

20221207 - December's Specification Committee Meeting

December Specifications Committee Meeting Agenda

Meeting Date

Wednesday, December 7, 2022 @ 9:00am

Meeting Location: 1334 Smith Street, Charleston, WV in Lower Level Conference

Also meeting virtually via Google Meet video conference. E-mail distribution message includes instruction.

Approved Permanent Specification changes from last Committee meeting (10/5/22)

- **642.7.1-Temporary Pollution Control, Unit Value Method, & 642.9-Pay Item.** Adds unit value method to the section.
- **711.5.3-Approval, 711.6.1.1-General, 711.22.1-General, 711.22.4-Top Coat, & 711.23-Sample Submission and Approval.** Update clarifies NTPEP testing & adds subsection on Sample Submission and Approval.
- **106.1-Source of Supply and Quality Requirements.** Updating the Buy America requirements to correlate with new federal law (Infrastructure Investment and Jobs Act).
- **623.2-Materials & 623.6.5-Combined Aggregate Gradation.** Update adds tolerances and quality assurance sampling requirements to ensure a more uniform concrete mix.

Approved Project Specific Special Provisions (SP) from last Committee meeting (10/5/22)

- None

Items removed from Committee Agenda

- None

Old Business-Provisions discussed at last Committee meeting

SECTION	TITLE	DESCRIPTION
DBE	SP for DBE S. Johnson	This is an update to previously approved SP. 4th time to Committee. Discussed in August, Special Meeting, & October. Update to the DBE utilization Special Provision used on Federally Funded projects. The revision adds reference to the Civil Rights Compliance Division and updates DBE Participation Plan submission requirements. Provision has been updated; it is redline copy, showing the changes/updates to the existing special provision. Approval is expected in December.

708	<p>708.3-Joint And Crack Sealant, Hot-Poured for Concrete and Asphalt Pavements</p> <p>708.4.1.2-Test Requirements</p> <p>D. Simmons</p>	<p>2nd time to Committee; discussed at Special Meeting & October. Two specification changes to Section 708-Joint Materials. Update adds NTPEP testing requirements.</p> <p>No update to the specification is redline copy showing the revisions.</p> <p>Approval is expected in December.</p>
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New Business - New Provisions for Spec Committee

SECTION	TITLE	DESCRIPTION
628	<p>SP238-Ground Anchors</p> <p>A. Mongi</p>	<p>Update of previously approved SP; 1st time to Committee. Update revises terminology to ground anchors so that the provision could be used for both rock and soil anchors (where very deep bedrock is encountered).</p> <p>The SP is redline copy showing the revisions to current one.</p>
219	<p>219.4.2-Testing</p> <p>D. Brayack</p>	<p>1st time to Committee. Specification changes to Section 219-CLSM. Update clarifies daily set of cylinders requirement.</p> <p>The specification is redline copy showing the revisions.</p>
501 601 679	<p>501. 2-Materials, 501.3- Proportioning, 501.8-Mixing Concrete, 501.9-Placing Concrete, 51.12.5-Floating, &501.12.7-Final Finish</p> <p>601.2-Materials, 601.3- Proportioning, 601.7- Mixing, 601.10.2-Chutes and Troughs, 601.10.6- Placing Concrete Containing Fibers, & 601.11.5- Texturing & Grooving Bridge Decks Containing Fibers for Portland Cement Concrete</p> <p>679.2.1.6-Fibers, 679.2.2- Specialized Concrete Mix Design and Testing, 679.2.3.3-Proportioning and Mixing Equipment, 679.2.3.4-Mobile Mixer</p>	<p>1st time to Committee. Given the wide use of fibers in Portland cement concrete with several DOT's and several fiber companies showing interest in entering our approved list we have decided to pursue the inclusion of fibers into our standard specification. This fiber specification was constructed through dialogue with other DOT's, industry, academia, and peer reviewed at MCS&T. We believe that adding fibers into our Specification will help to achieve better performance of concrete as desired.</p> <p>Four specification changes</p> <ol style="list-style-type: none"> 1. Section 501-Portland Cement Concrete Pavements. Subsections 501.2, 501.3, 501.8, 501.9, 51.12.5, &501.12.7 2. Section 601-Structural Concrete. Subsections 601.2, 601.3, 601.7, 601.10.2, 601.10.6, & 601.11.5 3. Section 679-Overlaying Portland Cement Concrete Bridge Decks. Subsections 679.2.1.6, 679.2.2, 679.2.3.3, 679.2.3.4, 679.2.3.6, & 679.3.7.4.1 4. Subsection 715.3-Fibers for Portland Cement Concrete <p>The specification are redline copy showing the revisions.</p>

	Units, 679.2.3.6-Placing and Finishing Equipment, & 679.3.7.4.1-Surface Texturing Concrete Containing Fibers for Portland Cement Concrete
715	715.3-Fibers for Portland Cement Concrete M. Perrow

Comments

Comments are requested on these Specifications Changes and Project Specific Special Provisions. Please share your comments by **December 2, 2022**, they help in the decision making process.

Please Send Comments to: DOHSpecifications@wv.gov

Deadline for new items & updates to these provision is **January 6, 2023**.

If you are the 'champion' of any specification changes and/or project specific special provisions currently in the Specification Committee, it is your responsibility to edit/update/modify them in a timely manner per comments and discussion in Spec Committee. *Failure to submit updates may result in removal of item and/or delays.*

Next Meeting

Wednesday, **February 1, 2023 at 9:00 a.m.**

Meeting will be held virtually via Google Meet video conference. E-mail distribution message includes instruction.

Specification Webpage Updated

Technical Support Division now has a webpage and the specification webpage has moved. The Specification page is here: <https://transportation.wv.gov/highways/TechnicalSupport/specifications/>

2022 Standard Specification Roads and Bridges & 2022 Supplemental Specifications

Electronic Copy (pdf): The 2017 Standard Specifications Roads & Bridges & 2022 Supplemental Specifications can be viewed, printed, or downloaded from the Specifications Website.

Print Version: We are out of hard copies of the 2017 Standard Specifications Roads and Bridges. Hard copies of the 2022 Supplemental Specifications are available thru Technical Support Division. An order form for the book is on Specifications Website.

2023 Standard Specification Roads and Bridges

Electronic copy (pdf): The 2023 Standard Specifications Roads & Bridges will be posted on the Specifications Website ASAP. We are hoping to post it around mid-December.

Print Version: Hope to have hard copy of 2023 Standard Specifications Roads and Bridge in early 2023. We are anticipating to have it early March 2023.

2023 Specifications Committee

The Specification Committee typically meet every other month; on the first Wednesday. 2022 meetings will be held in February (2/1), April (4/5), June (6/7), August (8/2), October (10/4), and December (12/6).

Calendar subject to change, updates will be given, as needed.

Specifications Committee Website

A copy of the meeting agenda can be found on the Specifications Committee Website <https://transportation.wv.gov/highways/TechnicalSupport/specifications/SPECCOMIT/Pages/default.aspx>

Materials Procedures

Material Procedures (MPs) referenced in provisions are available upon request.

For questions regarding the Standard Specifications Road and Bridges, Supplemental Specifications, Project Specific Provisions, or the Specifications Committee please email DOHSpecifications@wv.gov

File Format Structure and Progression of items thru Specifications Committee

The purpose of the below protocol is to provide guidance on the file structure of Proposed Specifications & Project Specific Provisions as they progress thru Specifications Committee. This procedure would facilitate a means of tracking changes from meeting to meeting; as the agenda & provisions are posted publicly online on the Spec Committee website.

TYPES OF PROVISIONS:

There are three standard types of provisions typically discussed in committee:

1. Specification Changes – These are permanent changes to the WVDOT Standard Specifications.
 - Unless inserted into a project proposal, these changes typically go into effect in January (of subsequent year) with the Supplemental Specifications
2. Project Specific Special Provisions (SP) – Are applied to specifically designated projects.
3. Updates to previously approved SP – Changes/edits/updated to SP that have been approved by spec committee.

NEW BUSINESS ITEMS:

New items should be setup & submitted in the following format:

1. Specification Changes – Show as red-line copy (see note)
2. Project Specific Special Provisions (SP) – Will be shown in all black.
3. Updates to approved SP – Shown as red-line copy.

Each item should also include a description with:

- Brief overview of item
- Background info and/or reason for change

NOTE: Red-line copy is a form of editing which indicates removal or addition of text. You can redline a Microsoft Word document by using the built-in “Track Changes” feature or you can manually reline document with font color changes & strike-through.

OLD BUSINESS ITEMS:

Updated provisions that were discussed at the last committee meeting should be setup in the following format:

- Redline copy from prior meeting would not be shown
- Redline copy of new changes/updates (from previous meeting)

PROGRESSION OF ITEMS THRU COMMITTEE AND APPROVAL:

Depending on how important the project and/or comments/discussion of item at previous meeting, then several things can happen in no particular order.

- Few comments/discussion/minor changes...will recommend approval of item at next meeting
- A lot of comments/discussion...will not recommend approval at next meeting; item will be updated and reviewed again at the next meeting.
- SP's in committee may be used in advertised project. Hope to work to address comments & finish approving at subsequent meeting.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

DISADVANTAGED BUSINESS ENTERPRISE UTILIZATION

I. GENERAL:

The West Virginia Division of Highways (Division) is committed to assuring the participation of Disadvantaged Business Enterprises (DBEs) in our highway construction program managed by the Civil Rights Compliance (CRC) Division. In support of this commitment and in compliance with the requirements for contracts funded, in whole or part, with assistance from the United States Department of Transportation (USDOT), the Division requires that any contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of USDOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Division deems appropriate.

The contractor shall designate and make known to the Division a liaison officer who is assigned the responsibility of effectively administering and promoting an active program for utilization of Disadvantaged Business Enterprises (DBEs).

If a formal goal has not been designated for this contract, all contractors are encouraged to consider DBEs for subcontract work as well as for the supply of materials and services needed for the performance of this work.

The contractor is encouraged to use the services of banks owned and controlled by minorities or women. Agreements between a bidder/proposer and the DBE in which the DBE promises not to provide subcontracting quotations to other bidders/proposers are prohibited.

II. DEFINITIONS:

A. “Days” means calendar days. In computing any period of time described in this provision, the day from which the period begins to run is not counted, and when the last day of the period is a Saturday, Sunday, Federal holiday, or State holiday, the period extends to the next day that is not a Saturday, Sunday, Federal holiday, or State holiday. Similarly, in circumstances where the Division’s offices are closed for all or part of the last day, the period extends to the next day on which the agency is open.

B. “DBE Participation Plan” means a fully completed form as provided in Section C, entitled “Contractor’s Plan for DBE Participation.”

A.C. “DBE Written Confirmation” means a signed quote from the DBE(s) listed on the DBE Participation Plan.

B.D. “Disadvantaged Business Enterprise” means a firm that is certified as a DBE, in

accordance with the provisions of 49 CFR §26, by the West Virginia Department of Transportation's DBE Unified Certification Program.

C.E. "USDOT-assisted contract" means any contract between the Division and a contractor (at any tier) funded in whole or part with USDOT financial assistance, including letters of credit or loan guarantees, except a contract solely for the purchase of land.

D.F. "Good faith efforts" means efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

E.G. "Joint venture" means an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

F.H. "Primary industry classification" means the North American Industrial Classification System (NAICS) designation which best describes the primary business of a firm. The NAICS is described in the *North American Industry Classification Manual—United States*, which is available via the internet at the U.S. Census Bureau Web site: <http://www.census.gov/eos/www/naics/>.

III. DBE CERTIFICATION REQUIREMENTS:

- A. In order to be classified as a DBE under this specification, a firm must be approved by the DBE Unified Certification Program prior to the letting date of any project in which a firm wants to participate as DBE.
- B. Under 49 CFR Part 26.71(n), DBE firms are not certified in general terms, in a way that makes every type of work performed eligible for DBE credit. Rather, the WVDOT, through its Unified Certification Program, will grant certification to a firm only for specific types of work which the socially and economically disadvantaged owners have the ability to control.
- C. The DBE rule requires all certification actions, including those expanding the types of work a firm is authorized to perform for DBE credit, to be made final before the date on which bidders on a prime contract must respond to a solicitation [49 CFR 26.81(c)].
- D. The DBE Uniform Certification Application and related documents, as well as the directories of certified DBE consulting and contracting firms, may also be obtained from the Division online at: <http://www.transportation.wv.gov/eo/DBE/Pages/default.aspx>

IV. DBE GOAL:

- A. The DBE goal determined by the West Virginia Division of Highways for this contract is _____% of the contract bid amount.
- B. The contractor shall indicate its goal in the appropriate space in Section C, Item 3 – Contractor's Goal for DBE Participation, of the Notice contained in the project proposal. The goal so indicated will be used in determining the award of the contract in accordance with this Special Provision and Section 103 of the Standard Specifications.

V. CONTRACTOR'S DBE PLAN:

A. Plan requirements. All bidders are ~~encouraged~~ required to submit their DBE Participation Plan ~~(Section C – Contractor’s Plan for DBE Participation)~~ with their bid; on www.BidX.com, as described in the Notice contained in the project proposal. Failure to submit the DBE Participation Plan will cause the bid to be deemed irregular and accordingly rejected. Submission of the DBE Participation Plan constitutes an agreement by the bidder to provide the required DBE Written Confirmation associated with the DBE Participation Plan at the time required by the Division. However, the DBE Written Confirmation from each listed DBE firm that is participating in the contract in the kind and amount of work provided in the apparent lowest responsible bidder’s commitment must be submitted to the Civil Rights Compliance (CRC) Division via email at dot.eeo@wv.gov within 5 days after bid opening, as a matter of responsibility or no later than 5 calendar days after bid opening. A Participation Plan form is attached to this provision. The Plan shall include the following:

- ~~1. Name of DBE Subcontractor(s) or Suppliers(s).~~
- ~~2. Description of work each is to perform, to include: Line Number, Item Number, Description, Type of Work, Quantity, Unit, Unit Cost and Total Cost.~~
- ~~3. The dollar value of each proposed DBE subcontract and the percentage of the total contract value represented by combined DBE participation; the extent to which payments to DBEs may be counted as DBE participation is set forth in Section VIII., DBE Participation Requirements, below.~~
- ~~4. Written and signed documentation of the bidder’s commitment to use a DBE subcontractor whose participation is being utilized to meet the DBE contract goal.~~
- ~~5. Written and signed confirmation from the DBE that it is participating in the contract as provided in the prime contractor’s commitment.~~
- ~~6. Plans may be submitted by e mail to DOT.EEO@wv.gov, fax 304-558-4236, or personal delivery and must be received by the WVDOT CRC Division no later than 4:00 p.m. eastern time on the submission due date.~~

B. Effect of Failure to Submit a Plan Required DBE Written Confirmation. The apparent lowest responsible bidder who does not submit the required DBE Written Confirmation within 5 days after the bid opening will be in breach of this Special Provision, and the Division shall revoke the bidder’s prequalification status for a period of twelve (12) months. a DBE Participation plan with the bid shall submit it no later than 5 calendar days after the bid opening as a matter of responsibility. Failure to submit all required information within the required time frame shall be just cause for the annulment of award; and the amount of the guaranty deposited with the Proposal may be retained by the Division and deposited in the Division of Highways Fund, not as a penalty, but as liquidated damages. Award may then be made to the next lowest responsible bidder, or the work may be readvertised or otherwise, as the Division may decide.

In the event that the apparent lowest responsible bidder fails to provide the DBE Written Confirmation as required, the Division may then, in its sole discretion, consider awarding the contract to the next apparent lowest responsible bidder, readvertise the work, or otherwise proceed as the Division deems appropriate. If the Division decides to consider awarding the contract to the next apparent lowest responsible bidder, upon notification of the same, said bidder will be given 5 days to submit their required DBE Written Confirmation.

In the event that the next apparent lowest responsible bidder fails to submit their required DBE Written Confirmation, they will be in breach of this Special Provision, and the Division shall revoke the bidder's prequalification status for a period of twelve (12) months.

The Division may then, in its sole discretion, proceed to each successively remaining apparent lowest responsible bidder and consider awarding the contract, readvertise the work, or otherwise proceed as the Division deems appropriate. In each case, upon notification, if the next successive apparent lowest responsible bidder fails to submit their required DBE Written Confirmation within 5 days, they will be in breach of this Special Provision, and the Division shall revoke the bidder's prequalification status for a period of twelve (12) months.

Nothing herein precludes any bidder, including one who is not the initial apparent lowest responsible bidder, from submitting their DBE Written Confirmation in advance of the contract being awarded.

- C. Qualification of DBEs in Plan.** In order to be accepted under this program all DBE subcontractors and suppliers of materials or services must be certified for the applicable Type of Work and NAICS code, in accordance with Section III of this provision, at the time of the letting.

If a DBE firm has not been certified for the type of work it is intending to perform on a given contract, then the Division of Highways cannot count the firm's participation on that contract toward meeting DBE contract goals or the agency's overall DBE goal. If a bidder has submitted a bid with DBE participation in response to the DBE goal, and the DBE firm named in the bid documents has not been certified in the type of work that the DBE firm would perform on the contract, then the bid shall not be considered because it does not qualify as a responsible bid.

- D. Changes to DBE Participation Plan.** The contractor shall utilize the specific DBEs listed on the DBE Participation Plan to perform the work and supply the materials for which each is listed unless the contractor obtains written consent by the CRC Division. Unless written consent is provided, the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

- E. Termination of a DBE from DBE Participation Plan.** A prime contractor cannot terminate a DBE subcontractor listed on an approved DBE Participation Plan without good cause, documented by the prior written consent of the Division. For the purposes of this paragraph, good cause includes, but is not limited to, the following circumstances:

1. The listed DBE subcontractor fails or refuses to execute a written contract;
2. The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;
3. The listed DBE subcontractor fails or refuses to meet the prime contractor's after-bid-award reasonable, non-discriminatory bond requirements;
4. The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

5. The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant to 2 CFR Parts 180, 215, and 1200 or applicable State law;
 6. The WV Department of Transportation has determined that the listed DBE subcontractor is not a responsible contractor;
 7. The listed DBE subcontractor voluntarily withdraws from the project and provides written notice to the Division of its withdrawal;
 8. The listed DBE is ineligible to receive DBE credit for the type of work required;
 9. A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;
 10. Other documented good cause as determined by the Division.
- F. Termination without Good Cause.** Good cause does not exist if the prime contractor seeks to terminate a DBE upon which it relied to obtain the contract if the reason for the proposed termination is so that the prime contractor can self-perform the work for which the DBE contractor was engaged or so that the prime contractor can substitute another DBE or non-DBE contractor after contract award.
- G. Procedure for Terminating DBE from DBE Participation Plan.** In order to obtain Division approval to terminate and/or substitute a DBE subcontractor, the following steps are required:
1. The prime contractor must give notice in writing to the DBE subcontractor, with a copy to the Division, of its intent to request to terminate and/or substitute; the notice must state the reason for the termination and/or substitution and must give the DBE subcontractor five (5) calendar days to respond to the notice.
 2. The DBE subcontractor must respond to the notice within the five calendar day period and advise the Division and the prime contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Division should not approve the prime contractor's action; if required in a particular case as a matter of public necessity (*e.g.* safety), the Division may provide a response period shorter than five days.
 3. In addition to post-award terminations, the provisions of this bullet (G) *Procedure for Terminating DBE from DBE Participation Plan* apply to pre-award deletions of, or substitutions for, DBE firms put forward by offerors in negotiated procurements.

VI. CONTRACT AWARD REQUIREMENTS:

- A. Good Faith Efforts Required.** In order to be deemed responsible and be awarded this contract, a bidder must demonstrate good faith efforts to meet the DBE goal established by the Division. The bidder can meet this good faith requirement in either of two ways:
1. The bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose on a Contractor's Plan for DBE Participation (a sample is attached to this Special Provision), or
 2. The bidder can document adequate good faith efforts showing that the bidder took all necessary and reasonable steps to achieve a DBE goal which, by their scope, intensity, and appropriateness to the objective, would be reasonably expected to obtain sufficient DBE participation, even if they were not fully successful.

The following is a list of types of actions that will be considered as part of the bidder's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

- a. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.
- b. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.
- c. Providing interested DBEs with adequate information about the plans, specifications and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- d. Negotiating in good faith with interested DBEs.
 - i. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
 - ii. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.
- e. Not rejecting DBEs as unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal.

- f. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance required by the Division or contractor.
- g. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- h. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

- B. Determining Good Faith Efforts.** In determining whether a bidder has made good faith efforts, the Division may take into account the performance of other bidders in meeting the contract. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, the Division may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders, the Division may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts.
- C. Documentation of Good Faith Effort.** When the established contract goal is not being met, all documentation of good faith effort must be submitted to the CRC Division, and must be received no later than five (5) calendar days after bid opening as a matter of responsibility. Contractors who fail to demonstrate that good faith efforts were made prior to the bid shall not be eligible to be awarded the contract. The Division may take any efforts it deems appropriate to assure the completeness and accuracy of documentation submitted to demonstrate good faith efforts.
- D. Bidder's Assurance.** The bidder's signature in Section J of the Notice contained in this proposal shall be written assurance he/she will comply with this special provision. The Contractor's proposed DBE goal percent (Section C Item 3) must be completed or the bid will be deemed irregular.
- E. Failure to Demonstrate Good Faith Effort.** A bid that fails to demonstrate good faith effort MUST be excluded from consideration as non-responsible. Under 49 CFR 26.53(a), when there is a contract goal the Division "must award the contract only to a bidder who makes a good faith effort to meet it." Federal funds cannot be used to fund contract activities that are not in compliance with 49 CFR Part 26. If the Division determines that the apparent successful bidder has failed to meet the requirements to demonstrate good faith effort, the Division will, before taking any further action, provide the bidder an opportunity for administrative reconsideration of the Division's determination.
1. As part of this reconsideration, the bidder will have the opportunity to provide written documentation or argument concerning the issue of whether it made adequate good faith effort, by either meeting the contract goal or by documenting its actions to do so.
 2. The Division's decision on reconsideration will be made by an official who did not take part in the original determination that the bidder failed to make adequate good faith effort.

3. The bidder will have the opportunity to meet in person with the reconsideration official to discuss the issue of whether it made adequate good faith effort.
4. The Division will send the bidder a written decision on reconsideration, explaining the basis for finding that the bidder did or did not make good faith effort.
5. The result of the reconsideration process is not appealable to the U.S. Department of Transportation.

VII. CONTRACT COMPLIANCE REQUIREMENTS:

Each contractor or subcontractor that fails to carry out the requirements set forth below will be subject to a breach of contract and, after notification to the Federal Highway Administration, the West Virginia Division of Highways may terminate the contract or subcontract or initiate other such remedy as deemed appropriate.

- A. Policy.** It is the policy of the West Virginia Division of Highways to ensure non-discrimination in the award and administration of USDOT-assisted contracts, to create a level playing field on which DBEs can compete fairly for USDOT-assisted contracts, to ensure that the DBE program is narrowly tailored in accordance with applicable law, to ensure that only firms that fully meet eligibility standards are permitted to participate as DBEs, to help remove barriers to the participation of DBEs in USDOT-assisted contracts, and to assist in the development of firms that can compete successfully in the marketplace outside the DBE program. Consequently, the DBE requirements of 49 CFR Part 26 apply to this contract.
- B. DBE Obligation.** By execution of the contract, the contractor expressly accepts and agrees to the following assurance, and further agrees to include this assurance in each and every subcontract executed between the prime contractor and a subcontractor: The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of USDOT-assisted contracts.
- C. Sanctions.** Failure by the prime contractor to fulfill the DBE requirements and to demonstrate good faith efforts constitutes a breach of contract. In the event of a breach of contract, the Division may take the following actions:
 1. Withholding of progress payments.
 2. Withholding payment to the prime contractor in an amount equal to the unmet portion of the contract goal.
 3. Termination of the contract.
 4. Such other remedy as the Division deems appropriate.
- D. Records and Reports.** All contractors must keep detailed records and provide regular reports to the Division on a quarterly basis, or as requested, on their progress in meeting contractual DBE obligations. These records may include, but are not be limited to, payroll, lease agreements, cancelled payroll checks, cancelled supply and material checks, and executed subcontracting agreements. At the end of each quarter, prime contractors will be requested to submit certified reports on monies paid to each DBE subcontractor/supplier on all active USDOT-assisted contracts.

VIII. COUNTING DBE PARTICIPATION TOWARD GOAL REQUIREMENTS:

The Division will only count expenditures to a DBE contractor toward DBE goals if the DBE is performing a commercially useful function on the contract. A commercially useful function is generally being performed when a DBE is responsible for the execution of a distinct element of the work and is carrying out its responsibilities by actually performing, managing and supervising the work involved in accordance with normal industry practice (except where such practices are inconsistent with the DBE regulations and these guidelines) and when the DBE firm receives due compensation as agreed upon for the work performed. Regardless of whether an arrangement between the contractor and the DBE represent standard industry practice, if the arrangement erodes the ownership, control or independence of the DBE or does not meet the commercially useful function requirement, sanctions against the DBE firm and the prime contractor may be pursued.

A. DBE Management: The DBE must be responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The DBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering materials, and installing (where applicable) and paying for the material itself. The DBE must perform the work of the contract with its own work force.

If a DBE does not perform or exercise responsibility for at least 30 percent of the total cost of its contract with its own work force, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, the Division will presume that the DBE is not performing a commercially useful function; the DBE may present evidence to rebut this presumption.

When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the DBE's subcontractor is itself a DBE. Work that a DBE subcontracts to a non-DBE firm does not count toward DBE goals.

The Division's decisions on commercially useful function are reviewable by the Federal Highway Administration, but are not appealable to the USDOT.

B. Equipment: In order to perform a commercially useful function the DBE subcontractor shall be responsible for any equipment necessary to complete the work within the approved Participation Plan.

1. The DBE may lease equipment consistent with standard industry practices.
 - a. The DBE shall be responsible for negotiating the cost, arranging for the delivery of, and paying for leased equipment.
 - b. Copies of the lease agreements shall be submitted for approval by the Division prior to the work being performed.
 - c. The DBE subcontractor shall provide paid invoices to the Division for all leased equipment.
2. The cost of equipment leased from the prime contractor or its affiliates will not be counted towards the goal. The Division does not consider a DBE subcontractor as performing a commercially useful function when it leases equipment from a prime contractor and the equipment is a critical element of the DBE's ability to perform its contract. All leasing agreements, including incidental equipment leasing agreements between the prime contractor and the DBE subcontractor must be

submitted to and approved by the WVDOT ~~EEO-CRC~~ Division prior to performance of the work.

C. Materials: The DBE shall negotiate the cost, determine quality and quantity, arrange delivery of, install (where applicable) and pay for the materials and supplies required for the work of the contract. Invoices for materials should be in the name of the DBE firm not the prime contractor. The Division will count expenditures by DBEs for materials or supplies toward DBE goals as provided in the following;

1. If the materials or supplies are obtained from a DBE manufacturer, count 100 percent of the cost of the materials or supplies toward DBE goals. For the purposes of this paragraph, a manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.
2. If the materials or supplies are purchased from a DBE regular dealer, count 60 percent of the cost of the materials or supplies toward DBE goals. A regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers.

3. With respect to materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of materials or supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals, provided the fees are reasonable and not excessive as compared with fees customarily allowed for similar services. The Division will not count any portion of the cost of the materials and supplies themselves toward DBE goals, however.

The WVDOT may allow the use of joint checks to purchase material/supplies used by the DBE when the following conditions are met: (1) the prime contractor acts solely as a guarantor, (2) the DBE must release the check to the supplier, (3) such payment arrangements are available to all subcontractors and not restricted to DBE's, (4) advance approval is obtained by WVDOT ~~EEO-CRC~~ Division.

4. If the materials or supplies are obtained from the prime contractor or an affiliate of the prime contractor, the cost of the materials or supplies will not be counted toward the goal.

D. DBE Trucking Firms: To be certified as a DBE trucking firm, the firm must own at least one fully operational truck that is fully licensed and insured and that is used on a day to day basis. DBE trucking firms must be covered by a subcontract or a written agreement approved by the DOT ~~EEO-CRC~~ office prior to performing their portion of the work. In order to perform a commercially useful function, the DBE trucking firm is restricted to the same subcontracting limitation in effect for other contractors. The DBE trucking firm must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a this contract, and there cannot be a contrived arrangement for the purpose of meeting DBE goals.

1. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
2. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
3. The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit for the total value of transportation services provided by DBE-owned trucks on the contract. The DBE is entitled to credit for the total value of transportation services provided by non-DBE lessees not to exceed the value of transportation services provided by DBE-owned trucks on the contract.

Example – DBE Firm X uses two of its own trucks on a contract. It leases two trucks from DBE Firm Y and six trucks from non-DBE Firm Z. DBE credit would be awarded for the total value of transportation services provided by Firm X and Firm Y, and may also be awarded the total value of transportation services provided by four of the six trucks provided by Firm Z. In all, full credit would be allowed for the participation of eight trucks. With respect to the other two trucks provided by Firm Z, DBE credit could be awarded only for the fees or commissions pertaining to those trucks Firm X receives as a result of the lease with firm Z.

4. A lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

G. Suspensions and Decertification's: If any DBE listed on the *Contractor's DBE Plan* has been suspended or decertified as a DBE **before** the execution of a subcontract agreement between the Prime and the DBE, the DBE's proposed work cannot be counted toward the project's DBE goal. Conversely, if a DBE has been suspended or decertified **after** the Prime and the DBE have executed a subcontract agreement, the contractor may continue to use the DBE and will continue to receive credit toward the project's DBE goal.

H. North American Industrial Classification (NAIC):

DBE work can only be counted toward meeting the contract DBE goal if the work to be performed by the DBE is:

1. Within the Type of Work for which the DBE is certified AND
2. Within the classification of the North American Industry Classification System (6 digit NAIC codes) approved for the DBE.

PARTICIPATION OF A DBE SUBCONTRACTOR WILL NOT BE COUNTED TOWARD A CONTRACTOR'S FINAL COMPLIANCE WITH ITS DBE OBLIGATIONS ON A CONTRACT UNTIL THE AMOUNT BEING COUNTED HAS ACTUALLY BEEN PAID TO THE DBE.

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**WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISADVANTAGED BUSINESS ENTERPRISE UTILIZATION
CONTRACTOR’S PLAN FOR DBE PARTICIPATION**

[1] DBE Sub-Contractor or Supplier	[2] Line Number	[3] Item Number	[4] Description	[5] Type of Work (from DBE Directory)	[6] Quantity	[7] Unit	[8] Unit Cost	[9] Total Cost

[10] CONTRACTOR’S DBE GOAL: TOTAL COST OF ALL DBE PARTICIPATION \$ _____ . PERCENT OF TOTAL BID AMOUNT: _____

EXPLANATORY NOTES:

- “DBE Sub-Contractor” (column [1]), for the purpose of this certificate, means a disadvantaged business as defined by Special Provisions in this Proposal.
- If material is to be supplied, the figure in column [9] shall not exceed 60% of the actual cost unless the material is manufactured by a DBE; if material IS manufactured by a DBE, 100% of the cost may be recorded.
- If material is not supplied by a regular dealer as defined in 49 C.F.R. 26.55€(2)(ii), the figure in column [9] shall only include a reasonable and customary fee or commission for providing a bona fide service.
- For line [10], enter the total cost of DBE participation and the percentage of the total contract bid amount that this total DBE cost represents.
- The Contractor’s authorized signature on this plan shall serve as documentation of commitment to use the DBE subcontractor(s) listed above by the contractor to meet the contract goal.
- The Contractor shall submit written and signed confirmation from the DBE that it is participating in the contract **as provided in the prime contractor’s commitment.**

Authorized Signature _____

Title _____

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 708
JOINT MATERIALS**

708.3-JOINT AND CRACK SEALANT, HOT-POURED FOR CONCRETE AND ASPHALT PAVEMENTS:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE THE FOLLOWING:

This material shall meet the requirements of ASTM D6690, and shall be evaluated by NTPEP. Unless otherwise specified, Type II sealant shall be used.

708.4-SILICONE JOINT SEALANT; JOINT BACK-UP MATERIAL:

708.4.1-Silicone Joint Sealant:

708.4.1.2-Test Requirements:

DELETE THE FIRST PARAGRAPH OF SUBSECTION 708.4.1.2 AND REPLACE THE FOLLOWING:

The sealant shall meet the following requirements, and shall be evaluated by NTPEP.

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 628

ROCKGROUND-ANCHORS

628.1-GENERAL:

628.1.1-Description: This work shall consist of furnishing and installing ~~rock ground~~ anchors in accordance with this special provision, AASHTO LRFD Bridge Construction Specifications (4th Edition, 2017), and in reasonably close conformity with the dimensions, locations and details shown on the Plans or established by the Engineer.

628.1.2-Prequalification of Contractor: A contractor experienced in permanent ~~rock ground~~ anchor installation shall perform the ~~rock ground~~ anchor work. The anchor contractor's qualifications must be submitted to the Engineer fourteen (14) calendar days before ~~rock ground~~ anchor work begins. The following is a list of the requirements:

1. The contractor must be experienced in the design and construction of permanently anchored walls.
2. The contractor's staff shall include at least one registered Professional Engineer in the state of West Virginia with at least five years of supervisory experience in the design and construction of permanently anchored walls.
3. The foreman shall have a minimum of five years' experience in constructing permanently anchored walls.
4. The contractor shall have constructed (or have under construction) a minimum of five projects (in the last five years) that are similar in concept and scope to the proposed wall.

628.1.3-CONTRACTOR'S DESIGNS:

The Contractor shall prepare a complete design for the anchors they propose to use. This design shall conform to the criteria on the Plans, Specifications, and other documents referenced therein. The design shall be based on the Contractor's experience on similar work and on accepted practice described in AASHTO LRFD Bridge Construction Specifications "Section 6: Ground Anchors". The design shall also include the corrosion protection scheme for the tendon as well as the anchor head.

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The Contractor is cautioned that the soil and rock information shown on the Plans is based on a limited number of borings. The actual conditions and elevations may differ from those shown.

Any design different from that shown on the Plans shall be prepared and sealed by a duly licensed Professional Engineer in the state of West Virginia. The design and working drawings shall be reviewed by the Engineer to confirm that the design meets the design requirements.

The Contractor may use a nominal (ultimate) grout-rock bond stress higher than 118 psi, provided that a field pullout test is performed by the Contractor to confirm the higher bond stress. The anchor to be pullout tested shall have a minimum bond length of 10 feet. The pullout test shall be done at no cost to the Division. The requirement for the pullout test can be waived if the contractor shows a proof test result of anchors bonded in sandstone and installed in the vicinity of the project site. If the Contractor chooses to use a higher bond stress, the Contractor will be responsible for failed performance tests and/or proof test as a result of using a higher bond stress. The cost of installing and re-testing additional anchors will be the responsibility of the Contractor.

For alternate designs it shall be assumed that all structural parts shown on the Plans, such as wales, piles and connections, are fully stressed. Any additional stresses imposed on such structural parts and on the anchors themselves, due to design changes such as a steeper slope of the anchors, will require strengthening of various parts. Such strengthening shall be done at no cost to the Division, nor will the contract amount be reduced because of any shortening of anchors due to design changes.

628.2-MATERIALS:

Materials shall conform to the requirements specified in the following Subsections:

MATERIAL	SUBSECTION
Portland Cement	701.1
Fine Aggregate	702.1
Prestressing Steel	709.2
Structural Steel	709.12

Minimum grout strength at stressing shall be 3,500 psi. Expansion additives in grout will not be allowed. Grout shall not be re-tempered or used after it has begun to set. Proportioning mix design requirements (including requirements for submission to the Division), quality control, and testing of grout (including number, size and shape of samples) shall conform to the applicable provisions of Subsections 601.3 and 601.4.

All other materials, including sheaths, grease, tubes, centralizers and spacers, shall be of good quality, acceptable to the Engineer. The contractor shall submit Manufacturer's certificates and catalogs, tests reports or other such documents, as required by the Engineer.

628.3-PREPARATION OF ANCHOR:

The anchor tendons shall consist of seven-wire low relaxation strands. The tendons shall be fabricated in accordance with approved details and shall be free of dirt, or other deleterious substances. Light rust or rust stains that can be wiped off with a rag may be allowed. Prior to installation, they shall be handled and stored in such a manner as to avoid corrosion and physical damage. Damage such as abrasions, cuts, nicks, welds, weld splatters, or heavy corrosion and pitting will be cause for rejection. Rejected tendons shall be replaced at no cost to the Division in

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terms of either material replacement or resulting time delay. Care shall be taken during handling and installation to prevent any sharp bends of the tendon.

Couplers and similar hardware should be avoided, but if their use is necessary, the grout cover shown in plans over the tendons shall be provided over hardware, too.

The bond length shall be degreased prior to installation.

A smooth, shop extruded, tight fitting polypropylene (or polyethylene) sheath will encapsulate the entire stressing length of each tendon. The sheath shall have a minimum wall thickness of 0.04 inches. The sheath should be heat shrunk onto the strand.

A grease film compounded to provide corrosion inhibiting and lubricating properties shall fill the space between the sheath and the stressing length of the tendons. The coefficient of friction between the steel tendon and the polypropylene shall not exceed 0.05. The contractor shall provide certified test data confirming that this coefficient of friction does not exceed 0.05. The allowable content of deleterious substances in the grease shall not exceed the following:

COMPOUND	TEST METHOD	MAXIMUM QUANTITY
Chlorides	ASTM D 512	2 ppm
Nitrates	ASTM D 992	2 ppm
Sulfides	APHA "Sulfides in Water"	2 ppm

Test samples are to be prepared in accordance to the following procedure:

1. Coat the inside (bottom and sides) of a liter glass beaker (dimensions approximately O.D. - 110 mm. Height - 144 mm) with 100 ± 10 grams of grease.
2. Fill beaker with a measured amount of distilled water, approximately 1000 cc.
3. Heat beaker at a controlled temperature of 100° F (± 3° F). Maintain for 4 hours. Do not heat on a hot plate. Heat either in an oven or with an immersion heater so that the water will remain clear for tests.
4. Run a blank on distilled water.
5. Decant water and analyze for soluble ions. Test only for salts in leached water used in the test.

For corrosion protection, the entire length of the anchor shall be encased in a polypropylene (or polyethylene) tube grouted both inside and outside at the same time. The tube within the bond length shall be corrugated.

If the bond length is grouted and the anchor stressed before grouting the stressing length, the Contractor must provide a mean to ensure that the grout covers the entire bond length plus two feet of the stressing length.

Provide spacers to center the strands inside the polypropylene tube and centralizers to center the polypropylene tube in the hole, both in the stressing and in the bond portion. These centralizers shall be provided at a maximum of five-foot intervals throughout the bond length of the anchor in the stressing length, so that no less than 0.5 inches of grout cover is achieved surrounding the anchor.

Place spacers at five foot and ten foot intervals throughout the tendon length to ensure grout cover on all elements. Centralizers and spacers may be made of any material, except wood, not deleterious to the prestressing steel or plastic sheath. Spacers and centralizers must be approved by the Engineer prior to use.

The entire polypropylene (or polyethylene) tube, together with any trumpet used under the anchor head, including all joints, shall be water and mortar tight. Provide seals, gaskets and the like as required.

The tendons, the anchor head, and any other metallic parts of the anchor, shall be electrically insulated from piles and wales, to the Engineer's satisfaction.

628.4-INSTALLATION:

628.4.1-General: Anchor centerlines shall not deviate from their planned location by more than 3 degrees, nor shall they approach each other closer than 4 feet at their lower ends.

A resistance factored unit bond stress and a set of estimated required bonded lengths and corresponding grouted diameters are specified on the plan. Should the Contractor decide to use a different factored unit bond stress, he shall be responsible for determining the bond length necessary to develop adequate load capacity to satisfy anchor testing acceptance criteria for the design load. Any ~~rock~~ ground anchor that does not meet the test acceptance criteria shall be replaced at no additional cost to the Division.

The diameter of the drilled hole shall be adequate for grouting inside and outside the polypropylene tube. The hole shall be free of fall-in soil or other debris immediately prior to grouting.

628.4.2-Hole in the Stressing Length: Casing of portions of many or all holes may be needed to maintain an open clean hole. There will be no additional compensation for such casings; their cost shall be included in the bid prices.

628.4.3-Hole in the Bond Length: Drilling Logs shall be prepared in a manner approved by the Engineer, and submitted daily. They shall contain the following information:

1. Characteristics of all materials encountered during the drilling process, and their specific location(s) within the holes
2. Length of each run with percentage of core recovery
3. The location of special features such as mud seams, open cracks, broken rock, etc.
4. Points where abnormal loss or gain to drill water has occurred
5. Groundwater levels or other items of interest for grouting
6. All significant actions of the bit
7. If any weak material, such as coal, clay, weathered rock or the like is encountered within the required bond length, the hole shall be extended to compensate for the weak material.
8. If large voids are encountered, consolidation grouting and re-drilling of the hole will be required. The grout shall be injected at the lowest point of the drill hole and shall proceed such that the hole is filled progressively from the bottom to the top, in order to prevent air voids.

Consolidation grout should have a water/cement ratio of between 0.45 and 0.55. Variations from these ratios shall require an approval from the Engineer prior to the placement. Special measures (such as stiff grout mixes) may be required to prevent or reduce grout loss. A consolidation-grouted hole shall not be re-drilled until the grout has had a minimum of 24 hours to set up.

628.4.4-Grouting: During grouting, the end of the grout pipe shall be covered by at least 2 feet of wet grout. Grouting shall proceed from the bottom up, to prevent air voids. The grout in the stressing length must not interfere with the stressing operation; tendons in the stressing length must not develop any bond to the surrounding grout. To achieve this, the grout inside the polypropylene tube shall preferably be placed after stressing.

The grout shall be placed over the entire bond length without interruption. The anchor shall then remain undisturbed until the grout has reached strength of 3500 psi. The following data shall be recorded and submitted to the Engineer, about the grouting operation, on a daily basis:

1. Type of Mixer
2. Type of Cement and Water/Cement Ratio
3. Type of Additives (if approved)
4. Grout Pressure
5. Test Sample Strengths (prior to stressing)
6. Volume of Grout placed in the Bond and in the Stressing Lengths

628.4.5-Corrosion Protection of Anchorage: Following acceptance of the anchor by the Engineer, the portion of each tendon extending past the lock-off plate shall be cut off with Carborundum blades in a manner that will not develop excessive heat. The tendon anchorage shall not be damaged by the cutting operation. All stressing anchorages shall be encased in concrete at least 4 inches or as shown on the plan.

The trumpet shall be sealed by bearing plate and shall overlap the unbonded length corrosion protection by at least 6 inches. The trumpet shall be long enough to accommodate movement of the structure and the tendon during testing and stressing. The trumpet shall also be long enough to enable the tendon to make a transition from the diameter of the tendon along the unbonded length to the diameter of the tendon at the wedge plate without damaging the encapsulation.

The trumpet shall be completely filled with grout, which must be placed after the ground anchor has been tested and stressed to the lock-off load. The trumpet shall either have a temporary seal between the trumpet and the unbonded length corrosion protection or shall fit tightly over the unbonded length corrosion protection for a minimum of 6 inches.

628.5-ANCHOR TESTS:

In the following sections, AL denotes alignment load (0.10P) and P denotes the anchor design load.

628.5.1-Performance Test: A performance test shall be carried out on the first anchor stressed for each tieback group shown on the plans and on one additional anchor selected by the Engineer. During the performance test, the contractor shall incrementally load and unload the anchor in accordance with the following schedule. The movement of the tendon shall be recorded to the nearest 0.001 inches at each increment, with respect to an independent (fixed) reference point. The load applied by the jack shall be monitored with a pressure gauge and preferably a load cell.

Each load shall be held for a minimum of one minute with the maximum loading being held for 60 minutes.

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All leaks in the jacking system shall be repaired as discovered and the test restarted at the initial reading.

Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6
AL	AL	AL	AL	AL	AL
0.25 <u>PDL</u>	0.25 <u>PDL</u>	0.25 <u>PDL</u>	0.25 <u>PDL</u>	0.25 <u>PDL</u>	0.25 <u>PDL</u>
	0.50 <u>PDL</u>	0.50 <u>PDL</u>	0.50 <u>PDL</u>	0.50 <u>PDL</u>	0.50 <u>PDL</u>
	0.25 <u>PDL</u>	0.75 <u>PDL</u>	0.75 <u>PDL</u>	0.75 <u>PDL</u>	0.75 <u>PDL</u>
		0.50 <u>PDL</u>	1.00 <u>PDL</u>	1.00 <u>PDL</u>	1.00 <u>PDL</u>
		0.25 <u>PDL</u>	0.75 <u>PDL</u>	1.20 <u>PDL</u>	1.20 <u>PDL</u>
			0.50 <u>PDL</u>	1.00 <u>PDL</u>	1.33 <u>PDL</u> (Max)
			0.25 <u>PDL</u>	0.75 <u>PDL</u>	- Hold for creep test
				0.50 <u>PDL</u>	- Reduce for lock-off load, <u>PDL</u>
				0.25 <u>PDL</u>	

Where:

AL = Alignment load

DL = Design load for ground anchor

All anchors undergoing performance tests shall hold the maximum load, i.e. 1.33P, for 10 minutes (or 60 minutes). The jack shall be repumped as necessary in order to maintain a constant load. During this period, the anchor movement with respect to a fixed reference point shall be recorded at 0 seconds, 30 seconds, 1 minute, 2, 3, 4, 5, 6, and 10 minutes (and 15, 20, 25, 30, 45, and 60 minutes). The dial gauge used for monitoring movement shall be capable of reading the entire movement without resetting. Upon passing the acceptance criteria in 628.5.4, the anchor shall be adjusted to lock-off load, P.

628.5.2-Lift-Off Test: A lift-off test shall be part of the performance test. After transferring the load to the end anchorage, a lift-off reading shall be made. The load determined from the lift-off reading shall be within 5 percent of the desired transfer or lock-off load otherwise the end anchorage shall be reset to the design load and another lift-off reading shall be made.

Lift-off tests can be made a minimum of 24 hours, and a maximum of 7 days, after the design load has been locked-off in the anchor. The results of the test shall be submitted to the Engineer on the day of the test. All tendons which are to be lift tested must have an adequate length of tendon left protruding over the anchorage to permit jacking. The jack utilized for lift-off testing shall be calibrated within two weeks of testing and at intervals of approximately 3 months throughout testing. The contractor shall furnish the calibration chart and submit it to the Engineer.

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628.5.3-Proof Test: All anchors not performance tested shall be proof tested by incrementally loading the anchor in accordance with the following schedule. Load and movement shall be monitored as stated in 628.5.1.

Load
AL
0.25- P <u>DL</u>
0.50- P <u>DL</u>
0.75- P <u>DL</u>
1.00- P <u>DL</u>
1.20- P <u>DL</u>
1.33- P <u>DL</u> (Max)
- Hold for creep test
- Reduce to lock-off load, P <u>DL</u>

Where:

AL = Alignment load

DL = Design load for ground anchor

The proof test results shall be compared to the performance test results. Any significant variation from the performance test results may require a performance test on the next anchor. Lift-off tests for proof tested anchors may be required as designated by the Engineer. The Contractor shall do all additional tests due to inadequate results of a proof test at no cost to the Division.

Upon passing the acceptance criteria in 628.5.4, the anchor shall be adjusted to lock-off load, P.

628.5.4-Acceptance Criteria: A performance-tested or proof-tested ~~rock~~ ground anchor with a 10-minute load hold shall be accepted if (1) the ~~rock~~ ground anchor resists the maximum test load with less than 0.04” of movement between 1 minute and 10 minutes; and (2) the total elastic movement at maximum test load exceeds 80% of the theoretical elastic elongation of the unbonded length; or (3) the total elastic movement at the maximum test load does not exceed the theoretical elastic elongation of the unbonded length plus 50% of the theoretical elongation of the bonded length.

A performance-tested or proof-tested ~~rock~~ ground anchor with a 60-minute load hold shall be accepted if (1) the ~~rock~~ ground anchor resists the maximum test load with a creep rate that does not exceed 0.08” in the last log cycle of time; and (2) the total elastic movement at maximum test load exceeds 80% of the theoretical elastic elongation of the unbonded length.

The initial lift-off reading shall be within +5% of the design lock-off load. If this criterion is not met, the tendon load shall be adjusted accordingly and the initial lift-off reading repeated.

If any anchor fails to meet the acceptance criteria, the Contractor shall determine, if possible, the reason for failure. An additional anchor shall be installed in accordance with this specification at a location approved by the Engineer and tested to verify that the capacity of the new anchor meets the 1.33 P load. The Division will make no payment for failed anchor.

An additional anchor in this area shall be performance tested when a failure occurs, at no cost to the Division.

Records shall be kept of the load and elongation for each increment of loading for each tieback and shall be furnished to the Engineer following the completion of each test.

628.6-METHOD OF MEASUREMENT:

628.6.1-~~Rock~~Ground Anchors, Installed, per each: The work performed for ~~rock~~ ground anchor installation shall be included in this item. The quantity of work performed to install the ~~rock~~ ground anchors as described above and to the depth shown on the plans will be paid for at the contract unit price bid for this item below. This price and payment shall include furnishing all material required for installation of the anchor, grouting of the anchor as specified or required, proof testing of all anchors, covering of anchor heads, and replacing failed anchors.

628.6.2-~~Rock~~Ground Anchor Performance Test, per each: This item covers the cost of a performance test, over and above that of the proof test. (Cost of proof test is included in the item, "~~Rock~~Ground Anchors, Installed").

628.6.3-Additional Anchor Length, per foot: This item will be applicable if the actual elevation of sound soil/rock is, on the average, lower than that indicated on the Plans, and if weak materials are encountered in the sound soil/rock, as described under 628.4.3 above. The measurement will be based on the anchor slope shown on the Plans.

This item shall be exercised after the installation of soldier piles but prior to the fabrication of tiebacks. The anchor stressing lengths shall be reevaluated and adjusted if needed by the Engineer based on top of sound soil/rock information obtained during soldier pile installation. The reevaluated anchor stressing lengths will be compared to the Contractor's bid quantity to determine the quantity for this bid item.

628.6.4-Drilled Hole, 4" Diameter, per linear foot: This item will occur if large voids are encountered in the sound soil/rock as described under 628.4.3 above. The hole diameter of 4" coincides with item, "Additional Anchor Length", and the anchor specifications used under item "~~Rock~~Ground Anchors, Installed". The required length of re-drilling will be measured, based on the anchor slope shown on the Plans.

628.6.5-Pressure Injected Grout, per cubic foot: This item will be applicable if large voids are encountered in the sound soil/rock as described under 628.4.3 above. Measurement will be based on the actual cubic foot amount of cement used in the grout that is injected in the void.

628.7-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid for at the contract unit prices bid for the items below, which prices and payments shall be full compensation for furnishing all materials and doing all the work in a workmanlike and acceptable manner, including all tools, equipment, supplies, labor and incidentals necessary to complete the job.

628.8-PAY ITEMS:

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ITEM	DESCRIPTION	UNIT
628007-001	Rock Ground Anchors, Installed	Each
628007-002	Rock Ground Anchor Performance Test	Each
628007-003	Additional Anchor Length	Linear Foot
628001-001	Drilled Hole, 4" Diameter	Linear Foot
628002-001	Pressure Injected Grout	Cubic Foot

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 219

CONTROLLED LOW-STRENGTH MATERIAL

219.4-CONSTRUCTION METHODS:

219.4.2-Testing:

DELETE THE CONTENTS OF THE SECOND PARAGRAPH IN SUBSECTION 219.4.2 AND REPLACE WITH THE FOLLOWING:

The Contractor shall determine the flow, and shall mold one set (3 cylinders) of standard six (6) inch by twelve (12) inch compressive strength specimens for every 100 cubic yards, or fraction thereof, of material that is placed per day. These cylinders shall be cured and tested in accordance with ASTM D4832 except that they shall be stored at the construction site in the storage container until the fourteenth day after preparation. After the fourteenth day, they shall be transported to the site of the curing environment, specified in ASTM D4832, where they will be cured for the remainder of the 28 day period. The average compressive strength at 28 days shall meet the strength requirements listed in section 219.3. Material not meeting the minimum compressive strength at 28 days shall be removed at the Contractor's expense. The Division shall evaluate Type A material that exceeds the maximum compressive strength.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 501

PORTLAND CEMENT CONCRETE PAVEMENT

501.2-MATERIALS:

ADD THE FOLLOWING TO THE TABLE:

MATERIAL	SUBSECTION
<u>Fibers</u>	<u>715.3</u>

501.3-PROPORTIONING:

ADD THE FOLLOWING AFTER THE FIRST PARAGRAPH:

The addition of Fibers in concrete pavement or overlay shall be allowed. The dosage rate in lbs./cy of fibers for any application shall be the manufacturer's recommendation to meet the requirements of 715.3. The dosage rate shall not be less than the submitted rate used for product approval which can be found in the approved products list. The dosage rate shall not exceed 5.0 lbs./cy, unless the manufacturer can demonstrate, through a field demonstration, that the concrete mixture will be workable and fiber balling is not a problem.

501.8-MIXING CONCRETE:

ADD THE FOLLOWING TO THE END OF THE SUBSECTION:

Mix fibers as recommended by the manufacturer such that the addition of the fibers does not create balling. Notify the Engineer in writing of the dedicated personnel for this task, the procedure for distributing fibers into the concrete mixture, and the mixing method. Any of the following fiber addition methods are acceptable on all jobs:

- Open bag and distribute fibers on aggregate belt at ready-mix concrete plant.
- Open bag, break apart any fiber clumps, and introduce fibers into ready-mix concrete truck in a well-distributed manner (i.e., "chicken feed").

A minimum of 70 revolutions at mixing speed after all the fibers are added is required for proper mixing and dispersion of fibers in trucks. Allowing bags of fiber to dissolve in the ready-mix concrete trucks will not be allowed. Fibers shall never be the first material added in any mixing process.

501.9-PLACING CONCRETE:

ADD THE FOLLOWING TO THE END OF THE SUBSECTION:

When placing concrete containing fibers, in order to provide consolidation and bury surface fibers, open slab surfaces should be struck off with a vibrating screed or laser screed. Magnesium floats in the form of a bullfloat, channel radius float, or highway straightedge should be used to establish a surface and close tears or open areas. The use of wood floats is not permitted. Any fiber balls should be removed immediately with a hoe or rake. The contractor should adjust the batching and mixing procedure to avoid the further creation of fiber balls as soon as they are noticed on a project.

501.12-FINAL STRIKE-OFF, CONSOLIDATION AND FINISHING:

501.12.5- Floating:

ADD THE FOLLOWING PARAGRAPH TO THE END OF THE SUBSECTION:

When floating the concrete containing fibers, magnesium floats in the form of a bullfloat, channel radius float, or highway straightedge should be used to establish a surface and close tears or open areas. The use of wood floats is not permitted. Care should be taken to avoid tilting the blades of any float at too great of an angle which could expose the fibers to the surface.

501.12.7-Final Finish:

ADD THE FOLLOWING SUBSECTION:

501.12.7.1-Final Finish Containing Fibers for Portland Cement Concrete: The final finish selected for concrete pavement or overlay containing fibers shall be an artificial grass carpet drag followed by tining. The tining tool selected must meet the groove and all other requirements of section 501.12.7. Caution must be used to avoid significant disturbance and removal of fibers from the surface. The tining rakes should be held at a small angle to the horizontal surface to prevent lifting or exposing the fibers. Texturing should also be done only in one direction and should never pull against the established pattern. The artificial grass carpet shall meet the following requirements:

- 1) Mounted on a Work Bridge or Paver
- 2) Width equal to the concrete placed
- 3) Artificial grass type

- 4) Molded polyethylene pile face
- 5) Blade length of from 5/8 inch to 1 inch
- 6) Total weight of at least 70 ounces per square yard

The roadway will be textured as accepted by the Engineer. The use of burlap sack for texturing shall not be permitted. All texturing should be accomplished with a single pass of the tool.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

**SECTION 601
STRUCTURAL CONCRETE**

601.2-MATERIALS:

ADD THE FOLLOWING TO THE TABLE:

MATERIAL	SECTION OR SUBSECTION
<u>Fibers</u>	<u>715.3</u>

601.3-PROPORTIONING:

DELETE THE FOLLOWING SECTION AND REPLACE WITH FOLLOWING:

The proportions for any concrete designated as modified shall be submitted by the Contractor to the Engineer for approval. The Design 28 Day Compressive Strength shall be as shown in the plans. The contractor's mix design shall utilize Table 601.3.1, except the Target Cement Factor may be revised to obtain the modified strength.

~~Class H concrete shall consist of a homogeneous mixture of cement, fine aggregate, coarse aggregate, silica fume admixture, fly ash or slag cement, chemical admixtures, and water.~~

Establishment of mixture proportions shall be coordinated with the manufacturer of the silica fume admixture.

Design mixture testing for Class H concrete shall be in accordance with MP 711.03.23 and shall include air content, slump, compressive strength, and rapid chloride permeability tests. For establishment of mixture proportions, rapid chloride permeability tests shall be made on representative samples prepared and tested in accordance with AASHTO T 277. The rapid chloride permeability test specimens shall be tested at an age of 90 days (or at any time prior to 90 days), and the results of this test shall not exceed 750 coulombs. Specimens shall be moist cured for 56 days prior to the start of specimen preparation unless specimens are to be tested prior to 56 days, in which case the specimens shall be moist cured until the time of test. The 28-day compressive strength of the test mix that satisfies the 750 coulomb threshold shall be used as the basis for acceptance of Class H concrete per Section 601.4.5. The cost of all test mix requirements shall be considered incidental to the cost of Class H concrete.

For establishment of mixture proportions, as an alternative to the curing methods for rapid chloride permeability testing outlined in the previous paragraph, specimens may be moist cured for 7 days in accordance with ASTM C192, then cured for 21 days in lime-saturated water at 100.0 ± 3.5 °F, then tested at an age of 28 days. This method of curing shall be noted as the accelerated RCPT curing method.

The dosage rate in lbs./cy of fibers for any application shall be the manufacturer's recommendation to meet the requirements of 715.3. The dosage rate shall not be less than the submitted rate used for product approval which can be found in the approved products list. The dosage rate shall not exceed 5.0 lbs./cy, unless the manufacturer can demonstrate, through a field demonstration, that the concrete mixture will be workable and fiber balling is not a problem.

601.7-MIXING:

ADD THE FOLLOWING TO THE END OF THE SUBSECTION:

601.7.1 Mixing of Fibers into Concrete: Mix fibers as recommended by the manufacturer such that the addition of the fibers does not create balling. Notify the Engineer in writing of the dedicated personnel for this task, the procedure for distributing fibers into the concrete mixture, and the mixing method. Any of the following fiber addition methods are acceptable on all jobs:

- Open bag and distribute fibers on aggregate belt at ready-mix concrete plant.
- Open bag, break apart any fiber clumps, and introduce fibers into ready-mix concrete truck in a well-distributed manner (i.e., "chicken feed").

A minimum of 70 revolutions at mixing speed after all the fibers are added is required for proper mixing and dispersion of fibers in trucks. Allowing bags of fiber to dissolve in the ready-mix concrete trucks will not be allowed. Fibers shall never be the first material added in any mixing process.

601.10-PLACING CONCRETE:

601.10.2-Chutes and Troughs:

ADD THE FOLLOWING PARAGRAPH TO THE END OF THE SUBSECTION:

When discharging the concrete containing fibers into a hopper assembly on a pump truck, the chute shall be raised 12 to 18 in. above the grate (if grate is present) on the pump to allow the fibers to pass through the grate.

ADD THE FOLLOWING SUBSECTION TO THE END OF THE SECTION:

601.10.6-Placing Concrete Containing Fibers: To provide consolidation and bury surface fibers, open slab surfaces should be struck off with a vibrating screed or laser screed. Magnesium floats in the form of a bullfloat, channel radius float, or highway straightedge

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SUPPLEMENTAL SPECIFICATION
FOR
SECTION 679
OVERLAYING OF PORTLAND CEMENT CONCRETE BRIDGE DECKS

679.2-MATERIALS:

679.2.1-General:

ADD THE FOLLOWING SECTION:

679.2.1.6-Fibers: Fibers shall meet the requirements of section of 715.3.

679.2.2- Specialized Concrete Mix Design and Testing:

DELETE THE FIRST AND SECOND PARAGRAPHS OF THE SUBSECTION AND ADD THE FOLLOWING:

Specialized concrete shall consist of a homogeneous mixture of cement, fine aggregate, coarse aggregate, latex or silica fume admixture, chemical admixtures, and water. The use of fibers in the specialized concrete shall be allowed.

The Contractor shall determine mixture proportions in general accordance with ACI 211.1, "Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete." Establishment of mixture proportions shall be coordinated with the manufacturer of the latex or silica fume admixture. The dosage rate in lbs./cy of fibers for any application shall be the manufacturer's recommendation to meet the requirements of 715.3. The dosage rate shall not be less than the submitted rate used for product approval which can be found in the approved products list. The dosage rate shall not exceed 5.0 lbs./cy, unless the manufacturer can demonstrate, through a field demonstration, that the concrete mixture will be workable and fiber balling is not a problem.

679.2.3-Equipment:

679.2.3.3-Propportioning and Mixing Equipment:

DELETE THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

Unless specified here Handling, Measuring, and Batching of materials shall conform to the requirements specified in 501.7. Mix fibers as recommended by the manufacturer such that the addition of the fibers does not create balling. Notify the Engineer in writing of the dedicated personnel for this task, the procedure for distributing fibers into the concrete mixture, and the mixing method. Any of the following fiber addition methods are acceptable on all jobs:

- Open bag and distribute fibers on aggregate belt at ready-mix concrete plant.
- Open bag, break apart any fiber clumps, and introduce fibers into ready-mix concrete truck in a well-distributed manner (i.e., "chicken feed").

A minimum of 70 revolutions at mixing speed after all the fibers are added is required for proper mixing and dispersion of fibers in trucks. Allowing bags of fiber to dissolve in the ready-mix concrete trucks will not be allowed. Fibers shall never be the first material added in any mixing process.

Proportioning and Mixing Equipment shall consist of the following:

679.2.3.4-Mobile Mixer Units:

DELETE THE TABLE AND REPLACE WITH THE FOLLOWING:

Coarse Aggregate	±2%
Fine Aggregate	±2%
Cement + fly ash	0% to +4%
Water	±1%
Cement + microsilica powder	1%
<u>Fibers</u>	<u>1%</u>
Latex Admixture	1%
Other Admixtures	3%

679.2.3.6-Placing and Finishing Equipment:

ADD THE FOLLOWING PARAGRAPH TO THE END OF THE SUBSECTION:

When using fibers for Portland cement concrete, in order to provide consolidation and bury surface fibers, open slab surfaces should be struck off with a vibrating screed or laser screed. Magnesium floats in the form of a bullfloat, channel radius float, or highway straightedge should be used to establish a surface and close tears or open areas. The use of wood floats is not permitted.

679.3-CONSTRUCTION METHODS:

679.3.7-Placing and Finishing Specialized Concrete Overlay

679.3.7.4-Surface Texturing:

ADD THE FOLLOWING SUBSECTION:

679.3.7.4.1-Surface Texturing Concrete Containing Fibers for Portland Cement Concrete: Where a texture finish is required, an artificial grass carpet drag longitudinally, or broom finish transversally shall be selected. The use of burlap sack for texturing shall not be permitted. The artificial grass carpet shall meet the following requirements:

1. Mounted on a Work Bridge
2. Width equal to the concrete placed
3. Artificial grass type
4. Molded polyethylene pile face
5. Blade length of from 5/8 inch to 1 inch
6. Total weight of at least 70 ounces per square yard

All texturing equipment should be pulled in one direction only and never against the established pattern. The Contractor shall texture in a transverse or longitudinal direction. Once begun, the direction of texturing shall not change. All texturing shall be performed prior to the beginning of curing operations. Only one pass of the texturing equipment over the finished area will be permitted. Texturing shall be in strict accordance with the time requirements of 679.3.7.5 for applying wet burlap.

If texturing is done in the transverse direction, the Contractor shall texture using a broom finish as soon as practicable after finishing machine passage, without any additional finishing operations between the machine passage and texturing operations.

If texturing is done in the longitudinal direction, the artificial grass carpet shall be attached to the work bridge such that the surface of the concrete is textured as soon as practicable after finishing machine passage, without any additional finishing operations between the machine passage and texturing operations. Small areas, inaccessible to the attached drag, may be textured by hand methods.

The finishing movement and resulting progress of the texturing equipment shall be done in a manner to prevent ridges or gouges from forming in the concrete surface. The artificial grass carpet shall be weighted, and the contact area changed as required to produce a texture acceptable to the Engineer. The drag shall be cleaned as required; to remove all hardened concrete particles and shall be replaced after each day's operation.

Texture resulting from the drag shall stop within one foot of curbs or parapets. Any hand finishing operations shall be kept to a minimum. Grooving bridge deck containing fibers for Portland cement concrete shall follow the requirements of section 679.5.2.

should be used to establish a surface and close tears or open areas. The use of wood floats is not permitted.

601.11- FINISHING CONCRETE SURFACES:

ADD THE FOLLOWING SUBSECTION:

601.11.5-Texturing & Grooving Bridge Decks Containing Fibers for Portland Cement Concrete: Where a texture finish is required, an artificial grass carpet drag longitudinally, or broom finish transversally shall be selected. The use of burlap sack for texturing shall not be permitted. The artificial grass carpet shall meet the following requirements:

- 1) Mounted on a Work Bridge
- 2) Width equal to the concrete placed
- 3) Artificial grass type
- 4) Molded polyethylene pile face
- 5) Blade length of from 5/8 inch to 1 inch
- 6) Total weight of at least 70 ounces per square yard

All texturing equipment should be pulled in one direction only and never against the established pattern. The Contractor shall texture in a transverse or longitudinal direction. Once begun, the direction of texturing shall not change. All texturing shall be performed prior to the beginning of curing operations. Only one pass of the texturing equipment over the finished area will be permitted. Texturing shall be in strict accordance with the time requirements of 601.12.4 for applying wet burlap.

If texturing is done in the transverse direction, the Contractor shall texture using a broom finish as soon as practicable after finishing machine passage, without any additional finishing operations between the machine passage and texturing operations.

If texturing is done in the longitudinal direction, the artificial grass carpet shall be attached to the work bridge such that the surface of the concrete is textured as soon as practicable after finishing machine passage, without any additional finishing operations between the machine passage and texturing operations. Small areas, inaccessible to the attached drag, may be textured by hand methods.

The finishing movement and resulting progress of the texturing equipment shall be done in a manner to prevent ridges or gouges from forming in the concrete surface. The artificial grass carpet shall be weighted, and the contact area changed as required to produce a texture acceptable to the Engineer. The drag shall be cleaned as required; to remove all hardened concrete particles and shall be replaced after each day's operation.

Texture resulting from the drag shall stop within one foot of curbs or parapets. Any hand finishing operations shall be kept to a minimum for Class H bridge decks. Grooving bridge deck containing fibers for Portland cement concrete shall follow the requirements of section 601.11.4.4.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION**DIVISION OF HIGHWAYS****SUPPLEMENTAL SPECIFICATION****FOR****SECTION 715
MISCELLANEOUS MATERIALS****715.3-BLANK**

DELETE SUBSECTION 715.3 AND REPLACE WITH THE FOLLOWING:

715.3-FIBERS FOR PORTLAND CEMENT CONCRETE:

Fibers for Portland cement concrete shall include pre-approved fibers from the WVDOH approved list of fibers for Portland cement concrete. The requirements for shotcrete fibers are separate and are addressed in Section 623.2. Product submittals shall include: a completed Form HL-468 (available on the WVDOH Materials Division Web Page), a copy of the technical data sheet, the current Material Safety Data Sheet (MSDS), and the independent AAHSTO accredited laboratory testing data meeting the requirements of 715.3.3. Any incomplete submittals will not be evaluated for inclusion on WVDOH approved list of fibers for Portland cement concrete.

715.3.1-Definitions:

Micro Fibers: Fibers with diameters less than 0.012 inch.

Macro Fibers: Fibers with diameters equal or greater than 0.012 inch.

Equivalent Diameter: Diameter of a circle having an area equal to the average cross-sectional area of a fiber.

Balling: A 1-inch diameter or greater conglomerate of fibers at the point of placement

Aspect Ratio: Length/Equivalent Diameter, Ratio.

Hybrid Fibers: The combination of macro and micro fibers in a mix design containing fibers for Portland cement concrete.

715.3.2-Materials: Fibers shall be synthetic type III in accordance with ASTM C1116 and ASTM D7508. Hybrid fibers shall be required for use in bridge decks.

715.3.3 Fibers for Post Crack Tensile and Flexural Capacity, and Plastic Shrinkage Cracking Control: Fibers shall meet the requirements of Table 715.3.3 unless solely intended for plastic shrinkage cracking control which shall only be required to meet the requirements of the crack reduction ratio of table 715.3.3.

TABLE 715.3.3

<u>Required Hardened Fiber-Reinforced Concrete Properties</u>	<u>Specification</u>	<u>Requirement</u>
<u>Equivalent Flexural Strength ($f_{T,150}^{150}$ or f_e^3), min. ^a</u>	<u>ASTM C1609 ^b</u>	<u>150 psi.</u>
<u>Equivalent Flexural Strength Ratio ($R_{T,150}^{150}$ or R_e^3), min. ^a</u>	<u>ASTM C1609 ^b</u>	<u>25%</u>
<u>Crack Reduction Ratio, (CRR), min. reduction</u>	<u>ASTM C1579</u>	<u>$\geq 85\%$</u>

^a The specimens shall be tested when the concrete ultimate flexural strength at peak stress (f_p) is a minimum of 650 psi. For 6 inch by 6 inch by 20 inch beam containing fibers the maximum allowable net deflection value of L/150 of the 18 inch span length is 0.12 inches.

^b ASTM C1609 will use roller supports that meet the requirements of ASTM C1812.