P, BR-28Q, BR-28R, BR-28S, BR-28T, BR-28U, BR-28V, BR-28W, BR-28X, BR-28Y, BR-28Z, BR-29A, BR-29B, BR-29C, BR-29D, BR-29E, BR-29F, BR-29G, BR-29H, BR-29I, BR-29J, BR-29K, BR-29L, BR-29M, BR-29N, BR-29O, BR-29P, BR-29Q, BR-29R, BR-29S, BR-29T, BR-29U, BR-29V, BR-29W, BR-29X, BR-29Y, BR-29Z, BR-30A, BR-30B, BR-30C, BR-30D, BR-30E, BR-30F, BR-30G, BR-30H, BR-30I, BR-30J, BR-30K, BR-30L, BR-30M, BR-30N, BR-30O, BR-30P, BR-30Q, BR-30R, BR-30S, BR-30T, BR-30U, BR-30V, BR-30W, BR-30X, BR-30Y, BR-30Z, BR-31A, BR-31B, BR-31C, BR-31D, BR-31E, BR-31F, BR-31G, BR-31H, BR-31I, BR-31J, BR-31K, BR-31L, BR-31M, BR-31N, BR-31O, BR-31P, BR-31Q, BR-31R, BR-31S, BR-31T, BR-31U, BR-31V, BR-31W, BR-31X, BR-31Y, BR-31Z, BR-32A, BR-32B, BR-32C, BR-32D, BR-32E, BR-32F, BR-32G, BR-32H, BR-32I, BR-32J, BR-32K, BR-32L, BR-32M, BR-32N, BR-32O, BR-32P, BR-32Q, BR-32R, BR-32S, BR-32T, BR-32U, BR-32V, BR-32W, BR-32X, BR-32Y, BR-32Z, BR-33A, BR-33B, BR-33C, BR-33D, BR-33E, BR-33F, BR-33G, BR-33H, BR-33I, BR-33J, BR-33K, BR-33L, BR-33M, BR-33N, BR-33O, BR-33P, BR-33Q, BR-33R, BR-33S, BR-33T, BR-33U, BR-33V, BR-33W, BR-33X, BR-33Y, BR-33Z, BR-34A, BR-34B, BR-34C, BR-34D, BR-34E, BR-34F, BR-34G, BR-34H, BR-34I, BR-34J, BR-34K, BR-34L, BR-34M, BR-34N, BR-34O, BR-34P, BR-34Q, BR-34R, BR-34S, BR-34T, BR-34U, BR-34V, BR-34W, BR-34X, BR-34Y, BR-34Z, BR-35A, BR-35B, BR-35C, BR-35D, BR-35E, BR-35F, BR-35G, BR-35H, BR-35I, BR-35J, BR-35K, BR-35L, BR-35M, BR-35N, BR-35O, BR-35P, BR-35Q, BR-35R, BR-35S, BR-35T, BR-35U, BR-35V, BR-35W, BR-35X, BR-35Y, BR-35Z, BR-36A, BR-36B, BR-36C, BR-36D, BR-36E, BR-36F, BR-36G, BR-36H, BR-36I, BR-36J, BR-36K, BR-36L, BR-36M, BR-36N, BR-36O, BR-36P, BR-36Q, BR-36R, BR-36S, BR-36T, BR-36U, BR-36V, BR-36W, BR-36X, BR-36Y, BR-36Z, BR-37A, BR-37B, BR-37C, BR-37D, BR-37E, BR-37F, BR-37G, BR-37H, BR-37I, BR-37J, BR-37K, BR-37L, BR-37M, BR-37N, BR-37O, BR-37P, BR-37Q, BR-37R, BR-37S, BR-37T, BR-37U, BR-37V, BR-37W, BR-37X, BR-37Y, BR-37Z, BR-38A, BR-38B, BR-38C, BR-38D, BR-38E, BR-38F, BR-38G, BR-38H, BR-38I, BR-38J, BR-38K, BR-38L, BR-38M, BR-38N, BR-38O, BR-38P, BR-38Q, BR-38R, BR-38S, BR-38T, BR-38U, BR-38V, BR-38W, BR-38X, BR-38Y, BR-38Z, BR-39A, BR-39B, BR-39C, BR-39D, BR-39E, BR-39F, BR-39G, BR-39H, BR-39I, BR-39J, BR-39K, BR-39L, BR-39M, BR-39N, BR-39O, BR-39P, BR-39Q, BR-39R, BR-39S, BR-39T, BR-39U, BR-39V, BR-39W, BR-39X, BR-39Y, BR-39Z, BR-40A, BR-40B, BR-40C, BR-40D, BR-40E, BR-40F, BR-40G, BR-40H, 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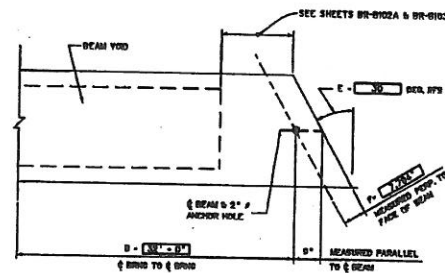
STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE DIV. NO.	COUNTY	SHEET NO.	TOTAL SHEETS
5308-43-12.29	N/A	02	CABELL	5	-



TYPICAL CROSS-SECTION WITH GUARDRAIL



DECK PLAN VIEW



ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	UNITS	QUANTITY
00000	PRESTRESSED CONCRETE BOX BEAM	LF	

## NOTES

- WHEN BRIDGE GUARDRAIL IS TO BE SUPPLIED BY THE BEAM FABRICATOR, COST OF ALL BRIDGE GUARDRAIL ITEMS TO INCLUDE POSTS, RAIL ELEMENTS, ATTACHMENT HARDWARE, AND MISCELLANEOUS ITEMS NEEDED TO COMPLETELY INSTALL BRIDGE GUARDRAIL SHALL BE INCLUDED IN ITEM 00000 "PRESTRESSED CONCRETE BOX BEAM".
- THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-8104 & 5 THRU BR-842A & 3, BR-8100, BR-8102A & 5, BR-8103, BR-8104, BR-8105A & 5 AND BR-8106.

APPROVED: John E. H. DATE: 10-04-13  
 WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 PRESTRESSED CONCRETE BEAM  
 DESIGN AND ASSEMBLY NOTES  
 STANDARD SHEET BR-8101

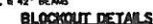
CONTROL DIMENSIONS		
DESCRIPTION	CODE	VALUE
OVERALL BEAM LENGTH	A	33' - 0"
SPAN LENGTH, & BEARING TO & BEARING	B	32' - 0"
SUPERSTRUCTURE WIDTH - OUT TO OUT	C	24' - 5 1/2"
ROADWAY WIDTH - FACE OF PARAPET TO FACE OF PARAPET	D	24' - 5 1/2"
NUMBER OF BEAMS REQUIRED		5
BEAM SIZE (WIDTH & DEPTH)		17' 6" x 38 1/2"
SKEW ANGLE (NORMAL, DEG. RPS OR DCL, LPS)	E	30 RPS
PERPENDICULAR DISTANCE FROM FACE OF BEAM TO & BEARING	F	7.704'
MILD BEARING COURSE REQUIRED (YES/NO)		NO
THICKNESS OF BEARING COURSE & OF DECK OR ROADWAY	G	
THICKNESS OF BEARING COURSE & EDGE OF DECK OR PARAPET	H	
TL-2 BRIDGE GUARDRAIL SYSTEM REQUIRED (YES/NO)		YES
FABRICATOR TO SUPPLY TL-2 BRIDGE GUARDRAIL (YES/NO)		YES
FABRICATOR TO INSTALL BRIDGE GUARDRAIL FROM TO SHIPMENT (YES/NO) IF NO, FABRICATOR TO SHIP (YES/NO)		YES
NUMBER OF GUARDRAIL POST SHEETS REQUIRED PER SIDE		5
TYPE F PARAPET REQUIRED (YES/NO)		NO
DRAGS REQUIRED (YES/NO)		NO
NUMBER OF DRAGS REQUIRED PER SIDE		
10" CURB REQUIRED (YES/NO)		NO

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION

BRIDGE NO.: 5308-43-12.29  
 OVER  
 LONG BRANCH  
 OR  
 CR 43  
 IN  
 CABELL COUNTY

PRESTRESSED CONCRETE BEAM  
 DESIGN & ASSEMBLY NOTES

DESIGNED BY/	DATE
CHECKED BY/	DATE
REVIEWED BY/	DATE
SCALE	
SHEET NO. OF	
BRIDGE NUMBER	



APPROVED: *Lynne Bailey*  
-----  
SENIOR, DESIGNING DIVISION

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
DESIGNING DIVISION

PRESSRESSED CONCRETE BEAM  
SKETCHED END REINFORCING  
MSC.DESIGN AND ASSEMBLY DETAILS

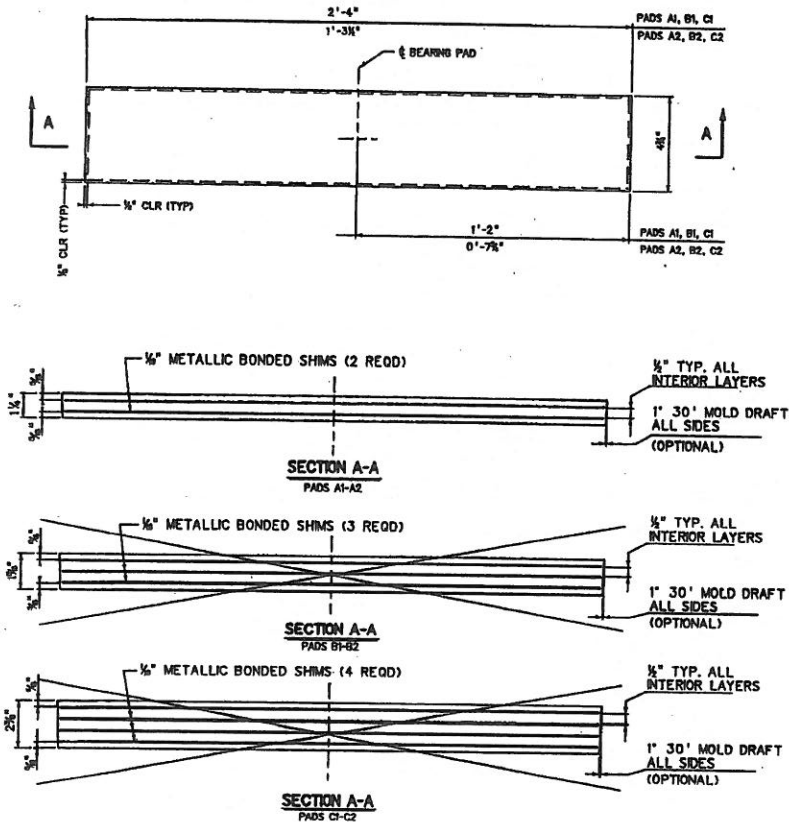
STANDARD SHEET BR-8102A

PRESTRESSED CONCRETE BEAM  
SKEWED END REINFORCING  
MISC.DESIGN AND ASSEMBLY DETAILS

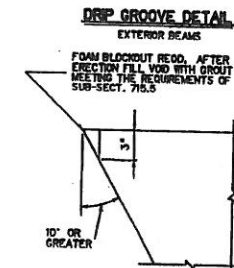
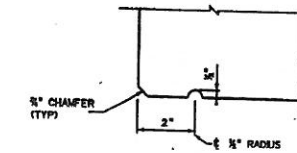
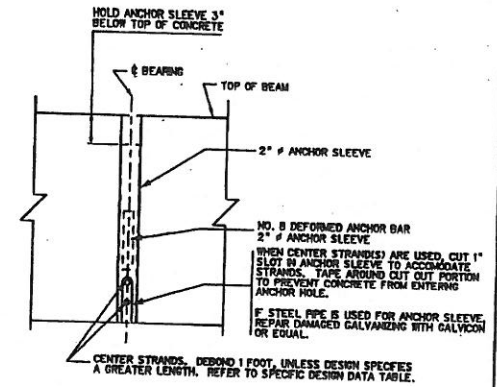
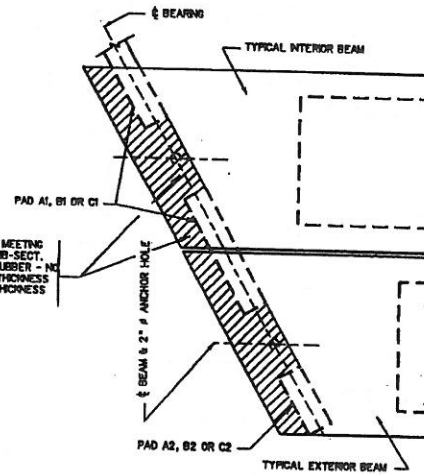
DESIGNED BY: THB/
DRAWN BY: THB/
CHECKED BY: TM/
REVIEWED BY: TW/
DATE:
SCALE:
SHEET _____ OF _____
BRIDGE NO.



STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE DIST. NO.	COUNTY	SHEET NO.	TOTAL SHEETS
S306-43-12.29	N/A	02	CABELL	-	-



PREFORMED JOINT FILLER MEETING THE REQUIREMENTS OF SUB-SECT. 705.11 (TYPE 1 SPONGE RUBBER - NO COLOR REQUIREMENTS). THICKNESS SHALL BE BEARING PAD THICKNESS PLUS 1/4". (TYPICAL)



## NOTES:

- ELASTOMERIC BEARING PADS ARE DESIGNED IN ACCORDANCE WITH DESIGN METHOD B CONTAINED IN SECTION 14 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 18 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.
- ALL BEARINGS ARE DESIGNED FOR A LOW-TEMPERATURE ZONE C AND SHALL HAVE A DUROMETER HARDNESS OF 80. METALLIC REINFORCEMENT SHALL HAVE A MINIMUM YIELD STRENGTH OF 36 KSI.
- BEARING PADS ARE DESIGNED FOR ZERO BRIDGE GRADE. FOR BRIDGE GRADES GREATER THAN 5%, PADS SHALL BE SPECIFICALLY DESIGNED FOR THE GRADE. AS AN ALTERNATE, CAST-IN-PLACE BEVELED SOLE PLATES MAY BE USED.
- DESIGNER, FABRICATOR AND ERECTOR SHALL BE AWARE THAT SKEWED END BEAMS MAY TWIST OR WARP, CAUSING UNEVEN BEAM SEATING AT THE BEARINGS. THE CONTRACTOR IS REQUIRED TO CORRECT AT THE TIME OF ERECTION, BEFORE THE BEAMS ARE SECURED IN PLACE. METHOD OF CORRECTION SHALL PROVIDE AN EVEN, TOTAL BEARING AND A LEVEL TOP BEAM SURFACE. TOLERANCE AFTER CORRECTION SHALL BE ± 1/8 INCH. THE FABRICATOR SHALL NOTIFY THE CONTRACTOR AND DESIGNER IF CORRECTIONS ARE REQUIRED PRIOR TO SHIPMENT.
- FOR BEAMS WITH STEPPED ENDS USE PADS A2, B2, OR C2 ON BOTH SIDES OF EACH BEAM.
- ELASTOMERIC BEARING PADS SHALL BE INCLUDED IN THE PRICE OF THE BEAMS.
- THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-817A & B THRU BR-842A & B, BR-850, BR-851, BR-852A, BR-853, BR-854, BR-855A & B AND BR-108 AS APPROPRIATE.

BOX BEAM BEARING PAD CONTROL DIMENSIONS

PAD	LENGTH	WIDTH	HEIGHT	NO. SHIMS	SHIM SIZE	SPACING RANGES	APPROX. REACTION	MAXIMUM MOVEMENT ONE DIRECTION
A1	48"	28"	1 1/4"	2	1/2" x 4 1/2" x 2 1/2" - 3/8"	20' - 38'	55 KIPS	0.39"
B1	48"	28"	1 1/4"	3	1/2" x 4 1/2" x 2 1/2" - 3/8"	40' - 78'	78 KIPS	0.80"
C1	48"	28"	1 1/4"	4	1/2" x 4 1/2" x 2 1/2" - 3/8"	80' - 100'	99 KIPS	1.02"
A2	48"	18 1/2"	1 1/4"	2	1/2" x 4 1/2" x 1 1/2" - 3/8"	20' - 38'	28 KIPS	0.39"
B2	48"	18 1/2"	1 1/4"	3	1/2" x 4 1/2" x 1 1/2" - 3/8"	40' - 78'	38 KIPS	0.80"
C2	48"	18 1/2"	1 1/4"	4	1/2" x 4 1/2" x 1 1/2" - 3/8"	80' - 100'	48 KIPS	1.02"

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION

BRIDGE NO.: S306-43-12.29

OVER  
LONG BRANCH

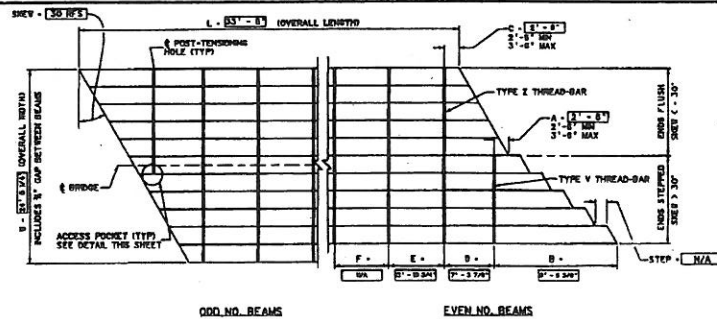
CITY  
CR 43

CABELL COUNTY

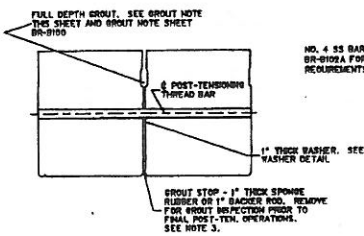
PRESTRESSED CONCRETE BEAM  
ELASTOMERIC BEARING PAD DETAILS  
MISC. DESIGN AND ASSEMBLY DETAILS

DESIGNED BY: THB/  
DRAWN BY: THB/  
CHECKED BY: TM/  
REVIEWED BY: THB/  
DATE:  
SCALE:  
SHEET  
OF  
BRIDGE NO.

APPROVED: *James B. Smith*  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION  
PREPARED: 10-04-13  
STANDARD SHEET BR-8102B



POST-TENSIONING BAR SPACING PLAN  
SKEW = 20°



GROUT DETAILS

#### PROCEDURE NOTES

- INSTALL ONE INCH THICK WASHER AND GROUT STOP BY BLIND TO ONE SIDE, FOR THE ENTIRE LENGTH OF EACH BEAM FROM TO SETTING BEAMS. BLUE SHALL BE AN APPROVED CONSTRUCTION TYPE BLUE OR EPOXY ADHESIVE. GROUT STOP MAY BE INSTALLED AFTER BEAMS ARE SET.
  - BLUE A 1" x 3" x 3" PIECE OF PRESSURE TREATED PLYWOOD AT EACH THREAD-BAR LOCATION TO INSURE THAT A 1" GAP IS OBTAINED. PLYWOOD SPACERS TO BE OFFSET APPROXIMATELY 3 FEET FROM THE THREAD-BAR HOLE AND CENTERED ON THE HOLE DEPTH. PLYWOOD SPACERS ARE REQUIRED ON ONLY ONE BEAM END FACE OF ANYTHING BEAMS. AFTER THE BEAMS ARE SET AND THE THREAD-BARS INSTALLED, FULL THE ENTIRE SUPERSTRUCTURE TOGETHER BY APPLYING A POST-TENSIONING FORCE OF APPROXIMATELY 3000 POUNDS. AT THIS STAGE THE GAP BETWEEN BEAMS SHALL BE A UNIFORM 1" WITH ALL SHEET REMOVED. RECORD THE ACTUAL FORCE APPLIED.
  - FILL THE GAP BETWEEN BEAMS AND SHEAR KEY FULL DEPTH WITH THE PRE-APPROVED, PRE-TESTED GROUT MIXTURE. FROM EACH BATCH, PREPARE JOB CONTROL GROUT CUBES FOR THREE AND SEVEN DAY TESTS. THESE JOB CONTROL SAMPLES WILL BE USED TO DETERMINE WHEN THE GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI. A MINIMUM OF THREE SPECIMENS PER TEST SHALL BE OBTAINED, AND THE AVERAGE OF THE TEST RESULTS USED. ACCEPTANCE SAMPLING AND TESTING OF THE GROUT IS THE RESPONSIBILITY OF THE CONTRACTOR; HOWEVER, A REPRESENTATIVE OF THE AGENCY SHALL WITNESS ALL OF THE ACCEPTANCE SAMPLING AND TESTING.
- TEST PROCEDURE SHALL BE ASTM C939 AS MODIFIED BY ASTM C937. IN NO INSTANCE SHALL THE CONTRACTOR PROCEED WITH POST-TENSIONING OR OTHER BEAM ERECTION PROCEDURES UNTIL THE REQUIRED MINIMUM GROUT STRENGTH IS ATTAINED AND VERIFIED BY THE ENGINEER. IN THE EVENT THAT THE MINIMUM GROUT STRENGTH IS NOT ATTAINED, THE ENGINEER SHALL BE NOTIFIED AND CORRECTIVE ACTION TAKEN AT THE DISCRETION OF THE ENGINEER. SEE SHEAR KEY GROUT NOTE, SHEET BR-9100 FOR ADDITIONAL REQUIREMENTS.
- AFTER THE GROUT HAS REACHED AN INITIAL SET CONDITION AND PRIOR TO ANY FINAL POST-TENSIONING PROCEDURES, THE CONTRACTOR SHALL REMOVE THE GROUT STOP AND INSPECT THE GROUT FOR VOIDS OR OTHER DISCONTINUITIES. ANY VOIDS DEEPER THAN 3" FROM THE BOTTOM SHALL BE REROUTED IN A MANNER ACCEPTABLE TO THE ENGINEER.
- AFTER GROUT AS BEEN PLACED AND REACHED IT'S MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AND HAS CURED A MINIMUM OF 3 DAYS, APPLY ONE OF THE FINAL POST-TENSIONING FORCE TO ALL THREAD-BARS. "STORAGE" BEAM ENDS TO "STORAGE" WATER ALL THREAD-BARS HAVE BEEN TENSIONED TO 50%; APPLY THE REMAINING PERCENTAGE OF FINAL POST-TENSIONING FORCE, WORKING IN THE SAME SEQUENCE AS THE FIRST STAGE OF FINAL TENSIONING.
  - MEASURE AND RECORD, IN THE ELONGATION TABLE, THIS SHEET, THE ACTUAL TOTAL ELONGATION OF EACH THREAD-BAR. COMPARE THE MEASURED ELONGATION TO THE CALCULATED ELONGATION. A SIGNIFICANT DIFFERENCE BETWEEN MEASURED AND CALCULATED ELONGATIONS COULD INDICATE IMPROPER JACKING TECHNIQUES, FAULTY MATERIALS, FAULTY JACKS, OR IMPROPERLY CALIBRATED JACKS. IF THE DIFFERENCE IS GREATER THAN 1%, THEN THE JACK SHALL BE RE-CALIBRATED AND THE JACKING TECHNIQUES EVALUATED. IF, AFTER THE ABOVE STEPS ARE TAKEN, THE PERCENTAGE DIFFERENCE IS GREATER THAN 1%, THEN THE CONTRACTOR SHALL BE NOTIFIED AND CORRECTIVE ACTION TAKEN AT THE DISCRETION OF THE ENGINEER. ALL COSTS INVOLVED IN CORRECTION SHALL BE AT THE CONTRACTORS EXPENSE.
  - USING BAR, TRIM EXCESS THREAD-BAR LEAVING 4" TO 6" PAST THE NUT. DO NOT TRIM THREAD-BARS BY TORCH CUTTING. TOUCH-UP TRIMMED ENDS WITH GALVANIZED OR EQUAL.
  - INSTALL ANCHOR DETAILS AS DETAIL ON STANDARD SHEETS BR-9101 AND BR-9102A.

#### SHEAR REINFORCEMENT DETAIL BEAMS WITH ACCESS POCKETS

FINAL POST-TENSIONING FORCE  
TYPE 2 BARS - 80 KIPS  
TYPE V BARS - 40 KIPS

POST-TENSIONING BAR LAYOUT SCHEDULE	
SPAN	1
SKW	30 RFS
L	33' - 0"
W	24' - 0 1/4"
A	8' - 6"
B	9' - 6 3/8"
C	2' - 5"
D	7' - 3 1/8"
E	10' - 10 3/4"
F	N/A
STEP	N/A

#### GROUT STRENGTH TABLE

		3 DAY (PSI)		7 DAY (PSI)	
		PRE-TEST STRENGTH	JOB CONTROL STRENGTH	GROUT TYPE & MANUFACTURER	
1					
2					
3					

#### ELONGATION (INCHES)

BAR	CODE	DATE	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	NO. 9	NO. 10
Z	②											
V	②											
CALCULATED ② = WPTJ / 24.8			CALCULATED ② = WPTJ / 99.2			CALCULATED ② = WPTJ / 31 / 99.2						

#### REINFORCING DETAILS @ DIAPHRAGM EXTERIOR BEAM & POCKETS ONLY

DIMENSIONS	
BEAM SIZE	REINFORCEMENT DIST
H	F J K S
IN.	IN. IN. IN.
17	12 2 4 8 1/2
21	12 4 4 10 1/2
27	18 4 4 13 1/2
33	24 4 4 18 1/2
39	30 4 4 20 1/2
42	33 4 4 21

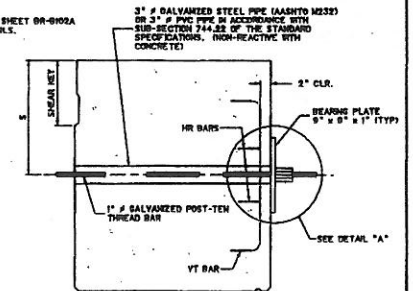
#### REINFORCING BAR DETAIL ALL BARS OR 60 - EPOXY COATED

1. DO NOT STAND IN LINE WITH THE POST-TENSIONING BAR DURING TENSIONING PROCEDURES.
2. NUTS, CONEPLUGS AND EXTENSION RODS USED ON THE POST-TENSIONING WORK SHALL BE THE MATERIAL APPROVED BY THE MANUFACTURER OF THE HIGH STRENGTH POST-TENSIONING RODS. IN NO CASE SHALL THE CONTRACTOR USE UNAPPROVED MATERIAL OR MATERIAL FROM TWO DIFFERENT SOURCES.

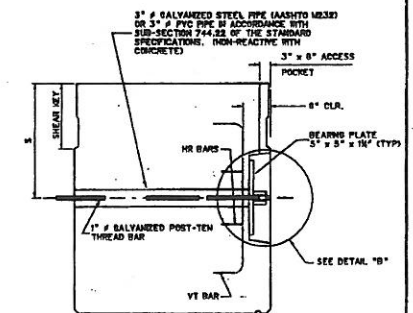
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION  
BRIDGE NO.: S306-43-12.29  
over  
LONG BRANCH  
on  
CR 43  
in  
CABELL COUNTY  
PRESTRESSED CONCRETE BEAM  
TRANSVERSE POST-TENSIONING DETAILS  
STANDARD SHEET BR-9103

STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE PROJECT NO.	COUNTY	SHEET NO.	TOTAL SHEETS
WV-43-12.29	N/A	NR	CABELL	8	-

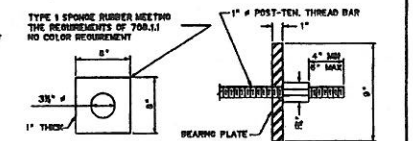
REFER TO STANDARD SHEET BR-9102A FOR SHEAR KEY DETAILS.



POST-TENSIONING BAR DETAILS



ACCESS POCKET, END POST-TENSIONING BAR



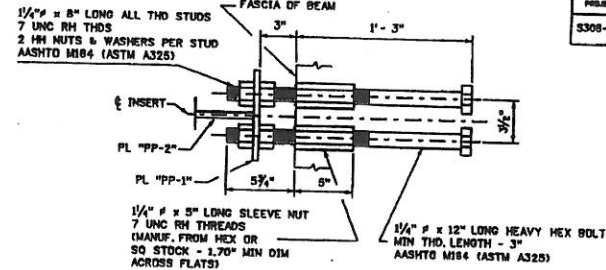
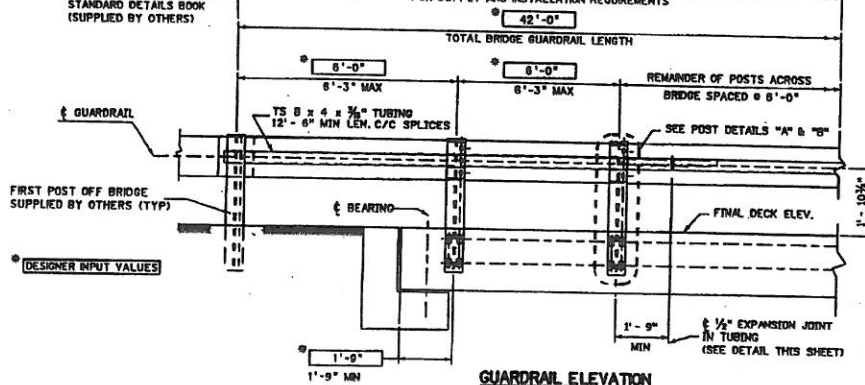
WASHER DETAIL

SPACE POST-TENSIONING THREAD BARS TO AVOID COMFLICT WITH DIAPHRAGM INSERTS.

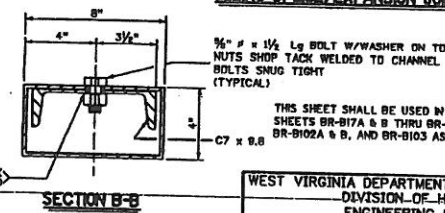
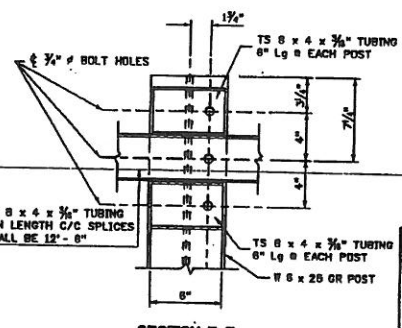
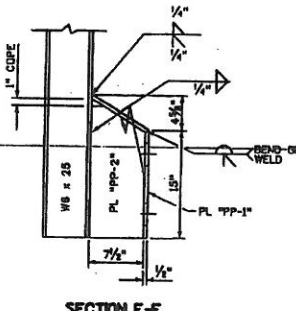
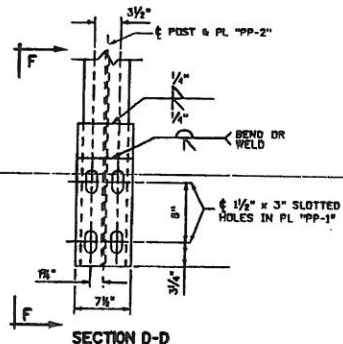
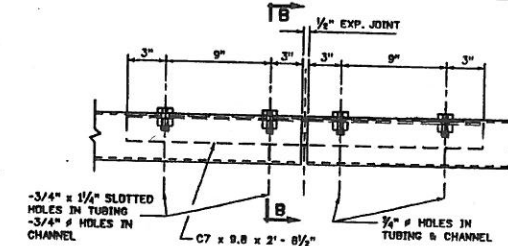
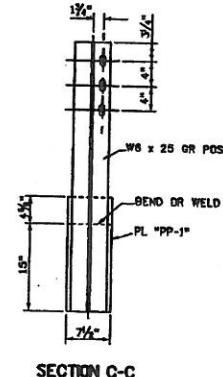
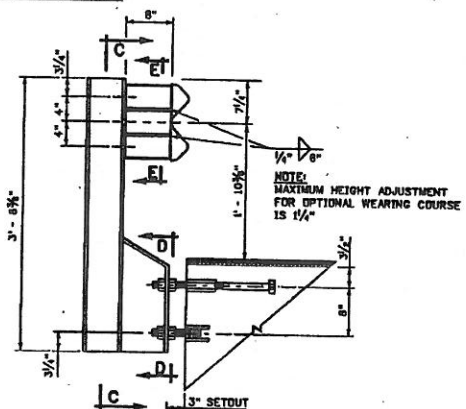
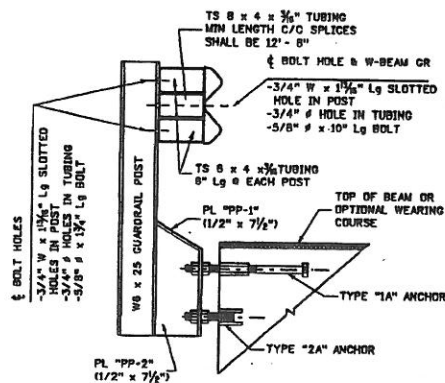
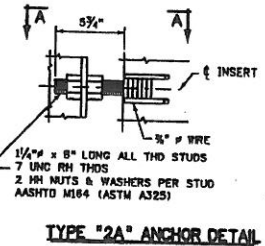
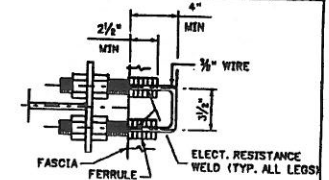
THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-9101 & 2 THRU BR-9102A & B, BR-9103, BR-9104, BR-9105, BR-9106, BR-9107, BR-9108, BR-9109, BR-9110, BR-9111, BR-9112, BR-9113, BR-9114, BR-9115, BR-9116, BR-9117, BR-9118, BR-9119, BR-9120, BR-9121, BR-9122, BR-9123, BR-9124, BR-9125, BR-9126, BR-9127, BR-9128, BR-9129, BR-9130, BR-9131, BR-9132, BR-9133, BR-9134, BR-9135, BR-9136, BR-9137, BR-9138, BR-9139, BR-9140, BR-9141, BR-9142, BR-9143, BR-9144, BR-9145, BR-9146, BR-9147, BR-9148, BR-9149, BR-9150, BR-9151, BR-9152, BR-9153, BR-9154, BR-9155, BR-9156, BR-9157, BR-9158, BR-9159, BR-9160, BR-9161, BR-9162, BR-9163, BR-9164, BR-9165, BR-9166, BR-9167, BR-9168, BR-9169, BR-9170, BR-9171, BR-9172, BR-9173, BR-9174, BR-9175, BR-9176, BR-9177, BR-9178, BR-9179, BR-9180, BR-9181, BR-9182, BR-9183, BR-9184, BR-9185, BR-9186, BR-9187, BR-9188, BR-9189, BR-9190, BR-9191, BR-9192, BR-9193, BR-9194, BR-9195, BR-9196, BR-9197, BR-9198, BR-9199, BR-9200, BR-9201, BR-9202, BR-9203, 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BRIDGE APPROACH GUARDRAIL  
SEE SHEETS GRI THRU GRII,  
STANDARD DETAILS BOOK  
(SUPPLIED BY OTHERS)

NOTE TO BEAM FABRICATOR, REFER TO BR-8101  
FOR SUPPLY AND INSTALLATION REQUIREMENTS



STATE	FEDERAL	STATE	COUNTY	SHEET	TOTAL
PROJECT NUMBER	PROJECT NUMBER	DATE		NO.	SHEETS
5308-43-12.29	N/A	02	CABELL	-	-



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION

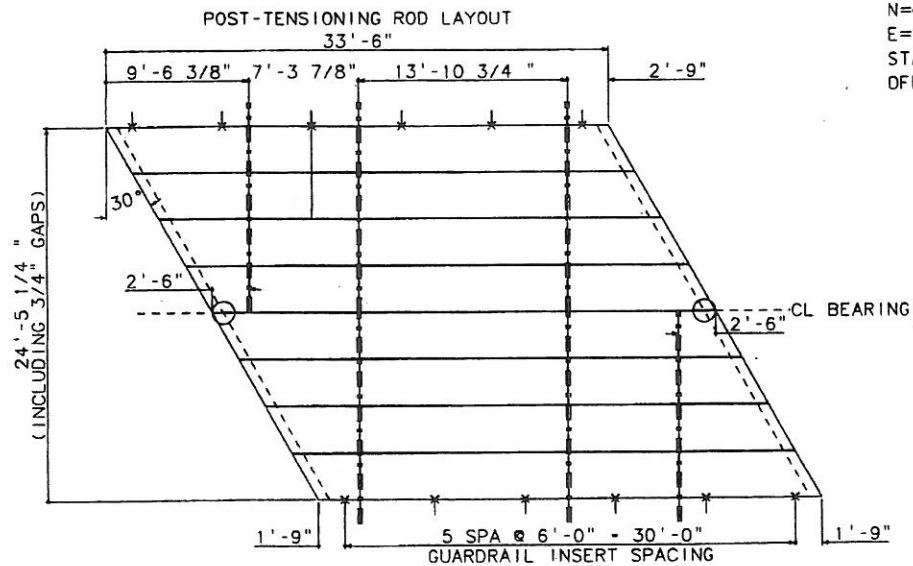
BRIDGE NO.: 5308-43-12.29  
OVER  
LONG BRANCH  
ON  
CR 43  
IN  
CABELL COUNTY

PRESTRESSED CONCRETE BEAM  
TYPE TL-2 GUARDRAIL SYSTEM  
DESIGN & ASSEMBLY DETAILS

DESIGNED BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE
STANDARD SHEET BR-8104	

Public Road No.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
V.	02	S308 -43- 12.29	N/A	2014	CABELL		

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E=1584846.8390  
STA=3+16.19  
OFF=0.03' (0.010m)



N=487704.5617  
E=1584868.9925  
STA=3+48.19  
OFF=0.03' (0.010m)

BEAM, GUARDRAIL & POST-TENSIONING ROD LAYOUT

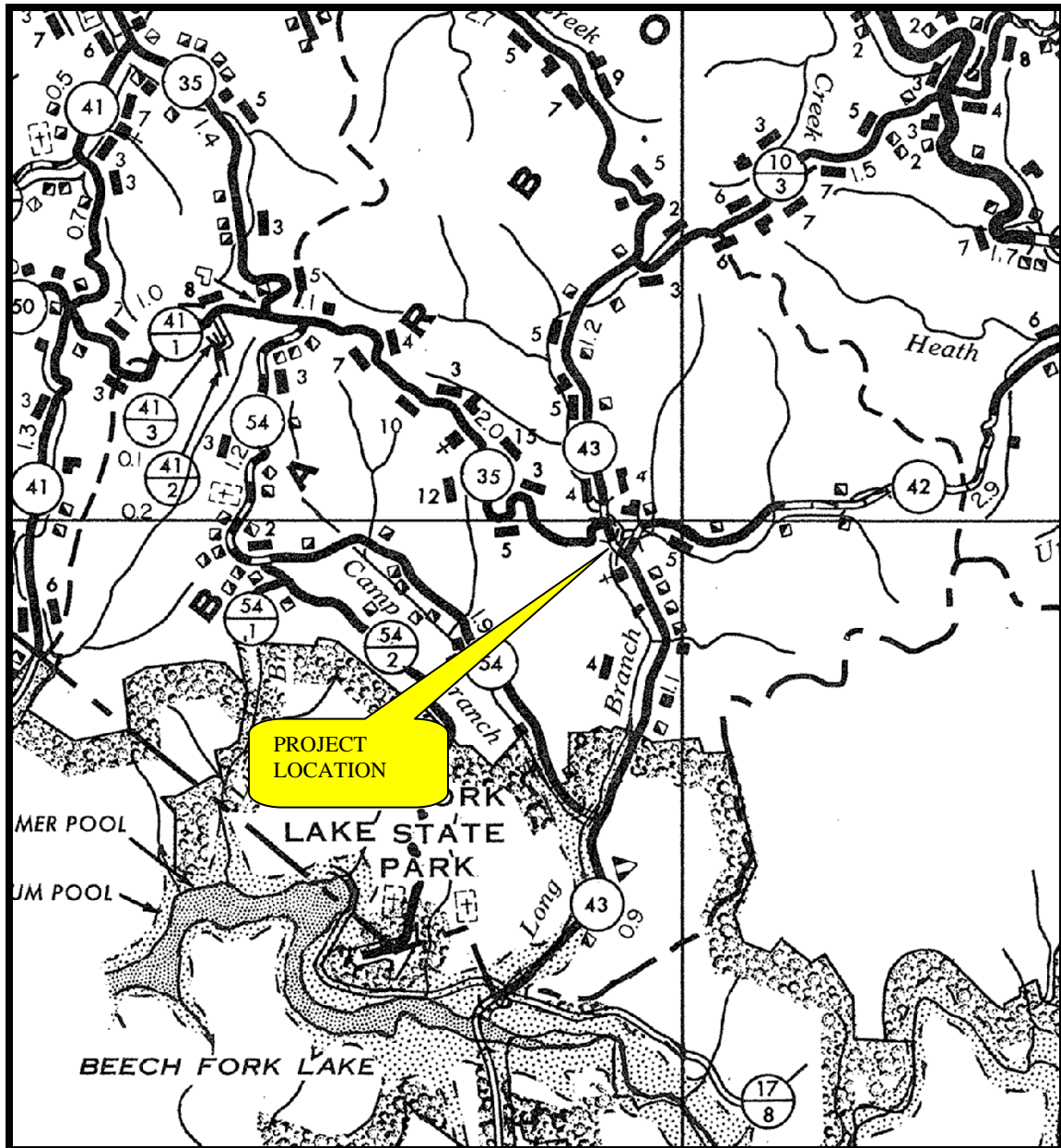
DESIGNED	DATE	REVISION	SHEET	DATE	BY
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION					
DIVISION OF HIGHWAYS					
BRIDGE NO.: S06-43-12.29					
OVER					
LONG BRANCH					
ON					
COUNTY ROUTE 43					
IN					
CABELL COUNTY					
SHEET					
OF					
BRIDGE NO.					

# EXHIBIT D

RFQ# 02-14-0354

HENRY FRANCE CONCRETE SLAB

06-43-12.29





# VENDOR PREFERENCE CERTIFICATE

Certification and application\* is hereby made for Preference in accordance with **West Virginia Code**, §5A-3-37. (Does not apply to construction contracts). **West Virginia Code**, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the **West Virginia Code**. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

**1. Application is made for 2.5% vendor preference for the reason checked:**

- \_\_\_\_ Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or**,  
 \_\_\_\_ Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or**,  
 \_\_\_\_ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or**,

**2. Application is made for 2.5% vendor preference for the reason checked:**

- \_\_\_\_ Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,

**3. Application is made for 2.5% vendor preference for the reason checked:**

- \_\_\_\_ Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,

**4. Application is made for 5% vendor preference for the reason checked:**

- \_\_\_\_ Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or**,

**5. Application is made for 3.5% vendor preference who is a veteran for the reason checked:**

- \_\_\_\_ Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or**,

**6. Application is made for 3.5% vendor preference who is a veteran for the reason checked:**

- \_\_\_\_ Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

**7. Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with West Virginia Code §5A-3-59 and West Virginia Code of State Rules.**

- \_\_\_\_ Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

**Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.**

Bidder: \_\_\_\_\_

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_



RFQ No. 02140354STATE OF WEST VIRGINIA  
Purchasing Division**PURCHASING AFFIDAVIT**

**MANDATE:** Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

**EXCEPTION:** The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**DEFINITIONS:**

**"Debt"** means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

**"Employer default"** means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

**"Related party"** means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

**WITNESS THE FOLLOWING SIGNATURE:**

Vendor's Name: \_\_\_\_\_

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

State of \_\_\_\_\_

County of \_\_\_\_\_, to-wit:

Taken, subscribed, and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

My Commission expires \_\_\_\_\_, 20\_\_.

AFFIX SEAL HERE

NOTARY PUBLIC \_\_\_\_\_

*Purchasing Affidavit (Revised 07/01/2012)***NOTE:****Vendor and Notary's date must be the same.****Notary required to AFFIX SEAL on Purchasing Affidavit.**