

**NOTES:** Changes made since the previous Supplemental Specification (SS-09008), (SS-09009), (SS-09010), and (DS-09027) issues are indicated by shading in the Table of Contents, in the instruction line, and in the text. Previous changes have been incorporated and are no longer called out by shading or strikeout.

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**Division 11. General Requirements and Covenants.**

**Section 1102**

**1102.01, D, 2, b.**

**Replace the Article:**

- b. When a CPA Reviewed Statement is submitted to the Department, an experience factor (F) ranging from 0.0 to ~~10.0~~ 12.5, depending on the prospective bidder's past performance with projects let by the Department, will be used in the prequalification formula. A prospective bidder, who has been qualified to submit proposals with this type of statement, shall be limited to individual proposal sizes that do not exceed the lesser of ~~\$600,000~~ \$1 million or the maximum prequalification amount minus the bidder's amount of uncompleted work currently under contract. Any combination of proposals, however, may total more than ~~\$600,000~~ \$1 million - as long as that total does not exceed the maximum prequalification amount minus the currently uncompleted work.

**1102.01, D, 3, b.**

**Replace the first sentence of Article:**

When a CPA Audited Statement is submitted to the Department, an experience factor (F) ranging from 0.0 to ~~10.0~~ 12.5, depending on the prospective bidder's past performance with projects let by the Department, will be used in the prequalification formula.

**1102.04, C.**

**Add as the second paragraph of the Article:**

Do not use composite crews for bridge and culvert work. Pay applicable prevailing wage rate for the classification which the employee is performing work.

**1102.09, A.**

**Replace the second sentence of the Article:**

For bids submitted to the Department that exceed ~~\$600,000~~ \$1 million, the bidder shall use subparagraph 2 or subparagraph 3 below.

**1102.09, B.**

**Replace the Article:**

- B. The bidder shall be familiar with the requirements of the applicable specifications. The bidder shall specify a unit price in figures of dollars and cents for all pay items, ~~the extensions for the respective unit prices and quantities in figures in the column provided for the purpose, and the total amount of the proposal obtained by adding the amounts of the several items~~ except for Lump Sum items where the proposal line item bid amount must be shown. All the unit price figures shall be in ink, typed, or computer printed. The bidder may also specify the extension for each proposal line item and or the total amount of the bid. However, if there is a discrepancy between the unit bid prices, extensions, or total amount of bid, the unit prices shall govern. The bidder shall not alter the quantity, unit price, or the extension which has been provided for items which have been predetermined by the Contracting Authority.

**1102.17, E, 4, b.**

**Delete** the second sentence of the second paragraph:

A contractor under consideration for having a history of utilizing DBE firms must have been awarded at least two contracts during the period being reviewed. ~~Contractors who have used the same DBE firm for over 50% of their subcontract dollars with DBE firms will not be considered as having a history of utilizing DBEs.~~

**1102.17, G, 1.**

**Replace** the second sentence of the first paragraph:

Prior to receiving final payment, the Contractor shall provide to the Engineer certification of the dollars paid to each DBE firm, using Form 102116, Certification Of DBE Accomplishment. This certificate shall be submitted on all Federal-aid contracts ~~where a DBE performed work~~ and shall list the dollar amounts paid to all DBE firms on the contract.

**Section 1107****1107.09, A, 2, i, Contractor's Work Plan.**

**Delete** the Article.

**i. Contractor's Work Plan.**

~~When traffic is to be maintained through construction areas, the Contractor shall submit to the Engineer the work plan or statement for traffic control at the preconstruction conference or at least before work commences.~~

**1107.09, A, 2, k, Traffic Control in Place.**

**Replace** the Article:

**k. Traffic Control in Place.**

At any time signs, barricades, or other traffic control devices are in place, for which the Contractor is responsible, the Contractor shall ~~have a person on the project site or on call to promptly, within 6 hours, repair and maintain these devices.~~ provide the Engineer the following information at the preconstruction conference or before work commences:

- 1) The name and telephone number of a 24 hour emergency response person for traffic control (answering services are not acceptable); so that repair or maintenance of these devices can occur promptly, within 2 hours and
- 2) The name and telephone number of the traffic control technician in responsible charge of the traffic control for the project per Article 2528.01, C.

**Section 1108****1108.02, Prosecution of Work.**

**Add** the Article:

**M. Notification of Traffic Impacts.**

The Contractor shall provide the Engineer with 10 calendar days notice before commencing or resuming work on a Primary or Interstate road or bridge open to traffic. This notification is needed to suspend the issuance of permits for oversized loads when width or vertical clearance restrictions occur during construction.

**1108.02, B, Completion Date Contracts.**

**Replace** the third sentence of the Article:

Articles ~~1108.02, G~~ 1108.02, E, Charging of Working Days and ~~1108.02, H~~ 1108.02, F, Winter Work will not apply.

**1108.02, C, 3, a.**

**Replace** the second sentence of the Article:

Except as noted in Article ~~1108.02, H~~ 1108.02, F, working days will begin to be charged whenever the Contractor starts work.

**1108.02, D, Contract Periods.**

**Replace** the second sentence of the Article:

The intermediate contract period may be the same type as listed in Articles ~~1108.02, D~~ 1108.02, B and ~~1108.02, E~~ 1108.02, C.

**1108.03, D, 2, Fourth of July.**

**Replace** the Article:

**2. ~~Fourth of July~~** When the Fourth of July is observed on Saturday, Sunday or Monday, no work will be allowed beginning the preceding Friday through the holiday. When the Fourth of July is observed on Friday, no work will be allowed the preceding Thursday or the following Saturday. **Independence Day** – When Independence Day is observed as a State Holiday on Monday, no work will be allowed beginning the preceding Friday through the holiday. When Independence Day is observed as a State Holiday on Friday, no work will be allowed the preceding Thursday through the following Saturday.

## Division 21. Earthwork, Subgrades, and Subbases.

### Section 2106

**2106.02, B, PVC Casting.**

**Replace** the Article:

Apply Section 4149.

### Section 2107

**2107.04, B, 1, Compaction with Moisture and Density Control.**

**Replace** the Article:

Cubic yards (cubic meters) shown on the contract documents as determined by the template fill volume. Shrinkage will not be included in moisture and density control quantity.

**2107.04, B, 2, a.**

**Replace** the Article:

**a.** Cubic yards (cubic meters) shown on the contract documents as determined by the template fill volume. Shrinkage will not be included in moisture control quantity.

### Section 2109

**2109.05.**

**Add** Articles D and E:

**D.** When adjustments to profile grades cannot be made, fill required for preparation of subgrade at locations other than structures or existing pavements will be paid for according to Article 2102.05, or, if no contract price is provided, Article 1109.03, B.

**E.** When grading of the subgrade is a part of the contract, additional payment will not be made for excavation or fill necessary for preparation of subgrade.

**2109.05, C.****Replace** the Article:

- ~~C. Payment for excavation or filling in excess of 3 inches (75 mm) for either elevation adjustment or subgrade correction at locations other than structures or existing pavement will be:~~
- ~~• According to Article 2102.05, or~~
  - ~~• If no contract unit price is provided, as extra work, except when both grading and paving are the responsibility of the same Contractor.~~
- C. Excavation in excess of 3 inches (75 mm) for preparation of subgrade at locations other than structures or existing pavements will be paid for according to Article 2102.05, or, if no contract unit price is provided, Article 1109.03, B.

**Section 2111****2111.03, A, 2.****Replace** Article:

2. Apply Article 2001.05, Paragraphs B, C, D, and F, to compaction equipment, except that other types of equipment may be used provided it is demonstrated they will consistently produce the required compaction.

**2111.05, D.****Delete** Article:

- ~~D. Excavation in excess of 3 inches (75 mm) for preparation of subgrade at locations other than structures or existing pavements will be paid for according to Article 2102.05, or, if no contract unit price is provided, Article 1109.03, B.~~

**2111.05, E.****Delete** Article:

- ~~E. When adjustments to profile grades cannot be made, fill required for preparation of subgrade at locations other than structures or existing pavements will be paid for according to Article 2102.05, or, if no contract price is provided, Article 1109.03, B.~~

**2111.05, F.****Delete** Article:

- ~~F. When grading of the subgrade is a part of the contract, additional payment will not be made for excavation or fill necessary for preparation of subgrade.~~

**Section 2122****2122.03, D, Finishing.****Replace** the Article:

After completion of the paved shoulder, place the granular fillet as shown in the contract documents and according to Section 2121. Finish the foreslope according to Article 2123.03, C.

**2122.05, A, 2, b.****Replace** the first bulleted item:

- Preparing the area, including the earth fill, furnishing and placing the paved shoulder, and finishing the shoulder edge and foreslope.

## Division 22. Base Courses.

### Section 2214

#### 2214.03, C, 3.

**Delete** the Article:

- ~~3. Place barricades, as described in Article 1107.09, B, 5, along the windrowed material.~~

## Division 23. Surface Courses.

### Section 2301

#### 2301.03, E, 2, a.

**Replace** the Article:

- a. Load transfer devices may be required in the contract documents. Accurately place these assemblies as shown. To prevent their movement during subsequent concrete paving operations, securely stake or fasten to the base to line and grade. Do not use mechanical dowel bar inserters.

#### 2301.03, F, Placing Concrete.

**Renumber** Articles 2301.03, F, 5, 6, and 7 as Articles 2301.03, F, 6, 7, and 8 respectively.

**Add** new Article 5:

5. Concrete shall be placed and consolidated in a manner that prevents material retained in the grout box of the finishing machine from being incorporated into the pavement. At headers, concrete screeded over the header during finishing shall be removed.

#### 2301.03, P, 7.

**Replace** the Article:

7. The Engineer may limit the wheel loads and axle loads of equipment operating on the pavement during preparation, cleaning, and sealing operations, if prior to the age and strength specified in Article 2301.03, U. Additional tests to determine the modulus of rupture may be required.

#### 2301.03, U, 4.

**Delete** the Article.

~~Personnel performing maturity testing shall be Level I PCC-certified technician with training for maturity testing.~~

### Section 2303

#### 2303.02, A, Asphalt Binder.

**Add** to the end of the Article:

Unless otherwise specified in the contract documents, use PG 58-28 for shoulder mixtures.

#### 2303.02, C, Recycled Asphalt Pavement (RAP).

**Replace** the Article:

##### C. Recycled Asphalt Pavement.

1. RAP is salvaged asphalt pavement. Use RAP from a source designated in the contract documents, or furnish Classified RAP, Certified RAP, or Unclassified RAP from the Contractor's stockpile. The designations Classified, Certified, and Unclassified are exclusively for the use of RAP in HMA.
  - ~~a. Classified RAP.~~

- 1) Classified RAP is from a documented source with the aggregate meeting the appropriate quality requirements in Materials I.M. 510, and properly stockpiled.
  - 2) Classified RAP may be used in the base and intermediate mixtures, and in surface mixtures (unless stated otherwise in the contract documents), for which the RAP aggregate qualifies. The surface course may contain up to 15% Classified RAP. The Contractor may use more than 15% of Classified RAP for the surface course when there is quality control sampling and testing of the RAP meeting the requirements in I.M. 505. Asphalt binder contributed by the RAP is limited to no more than 30% of the total asphalt binder in the surface mix.
- b. Unclassified RAP.**
- 1) RAP is designated as Unclassified RAP if it is:
    - Stockpiled RAP not meeting the requirements of Classified RAP, or
    - RAP from an unknown source.
  - 2) When an Unclassified RAP stockpile is characterized by sampling and testing for mix design, do not add material to the stockpile until the project is completed.
  - 3) For Interstate or Primary projects, HMA base and shoulder mixtures may contain up to 10% Unclassified RAP. For Primary projects, intermediate mixtures for 1,000,000 ESALs or less may contain up to 10% Unclassified RAP. HMA base, intermediate, and shoulder mixtures for all other projects may contain up to 10% Unclassified RAP. There will be no friction aggregate credit or aggregate crushed particles credit for Unclassified RAP.
2. Unless otherwise stated in the contract documents, identify each RAP stockpile and document Classified and Certified RAP stockpiles as directed in Materials I.M. 505. Do not add material to a Classified RAP stockpile without the approval of the District Materials Engineer. Include the following information when documenting Classified RAP material in a stockpile for future use in HMA:
- Identification of the project from which the material was removed,
  - Mix data from the original project including mixture type, aggregate classification, location and depth in the pavement structure,
  - Aggregate classification,
  - Location and depth in the pavement structure,
  - Extracted gradation information, if available, and
  - Description of stockpile location and quantity.
- Do not add material to a Classified or Certified RAP stockpile without the approval of the District Materials Engineer.
3. The Engineer may reject a RAP stockpile for non-uniformity based on visual inspection. Work the stockpiles in such a manner that the materials removed are representative of a cross section of the pile.
  4. Place stockpiles of RAP on a base sufficient to prevent contamination, as directed in Materials I.M. 505. Do not use RAP stockpiles containing concrete chunks, grass, dirt, wood, metal, coal tar, or other foreign or environmentally restricted materials. RAP stockpiles may include PCC (not to exceed 10% of the stockpile) from patches or composite pavement that was milled as part of the asphalt pavement. Track equipment may operate on the stockpile during its construction.
  5. When RAP is taken from a project, or is furnished by the Contracting Authority, the contract documents will indicate quantity of RAP expected to be available and test information, if known. Salvage this material. Unless otherwise specified in the contract documents, RAP not used in HMA becomes the property of the Contractor.
  6. For HMA mix design purposes, the Contracting Authority will test samples of the RAP. The aggregate gradation and amount of asphalt binder in the RAP will be based on the Contracting Authority's extraction tests. When the amount of RAP recycled binder exceeds 20% of the total asphalt binder, change the asphalt binder grade as directed in Materials I.M. 510. No adjustments will be made to the contract unit price for required changes to the asphalt binder grade.
- a. Classified RAP.**
- 1) Classified RAP is from a documented source with the aggregate meeting the appropriate quality requirements in Materials I.M. 510, and properly stockpiled.

- 2) Classified RAP may be used in the base, intermediate, and surface mixtures for which the RAP aggregate qualifies. Classified RAP may be used in accordance with Table 2303.02-1.
- 3) Credit for the +4 proportion of frictional aggregate may be given for virgin aggregates used in the original pavement to be reclaimed. Types 4 and 5 frictional aggregate content in the RAP may be given full credit, while Types 2 and 3 content may be given credit for half the proportion in the original pavement. Credit may be used toward the total frictional aggregate requirement. No frictional credit shall be given beyond one generation of the RAP's service life.
- b. Certified RAP.**  
Any stockpiled RAP not meeting the requirements of Classified RAP or from an unknown source may be given a Certified status when meeting quality control sampling, testing, and reporting requirements in Materials I.M. 505. Certified RAP may be used in accordance with Table 2303.02-1.
- c. Unclassified RAP.**
- 1) Any stockpiled RAP not meeting the requirements of Classified RAP or Certified RAP shall be designated as Unclassified RAP. Unclassified RAP may be used in accordance with Table 2303.02-1. No frictional aggregate credit or aggregate crushed particles credit will be given for Unclassified RAP.
- 2) When an Unclassified RAP stockpile is characterized by sampling and testing for mix design, no material can be added to the stockpile until the project is completed.

**Table 2303.02-1: Allowable RAP Usage**

Mix Designation	Aggregate Quality Type	Maximum Allowance Usage <sup>2, 3</sup>		
		Unclassified RAP	Certified RAP	Classified RAP
HMA 100K S	B	0%	10%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 100K I	B	10%	20%	No Limit
HMA 100 K B	B	10%	20%	No Limit
HMA 300K S	B	0%	10%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 300 K I	B	10%	20%	No Limit
HMA 300K B	B	10%	20%	No Limit
HMA 1M S L-4	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 1M S	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 1M I	B	10%	20%	No Limit
HMA 1M B	B	10%	20%	No Limit
HMA 1M B (shoulder)	B	10%	20%	No Limit
HMA 3M S L-4	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 3M S L-3	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 3M S	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 3M I	A	0%	0%	No Limit
HMA 3M B	B	10%	20%	No Limit
HMA 10M S L-3	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 10M I	A	0%	0%	No Limit
HMA 10M B	B	10%	20%	No Limit
HMA 30M S L-3	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 30M S L-2	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>
HMA 30M I	A	0%	0%	No Limit
HMA 30M B	B	10%	20%	No Limit
HMA 100M S L-2	A	0%	0%	15% (min. 70% virgin binder) <sup>1</sup>

HMA 100M I	A	0%	0%	No Limit
HMA 100M B	B	10%	20%	No Limit

## Note:

1. More than 15% of Classified RAP may be used for the surface course when there is quality control sampling, testing, and reporting of the RAP meeting the requirements in Materials I.M. 505. At least 70% of the total asphalt binder in the surface mix shall be virgin.
2. Maximum percentages shown are not to be combined.

**2303.02, D, Hot Mix Asphalt Mixture.****Renumber** Table 2302.02-1:Table ~~2303.02-1~~ 2303.02-2: Basic Asphalt Binder Content (%)**2303.02, E, 2, Anti-strip Agent.****Replace the Article:****2. Anti-strip Agent.**

- a. On Interstate and Primary highways designed for ~~over 10,000,000 ESALs and all Interstate highways~~ 30,000,000 ESALs and higher, perform an AASHTO T 283 moisture sensitivity evaluation of the proposed HMA asphalt mixture design.
- b. On all other Interstate and Primary highways, perform an AASHTO T 283 moisture sensitivity evaluation of the proposed HMA asphalt mixture design if 25% or more of the plus No. 4 (4.75 mm) (virgin and RAP) aggregates or more than 40% of the total (virgin and RAP) aggregates is:
  - Quartzite,
  - Granite, or
  - Other siliceous aggregate (not a limestone or dolomite) which is obtained by crushing from ledge rock.
- c. ~~Anti-strip agent~~ AASHTO T 283 will not be required for base repair, patching, or temporary pavement.
- d. ~~The following apply when an AASHTO T 283 analysis is required:~~
  - 1) ~~The Contractor's results equal or exceed 90% tensile strength ratio (TSR).~~  
Submit mix design sample to the Central Materials Laboratory for testing. If the Central Laboratory results verify the Contractor's results, no anti-strip agent will be required and no further testing will be required unless substantial mix proportion changed from the original design are made.
  - 2) ~~Either the Contractor's results equal or exceed 80% but are less than 90%, or the Central Laboratory TSR results do not verify the Contractor's results.~~  
Obtain additional sample for AASHTO T 283 testing during the initial placement of the plant produced mix. Obtain the additional sample from a test strip, if available, or during the initial approximately 500 tons (500 Mg) of mix. Obtain sample from an area without anti-strip agent. This sample will be used to determine acceptability of the plant produced mixture for moisture sensitivity. For production taking place after this initial 500 tons (500 Mg), add anti-strip agent to the mixture until results are obtained from the Central Laboratory. Payment for the anti-strip agent will be made according to Article 2303.05, D. If Central Laboratory results on mixture without anti-strip confirm acceptability, anti-strip agent will not longer be required from the time of notification.
  - 3) ~~The Contractor's results fall below 80%.~~  
Anti-strip will be required.
- d. A minimum tensile strength ratio (TSR) of 80.0% is required on plant produced mixture.
- e. When the Contractor's mix design TSR results are greater than or equal 80.0% and less than 90.0%, an anti-strip agent will be required until the Contracting Authority's TSR results on the plant produced mixture are equal to or exceeding 80.0%. Plant produced material without anti-strip shall be tested to confirm the need for an anti-strip agent.
- f. When the Contractor's mix design TSR results are below 80.0%, an anti-strip agent will be required. Plant produced material with anti-strip shall be tested to verify the minimum TSR is achieved.
- g. When there is a "significant mix change", the Engineer may require a re-evaluation of the AASHTO T 283 test.
- eh. Use one of the following anti-strip agents:
  - 1) Hydrated Lime.

Meet the requirements of AASHTO M 303, Type I. Do not apply Section 4193. Hydrated lime will not be considered part of the aggregate when determining the job mix formula and the filler/bitumen ratio.

**2) Liquid Anti-strip Additives.**

For each JMF, obtain approval for liquid anti-strip additives blended into the binder. Approval will be based on the following conditions:

- a) The asphalt binder supplier provides test results that the additive does not negatively impact the asphalt binder properties, including short term and long term aged properties.
- b) The design is to establish the optimum additive rate when comparing the dry strength of specimens prepared with asphalt binder not containing the anti-strip additive to conditioned specimens prepared with asphalt binder containing the anti-strip additive. See Materials I.M. 510 for additional information.
- ~~c) A change in the source of asphalt binder, liquid anti-strip, or aggregates will require a re-evaluation of the AASHTO T 283 test. When there is a significant change in the aggregate proportions, the Engineer may require a re-evaluation of the AASHTO T 283 test.~~

**3) Polymer-based Liquid Aggregate Treatments.**

For each JMF, obtain approval for polymer-based liquid aggregate treatments. Approval will be based on the following conditions:

- a) ~~The Design establishes~~ establishing the optimum additive rate when comparing the dry strength of specimens prepared without the anti-strip additive to conditioned specimens prepared with asphalt binder containing the anti-strip additive. See Materials I.M. 510 for additional information.
- ~~b) A change in the source of asphalt binder, liquid additive treatment, or aggregates will require a re-evaluation of the AASHTO T 283 test.~~

**2303.03, A, 3.**

**Replace** the Article:

- 3. Apply Quality Management - Asphalt (QM-A) to ~~contracts with HMA quantities of 5000 tons (5000 Mg) asphalt mixture bid items greater than 1000 tons (1000 Mg) or greater~~ and all Interstate contracts. Follow the procedures and meet the criteria established in Articles 2303.02 and 2303.03, B; Section 2521; and Materials I.M. 510 and 511.

**2303.03, A, 4.**

**Replace** the Article:

- 4. ~~For contracts with less than 5000 tons (5000 Mg), the Engineer will be responsible for quality control. The Contractor is responsible for the mix design. This does not change the mix requirements from gyratory to Marshall, unless specified in the contract documents. Apply Article 2303.03, E, for asphalt mixture bid items of 1000 tons (1000 Mg) or less.~~

**2303.03, C, 3, c, 1, a, 1.**

**Add** to the Article:

- (c) Add to the outer drum of a double drum system away from heated gas flow and prior to the addition of the virgin asphalt binder

**2303.03, C, 3, c, 1, a, 2.**

**Replace** the Article:

- (2) Alternative methods for mixing will be allowed only with the Engineer's approval. Do not introduce hydrated lime directly into a single drum mixer by blowing or ~~auguring~~ by auger.

**2303.03, D, 3, a, 4.**

**Replace** the Article:

- 4) A "significant mix change" is defined as a single occurrence of an aggregate interchange of greater than 5%, a single occurrence of an asphalt content change greater than 0.2%, or any deletion or introduction of a new material into the mix. All of the following qualify as a "significant mix change":

- A single occurrence of an aggregate interchange of greater than 5%.
- A single occurrence of an asphalt content change greater than 0.2%.
- A deletion or introduction of a new material into the mix.
- A change of additive dosage rate.
- A change of binder, aggregate, or additive source.

**2303.03, D, 3, b, 9.**

**Renumber** existing Article and **Replace** the first sentence:

910) When liquid anti-strip additives are used added by the Contractor at the plant, satisfy one of the following methods to regulate the quantity of additive:

**Add** new Article:

9) The Engineer may obtain samples for AASHTO T 283 at any time for mixes requiring moisture sensitivity testing under Articles 2303.02, E, 2, a, and 2303.02, E, 2, b, to verify the minimum TSR has been achieved.

**2303.03, D, 4, a, 2.**

**Replace** the first sentence of the Article:

A lot is considered to be one layer of one mixture placed during a day's operation.

**2303.04, C, 2.**

**Replace** the Article:

2. The quantity of asphalt binder in classified or unclassified RAP, which is incorporated into the mix, will be calculated in tons (megagrams) of asphalt binder in the RAP. This quantity will be based on the actual asphalt binder content determined for the mix design from the results of the Engineer's extraction test.

**2303.04, C, 3.**

**Replace** the Article:

3. The quantity of asphalt binder in classified or unclassified RAP, which is incorporated into the mix, will be included in the quantity of asphalt binder used.

**2303.05, A, 6.**

**Replace** the Article:

6. When liquid anti-strip agent is used and production quality control testing for AASHTO T 283 is required, When AASHTO T 283 is performed on plant produced mixture, the payment for HMA asphalt mixture will be adjusted according to Table 2303.05-3:

**Table 2303.05-3: HMA Asphalt Mixture Payment Adjustment**

<b>Contracting Authority's Results (Percent TSR)</b>	<b>Percent of Full</b>
Greater than 79	100
70 to 79	90
Less than 70	75 maximum

**2303.05, B, 2.**

**Replace** the second sentence of the Article:

The quantity of asphalt binder in classified or unclassified RAP, which is incorporated into the mix, will be calculated in tons (megagrams) of asphalt binder in the RAP.

**2303.05, D, 1.****Replace the Article:**

When anti-strip agent is required according to Article 2303.02, E, 2, the incorporation of the anti-strip agent into the HMA asphalt mixture will be considered as extra work ordered by the Engineer. Payment will be made at the rate of \$2.00 per ton (megagram) of HMA asphalt mixture in which the anti-strip agent is incorporated. For mix designs with a TSR greater than or equal to 80.0%, payment will stop when the Contracting Authority's TSR results of the field produced mixture are greater than or equal to 80.0%.

**Section 2310****2310.03, A, Equipment.****Replace the article and title:****A. Equipment.**

~~Use preparation equipment approved by the Engineer and complying with the following:~~

**1. Scarifying or Shotblasting Equipment.**

Use power operated equipment capable of uniformly scarifying or removing the existing surface in a satisfactory manner and to depths required. Other types of removal devices may be used if their operation is suitable and if they can be demonstrated to the satisfaction of the Engineer. The contract documents will include a pay item for such work.

**2. Sand Blasting Equipment.**

~~Use sand blasting equipment capable of removing rust, oil, and concrete laitance from the existing surface of the pavement.~~

**2310.03, B, Preparation of Surface.****Replace the Article:****1. General.**

- a. If full depth base repair is included in the project, complete it prior to surface preparation of the existing pavement surface.
- b. When required, include the entire surface area to be resurfaced in surface preparation of the existing pavement surface. Materials removed in the preparation operation may be placed in the shoulder area unless specified otherwise in the contract documents.

**2. Bonded Overlays.**

- a. Prepare the surface by shot blasting, or scarifying followed by either shot blasting or sand blasting. Scarify to a nominal depth of 1/4 inch (5 mm).
- b. Ensure preparation removes all dirt, oil, foreign materials, laitance, or loose material from the surface and edges against which new concrete will be placed.
- c. Work covered by Article 2310.03, B, 2 will be paid for according to Article 2310.05, C, Surface Preparation.

**3. Unbonded Overlays and Whitetopping.**

- a. ~~When jointing is specified in which panels are smaller than a normal lane width, scarify the entire surface to create a roughened surface. This will not apply when a new HMA stress relief layer is constructed as a part of the contract.~~ Prepare surface by scarifying per Section 2214.
- b. When placement of HMA stress relief layer is included as part of the contract for unbonded overlays, pavement scarification will not be required.
- ~~b~~c. At the direction of the Engineer, trim high spots found in the existing HMA pavement. This work will be accomplished during the scarification operation, only at isolated locations, and will be considered incidental to the surface preparation pavement scarification.
- d. Work covered by Article 2310.03, B, 3, will be paid for according to Article 2310.05, D, Pavement Scarification.

**4. Whitetopping.**

- a. ~~When jointing is specified in which panels are smaller than a normal lane width, scarify the entire surface using a cold-milling operation to create a roughened surface.~~

- b. ~~At the Engineer's direction, trim high spots found in the existing HMA pavement. This work will be accomplished during the scarification operation, only at isolated locations, and will be considered incidental to the surface preparation.~~

### **2310.03, C, 2, c, 2.**

#### **Replace the Article:**

- 2) Saw joints in the resurfacing directly over existing ~~transverse~~ joints. Saw ~~transverse~~ joints to the full depth of new resurfacing concrete, including depressions created in the existing surface and as specified in the widening areas. Saw ~~transverse~~ joints as soon as possible without causing excessive raveling. ~~Saw joints directly over existing longitudinal joints to a depth of one half the overlay thickness, with a maximum depth of 3 inches (75 mm).~~

### **2310.03, C, 3, a, Hot Mix Asphalt Stress Relief Course.**

#### **Replace the Article:**

Construct in accordance with Article 2303.03. ~~Compaction shall be in accordance with Article 2303.03, E, Use Class II Compaction, except use only static steel wheeled rollers. Article 2303.04 shall also apply.~~

### **2310.04, D, Hot Mix Asphalt Stress Relief Course.**

#### **Renumber the Article:**

**DE. Hot Mix Asphalt Stress Relief Course.**

#### **Add new Article:**

##### **D. Pavement Scarification**

###### **1. Measurement by Weight (Mass).**

The quantity of Pavement Scarification will be determined in accordance with Article 2214.06, A, 1.

###### **2. Measurement by Area.**

The quantity of Pavement Scarification will be determined in accordance with Article 2214.06, A, 2.

### **2310.05, C, 2.**

#### **Replace the Article:**

2. Payment is full compensation for preparation of the existing pavement, ~~sandblasting~~ scarifying or shot blasting, and for removal of the existing pavement surface material according to Article 1104.08.

### **2310.05, D, Hot Mix Asphalt Stress Relief Course.**

#### **Renumber the Article:**

**DE. Hot Mix Asphalt Stress Relief Course.**

#### **Add new Article D:**

##### **D. Pavement Scarification**

###### **1. Measurement by Weight (Mass).**

The Contractor will be paid the contract unit price for Pavement Scarification in accordance with Article 2214.07, A, 1.

###### **2. Measurement by Area.**

The Contractor will be paid the contract unit price for Pavement Scarification in accordance with Article 2214.07, A, 2.

## **Section 2316**

### **2316.02, A, 7, Exclusions.**

#### **Replace the Article:**

- a. ~~Areas excluded from smoothness testing are detour pavement, crossovers, shoulders, and sections less than 50 feet (15 m) long.~~

- ~~b. The Engineer will check all excluded areas with a surface checker. Excluded areas are not to exceed 1/8 inch in 10 feet (3 mm in 3 m).  
Paved shoulders will be excluded from smoothness testing unless used as a temporary driving surface. When used as a temporary driving surface, evaluate paved shoulders for bumps and dips only. Evaluate and correct as provided in Article 2316.03, C.~~

**2316.02, B, 1, a.****Replace the Article:**

- a. Provide and operate an Ames or California type profilograph or an inertial profiler to produce a profilogram (profile trace) of the surface tested, according to Materials I.M. 341. ~~Other types of profilographs or profilers that produce compatible results and meet the requirements of Materials I.M. 341 may be used.~~

**2316.02, B, 2, c.****Add to the end of the Article:**

Testing will be done at the quarter point of the traffic lanes unless another location is specified in the contract documents.

**2316.02, B, 3, Bridge Approach Sections.****Delete the Article:****~~3. Bridge Approach Sections.~~**

~~Bridge approach sections will not be considered a part of a pavement segment, section, or project.~~

**2316.02, D, 1.****Add to the end of the Article:**

- g. Detour Pavement.  
h. Crossovers.  
i. Sections less than 50 feet (15 m) long

Evaluate pavement segments excluded from profile index calculation for bumps and dips. Evaluate and correct per Article 2316.03, C.

**2316.03, B, 1, b.****Replace the second sentence of the Article:**

Use a cutting head that is a minimum of 24 inches (600 mm) wide, unless a 24 inch (600 mm) cutting head is necessary due to space limitations.

**2316.03, C, Bumps and Dips.****Delete the last sentence of the first paragraph:**

~~For areas excluded from profilograph testing, correct deviations exceeding 1/8 inch in 10 feet (3 mm in 3 m).~~

**2316.03, C, 3, Exceptions.****Replace the Article:**

~~When the Contractor is not responsible for the adjoining surface, the Engineer will evaluate bumps and dips exceeding 0.5 inches (12.7 mm) located within 16 feet (5 m) either side of the end of a section. The Contractor will not receive a price adjustment for bumps and dips in this area. When the Engineer instructs, the Contractor will be paid to repair these bumps and dips according to Article 1109.03, B.~~

When the Contractor is not responsible for the adjoining surface, bumps and dips in the 16 feet (5 m) at the end of a section will be reviewed by the Engineer. Correct all bumps and dips determined to be under the control of the Contractor and resulting from the Contractor's operations. Correction of bumps and dips determined to be beyond the control of the Contractor will be paid according to Article 1109.03, B.

**2316.05, H, 2.**

Replace Table 2316.05-4:

**Table 2316.05-4: Price Reduction for Pavement Smoothness**

Initial Profile Index	New Pavements	Resurfaced Pavements
Inches Per Mile (mm / km) Per Segment (a)	Dollars Per Segment	Dollars Per Segment
12.1-22.0 (191-345) 22.1-30.0 (346-475) 30.1 & Over (476 & Over) (a)	Unit Price Grind500 Grind Only	Unit Price Grind250 Grind Only
(a) For segments with an initial index of 30.1 (476) and over, grind the surface to a finish index of 22.0 (345) or better. In lieu of accepting a price reduction and grinding the surface to a final index of 22.0 (345) or better the Contractor may elect to replace part or all of the segment.		

**Section 2317****2317.01, General.**

Replace the Article:

- A.** Evaluate pavement smoothness for all Interstate and Primary main line pavement surfaces, and all other road surfaces included on Primary projects, except when specifically excluded or modified by the contract documents. Main line pavement is defined as all permanent pavement for through lanes. Exclusions from profilograph testing are detour pavement, shoulders, crossovers, and individual sections of pavement less than 50 feet (15 m) in length.
- B.** The Engineer may determine the pavement smoothness according to Materials I.M. 341 using a 10 foot (3 m) straightedge or rolling straightedge on surfaces excluded from profilograph testing. The variation of the surface from the testing edge of the straightedge is not to exceed 1/8 inch (3 mm) between any two contacts, longitudinal or transverse. Correct all irregularities exceeding the specified tolerance using equipment and methods approved by the Engineer. After the Contractor has corrected an irregularity, the Engineer may perform monitor testing of the area to verify compliance with the specified tolerance.

**2317.02.**

Add the Article:

- C.** For corrective work by diamond grinding, use grinding and texturing equipment meeting the requirements of Section 2532.

**2317.02, A.**

Replace the Article:

- A.** Provide and operate an Ames type or California type profilograph or an inertial profiler to produce a profilogram (profile trace) of the surface tested according to Materials I.M. 341. Other types of profilographs or profilers that produce compatible results and meet the requirements of Materials I.M. 341 may be used. Ensure the operator is trained and certified to operate the profilograph as required by the Contracting Authority.

**2317.03, B, Testing.**

Add the Article:

- 4.** Paved shoulders will be excluded from smoothness testing. When used as a temporary driving surface, evaluate paved shoulders for bumps and dips. Evaluate for high points and low points with deviations in excess of 0.5 inches (12.7 mm) in a length of 25 feet (7.6 m) or less. Take corrective action.

**2317.03, C, 1.**

Add to the end of the Article:

- i.** Detour pavement.

- j. Crossovers.
- k. Individual sections of pavement less than 50 feet (15 m) in length.

Evaluate pavement segments excluded from profile index evaluation for high points and low points with deviations in excess of 0.5 inches (12.7 mm) in a length of 25 feet (7.6 m) or less. Take corrective action.

**2317.03, C, 2.**

**Replace** the second sentence of the Article:

If the average profile index exceeds the tolerances listed in Article 2317.03, A, the Contractor may elect to eliminate that area from the profile index for the day's paving operation. ~~and evaluate the area using a 10-foot (3-m) straightedge as outlined in Article 2317.01.~~

**Add** to the end of the Article:

Evaluate pavement segments eliminated from profile index evaluation for high points and low points with deviations in excess of 0.5 inches (12.7 mm) in a length of 25 feet (7.6 m) or less. Take corrective action.

**2317.04, A, 2.**

**Delete** the second sentence of the Article:

~~Evaluate pavement segments excluded from profile index evaluation in Article 2317.03 for high points and low points with deviations in excess of 0.5 inches (12.7 mm) in a length of 25 feet (7.6 m) or less.~~

**2317.04, E, Corrective Work.**

**Replace** the first paragraph:

~~Corrective work is at the Contractor's expense except for the 16 feet (5 m) before and the 16 feet (5 m) beyond the end of the section when the Contractor is not responsible for the adjoining surface. When the Contractor is not responsible for the adjoining surface, bumps and dips in the 16 feet (5 m) at the end of a section will be reviewed by the Engineer. Correct bumps and dips determined to be under the control of the Contractor and resulting from the Contractor's operations. Correction of bumps and dips determined to be beyond the control of the Contractor will be paid according to Article 1109.03, B. Complete the corrective work prior to determining pavement thickness. Do not use bush hammers or other impact devices.~~

**2317.05, 1, PCC Pavement.**

**Replace** the Article:

**4B. PCC Pavement.**

The payment will be adjusted as shown in Table 2317.05-1 according to the posted or proposed speed.

**Table 2317.05-1: Schedule for Adjustment Payment for PCC Pavements (0 inch (0 mm) blanking band)**

Profile Index For greater than 45 mph  Inches per mile (mm / km)	Profile Index For 45 mph or less and ramps  Inches per mile (mm / km)	Dollars per 0.1 mile (161 m) segment per lane	
		Interstate & Multi-Lane Divided Segments	Other Primary Segments
22.0 or less (345 or less)	25.0 or less (395 or less)	+950.00	+850.00
22.1 to 23.5 (346 to 370)		+800.00	+650.00
23.6 to 26.0 (371 to 410)	25.1 to 30.0 (396 to 475)	+600.00	+450.00
26.1 to 40.0 (411 to 630)	30.1 to 65.0 (476 to 1025)	0.00	0.00
40.1 to 45.0 (631 to 710)	65.1 to 70.0 (1025 to 1105)	-600.00 or grind*	-450.00 or grind*
45.1 or more (711 or more)	70.1 or more (1105 or more)	0.00*	0.00*

\* These segments ~~must shall~~ be corrected to the levels shown in Table 2317.04-1.

**2317.05, 2, HMA Pavement.****Replace the Article:****2C. HMA Pavement.**

The payment will be adjusted as shown in Table 2317.05-2 according to the posted or proposed speed.

**Table 2317.05-2: Schedule for Adjustment Payment  
for HMA Pavements (0 inch (0 mm) blanking band)**

Profile Index For greater than 45 mph	Profile Index For 45 mph or less and ramps	Dollars per 0.1 mile (161 m) segment per lane	
Inches per mile (mm / km)	Inches per mile (mm / km)	Interstate & Multi- Lane Divided Segments	Other Primary Segments
10.0 or less (160 or less)		+850.00	+750.00
10.1 to 11.5 (161 to 180)	15.0 or less (235 or less)	+650.00	+500.00
11.6 to 13.5 (181 to 215)		+500.00	+350.00
13.6 to 15.5 (216 to 245)	15.1 to 20.0 (236 to 315)	+350.00	+200.00
15.6 to 35.0 (246 to 550)	20.1 to 45.0 (316 to 710)	0.00	0.00
35.1 to 40.0 (551 to 630)	45.1 to 50.0 (711 to 790)	-350.00 or grind*	-200.00 or grind*
40.1 or more (631 or more)	50.1 or more (791 or more)	0.00*	0.00*
* These segments <del>must shall</del> be corrected to the levels shown in Table 2317.04-1.			

**Division 24. Structures.****Section 2403****2403.03, E, 1.****Replace the Article:**

1. Protect concrete which has been placed from external stress between the time it ceases to be plastic and the time it may be stressed, as provided in Article 2403.03, N.

**2403.03, H, 1.****Replace the Article:**

1. When concrete placement in any section of a structure must be interrupted, locate the construction joint as specified in Article 2403.03, O. Leave the surface of the concrete in horizontal joints rough (except in the area near the form) to increase the bond with concrete that is to be placed later. Finish the top surface of the concrete adjacent to the forms to a horizontal 3/4 inch (20 mm) bevel strip.

**2403.03, M, 2, a.****Replace the Article:**

- a. Except when form removal is permitted in less than 5 calendar days, forms may be removed as soon after 5 calendar days as the concrete has attained the strength required in Article 2403.03, N, 2. When Maturity Method (according to Materials I.M. 383) for strength determination is used, the flexural strength of 550 psi (3.8 MPa) will be required. The days of age will depend on the Maturity Curve for the concrete mix used.

**2403.03, N, 2, g.****Delete the Article:**

- ~~g. Perform maturity testing using a Level 1 PCC Certified Technician with training for maturity testing. This technician may supervise other persons who may then perform the temperature testing.~~

**Section 2407****2407.02, H, Cement.****Replace the Article:**

Apply Section 4101, unless otherwise specified. If the use of Type III Portland cement has been authorized, use it in the same proportions as specified for Type I Portland cement. Cement with total equivalent sodium oxide between 0.61% and 0.75% may be used, provided it is non-reactive with the proposed aggregate when tested according to ASTM C 1260, C 1567, or C 1293.

**2407.02, I, Supplementary Cementitious Materials.****Replace the Article:**

2. Fly ash may be substituted for Portland cement. Use a substitution rate of no more than ~~15%~~ 25% by weight (mass).

**Add the Article:**

4. The maximum total supplementary cementitious materials substitution shall not exceed 50%.

**2407.03, L, 4.****Replace the first sentence of the Article:**

4. Coat and seal beam ends exposed in the complete structure with an approved gray or clear epoxy listed in Materials I.M. 491.129, Appendix A B.

**Section 2408****2408.02, Q, 2, c, 1.****Replace the second sentence of the Article:**

Approved paints are shown in Materials I.M. 482.02, Appendix A and Appendix C.

**2408.02, Q, 2, c, 2.****Replace the first sentence of the Article.**

Apply a top coat of waterborne acrylic paint from the approved lists shown in Materials I.M.s 482.05, Appendix A; or 482.07, Appendix A, to the primed surfaces after the primer has cured to a resistance rating of 4 as verified by 50 MEK rubs as per ASTM D 4752 for inorganic zinc rich primers.

**2408.03, B, 6.7, Nondestructive Testing.****Replace subparagraph 6.71.2(2):**

50% of each joint subject to compression or shear in each main member as specified, ~~except that including longitudinal butt weld splices in beam or girder webs need not be tested by radiographic or ultrasonic testing unless so specified in contract document.~~ If unacceptable discontinuities are found in the first 50% of joint, the entire length shall be tested.

**Section 2414****2414.04, A, 1, Concrete Barrier Railing.****Replace the first sentence of the Article:**

Linear feet (meters) shown in the contract documents, measured from end to end of the barrier, including end sections and transition sections.

**2414.04, A, 2, Concrete Open Railing.****Replace the first sentence of the Article:**

Linear feet (meters) shown in the contract documents, measured from end to end of the barrier, including end sections and transition sections.

**2414.04, A, 3, Retrofit Concrete Barrier Railing.**

**Replace** the first sentence of the Article:

Linear feet (meters) shown in the contract documents, measured from end to end of the barrier, including end sections and transition sections.

**Section 2416****2416.03, Construction.**

Add new Article:

- E. Trenchless Construction.**  
Apply Section 2553.

**2416.04, Method of Measurement.**

Add new Article:

- H. Trenchless:** Measurement for each type and size of pipe installed by trenchless methods will be in linear feet (meters) along the centerline of the pipe.

**2416.05, Basis of Payment.**

Add new Article:

**H. Trenchless:**

1. Payment will be made at the contract unit price per linear foot (meter) for each type and size of pipe.
2. Payment is full compensation for:
  - Furnishing and installing pipe,
  - Trenchless installation materials and equipment,
  - Pit excavation, dewatering, and placing backfill material, and
  - Pipe connections.

**Section 2428****2428.02, B, Measurement.**

**Replace** the Article:

Provide and operate an Ames type or California type profilograph or an inertial profiler to produce a profilogram (profile trace) of the surface tested according to Materials I.M. 341. Other types of profilographs or profilers that produce compatible results and meet the requirements of Materials I.M. 341 may be used.

**2428.03, C.**

**Delete** the last sentence of the Article:

~~Use a cutting head that is a minimum of 24 inches (600 mm) wide.~~

**2428.04, Bumps and Dips.**

**Delete** the last sentence of the first paragraph:

~~For areas excluded from profilograph testing, correct deviations exceeding 1/8 inch in 10 feet (3 mm in 3 m).~~

**2428.04, A, 1.**

**Replace** the Article:

1. Correct all bumps exceeding 0.5 inch (12.7 mm) within a 25 foot (7.6 m) span, as indicated on the profilogram, except as stated in Article 2428.04, C.

**2428.04, B, 1.**

**Replace** the Article:

1. Correct all dips exceeding 0.5 inch (12.7 mm) in a 25 foot (7.6 m) span, as indicated on the profilogram, only when the Engineer requires, except as stated in Article 2428.04, C. The Contractor will be assessed a price adjustment of \$900 for each dip exceeding 0.5 inch (12.7 mm) that is not corrected, except as stated in Article 2428.04, C.

**2428.04, C, Exceptions.**

**Replace** the Article:

~~When the Contractor is not responsible for the adjoining surface, the Engineer will evaluate bumps and dips exceeding 0.5 inches (12.7 mm) located within 16 feet (5 m) either side of the end of a section. The Contractor will not receive a price adjustment for bumps and dips in this area. When the Engineer instructs, the Contractor will be paid to repair these bumps and dips according to Article 1109.03, B.~~  
 When the Contractor is not responsible for the adjoining surface, bumps and dips in the 16 feet (5 m) at the end of a section will be reviewed by the Engineer. Correct bumps and dips determined to be under the control of the Contractor and resulting from the Contractor's operations. Correction of bumps and dips determined to be beyond the control of the Contractor will be paid according to Article 1109.03, B.

**Section 2429****2429.03, B, 1, Welding.**

**Replace** the first bulleted item:

- Comply with Article 2408.03, B.

**Section 2432****2432.02, B, Materials.**

**Replace** "I.M. 445, Appendix A" with "I.M. 445.03, Appendix A" in the first paragraph.

**2432.02, B, 3, a, Horizontal and Vertical Joints.**

**Replace** the Article:

Cover horizontal and vertical joints between panels with a polyester fabric that meets requirements of Article 4196.01, B, 3, and is acceptable to the MSE wall company. Obtain the Engineer's approval for adhesives used to temporarily attach the fabric to the back of the facing panels.

**Section 2434****2434.04, Method of Measurement.**

**Replace** the Article:

The quantity of Disc Bearing Assemblies (each) will be shown in the contract documents.

**Section 2435****2435.03, F, 4, c, 8.**

**Replace** the Article:

- 8) Determine the allowable drop in water level by using the equation given in Article 2504.03, L, 4, b, 3, c. After 1 hour, measure the drop in water level.

## Division 25. Miscellaneous Construction.

### Section 2501

#### 2501.03, A, 10, b, 1, d.

Replace the Article:

- d) Equipment meeting the values in Tables 2501.03-1 and 2501.03-2 in the Appendix will be acceptable for wave equation analysis.

#### 2501.04, Method of Measurement.

Replace the first paragraph of the Article:

Measurement for the quantities of Wood Piles, Steel HP-Piles (either encased or not), Steel Pipe Piles, Concrete Piles, and Steel Sheet Piles, will be the plan length quantity. The quantity may be modified by Article 2501.04, D, ~~or~~ F, or G.

Add new Article:

#### G. Unused Piles.

The quantity of unused piling delivered to the job site without having been placed in the leads or any attempt made to drive it will be subtracted from the plan quantity.

#### 2501.05, Basis of Payment.

Rename and Replace the Article:

#### A. ~~Increased or Decreased Length or Size of Piles~~ Unused Piles.

1. Return unused piling (either ordered as directed by the Engineer, or specified in the contract documents and delivered to the job site without having been placed in the leads) to the supplier. Unused piles are piles that have been delivered to the job site without having been placed in the leads or any attempt made to drive them. Payment will be made for freight, restocking, and handling charges.
2. ~~When the plans designate steel HP piles 60 feet (18 m) or shorter and the Engineer subsequently orders steel H piles longer than 60 feet (18 m), the adjusted price for such piles will, when required, will also include payment for one extension splice for each pile at the rate specified in Paragraph C below. The Contracting Authority may purchase unused piles for the invoice cost plus handling and transporting costs.~~

Add new Article:

#### N. Payment for Driving Only.

If extensions or extra piles are furnished by the Contracting Authority, payment for driving will be paid according to Article 1109.03, B.

### Section 2502

#### 2502.03, C, 2.

Replace the Article:

2. Install outlets as shown in the contract documents at approximately 500 foot (150 m) intervals. Provide additional outlets at the low points of vertical sag curves. The Engineer may adjust outlet location. Cover the outlet end of each subdrain with the specific outlet covering. Cap the blind end with a fitting recommended by the manufacturer.

#### 2502.03, C, 18.

Replace the third and fourth sentences of the Article:

Drive the posts 3 feet (1 m) into the ground and install 4 foot (1.1 m) plastic sleeves over the posts. ~~If the Contracting Authority furnishes sleeves, install the sleeves they furnish. If plastic sleeves are furnished by the Contracting Authority, install over posts.~~

**Section 2505****2505, Guardrail Construction and Removal.**

Replace the Section:

**Section 2505. Guardrail Construction and Removal****2505.01 DESCRIPTION.**

Construct guardrail. Remove existing guardrail.

**2505.02 MATERIALS.**

Provide guardrail materials meeting the requirements for the type of guardrail specified. Provide guardrail posts of wood or steel as specified in the contract documents.

**A. Formed Steel Beam Guardrail and Low Tension Cable Guardrail.**

Apply Section 4155.

**B. High Tension Cable Guardrail.**

1. Meet the manufacturer's materials requirements. For line post and end anchor foundations, use Class C mix according to Section 2403.
2. Supply spare parts kits for high tension cable guardrail. Deliver them to the Contracting Authority's nearest maintenance office. Spare parts kits consist of the following items, but do not include a tension meter:
  - An extra supply of line ~~TL-4~~ posts (socketed-type), including post hardware and accessories (caps, reflective sheeting, straps, spacers, and socket covers). This supply is to include enough materials to complete a 300 foot (90 m) installation.
  - An extra supply of anchor posts (socketed-type), including post hardware and accessories (caps, reflective sheeting, straps, fittings, spacers, and socket covers). This supply is to include enough materials to complete one end anchor installation.
  - Specialized tools necessary to maintain the guardrail, such as a spreader tool.

**2505.03 CONSTRUCTION AND REMOVAL OF GUARDRAIL.**

Furnish and install posts, beams or cables, end anchors, and special connections and fittings required in the contract documents. Install to the specified line and mounting height. Changes in the installed length require the Engineer's approval.

**A. Steel Beam Guardrail and Low Tension Cable Guardrail.****1. Steel Beam Guardrail.**

- a. Install w-beam or thrie beam as designated in the contract documents. When not designated, install w-beam.
- b. Use steel beam guardrail ready for assembly when delivered to the project. Do not punch, drill, cut, or weld beam in the field.
- c. Steel beam guardrail elements may be furnished in either 25 foot (7.62 m) or 12.5 foot (3.81 m) nominal length sections.
- d. Straight rail sections may be used to construct radii of 150 feet (45 m) or greater. Shop curve rail sections for radii less than 150 feet (45 m).
- e. Install posts for steel beam guardrail at spacing identified in the contract documents. If not defined, use 6.25 foot (1.91 m) spacing.
- f. Where necessary, adjust horizontal and vertical alignment of the guardrail to account for road curvature. Use minor adjustments with no abrupt changes.
- g. Fully connect beam to all posts as shown in the contract documents. For W-beam guardrail installations with wood blockouts, nail the blockout to the post to prevent blockout rotation. Other methods of preventing rotation may be approved by the Engineer.

- 2. Low Tension Cable Guardrail.**
    - a. Attach the cables to the posts and end anchors according to the contract documents. Attach compensation devices and turnbuckles so as not to interfere with the function of any part of the installation.
    - b. Individual cables may be spliced by use of an approved device installed where no interference with any other function will occur. One splice per cable is allowed. Cable may not be spliced within 250 feet (75 m) of another splice in one of the other cables.
    - c. Tighten individual cables using mechanical means. Stretch cables tight so that no sags occur between posts and so that, in the opinion of the Engineer, the finished installation presents a satisfactory appearance.
  - 3. Posts.**
    - a. Drive posts in a manner that does not damage the post. Place backfill material (consisting of material removed or other suitable soil) around posts required to be set in prebored holes. Place the backfill material in lifts not exceeding 4 inches (100 mm). Thoroughly compact each lift before the next lift is placed.
    - b. Install the posts to be firm, plumb, and at the location, spacing, and elevation designated.
  - 4. End Anchors and Terminals.**
    - a. Install end anchors and terminals of the type shown in the contract documents. Cast end anchors in place using Class C concrete according to Section 2403, except air content may vary from 4% to 7%. Finish exposed concrete as directed by the Engineer.
    - b. When bolt holes in concrete bridge end posts or concrete barrier do not align correctly for the steel beam guardrail terminal connection, drill new bolt holes in the locations required for the terminal connection. Use a core bit to ensure correct bolt hole location and alignment.
  - 5. Guardrail Markers.**

When indicated in the contract documents, install guardrail markers of the required type meeting the requirements of Article 4186.12.
  - 6. Delineators and Object Markers.**

When indicated in the contract documents, install delineators and object markers of the required type meeting the requirements of Articles 4186.11 and 4186.12.
- B. High Tension Cable Guardrail.**  
Furnish high tension cable guardrail from the approved products listed in Materials I.M. 455.01.
- 1. Installation of High Tension Cable Guardrail.**
    - a. Install high tension cable guardrail according to the manufacturer's recommendations. Prior to construction, provide the Engineer with three copies of the manufacturer's most current product manuals covering installation and maintenance of the installation. Include signed certification statements that all materials to be incorporated into the installation comply with Materials I.M. 455.01.
    - b. Tension the cables according to the manufacturer's recommendations at the time of installation, then check and adjust the tension approximately three weeks after installation.
  - 2. Posts.**
    - a. Ensure posts are plumb and at the manufacturer's recommended location, spacing, and elevation. Spacing is not to exceed 20 feet (6 m).
    - b. Furnish "socketed" type posts and install in reinforced concrete foundations. Cast the foundations in place according to Article 2505.03, A, 4. Use the dimensions and reinforcement recommended by the manufacturer, except with a foundation depth of at least 42 inches (1.1 m).

**3. End Anchors.**

- a. Incorporate one of the approved end anchors listed in Materials I.M. 455.01. Furnish end anchors produced by the same manufacturer of the high tension cable guardrail.
- b. Construct end anchors according to the manufacturer's recommendations for the site specific soil conditions. Soils testing required is incidental to the cable installation.

**4. Delineating High Tension Cable Guardrail.**

- a. Delineate high tension cable guardrail installations using retroreflective sheeting. Apply the sheeting to the last five posts at each end of an installation and throughout the remainder of the installation at a maximum spacing of 50 feet (15 m). Apply Type III or IV retroreflective sheeting that:
  - Meets the requirements of Article 4186.03,
  - Provides at least 7 square inches (4500 mm<sup>2</sup>) of surface area when viewed from a line parallel to the roadway centerline, and
  - Is yellow or white and of the same color as the adjacent edge line.
- b. Attach sheeting near the top of the post: 1) in a manner recommended by the manufacturer; and 2) to that side of the post from which vehicle impacts are most likely. For installations where impacts are likely to occur from either side, apply the sheeting to both sides of the post.

**C. Guardrail Removal.**

1. Remove guardrail, delineators, and object markers as shown in the contract documents. Guardrail materials become the property of the Contactor unless stated otherwise in the contract documents. Deliver salvaged materials to the location stated in the contract documents. Salvaged materials become the property of the Contracting Authority. Remove non-salvaged materials from project site.
2. Carefully remove, disassemble, and clean the salvaged guardrail without damaging the parts. Replace material damaged during removal, disassembly, or cleaning with new material of the same kind (at no cost to the Contracting Authority). Stockpile salvaged materials as indicated in the contract documents. Restore areas disturbed by the removal operation to an acceptable condition.
3. Place backfill material consisting of suitable soil in post holes. Sand or other granular materials are not acceptable for use as backfill material. Place backfill material in lifts not exceeding 4 inches (100 mm). Thoroughly compact each lift before the next lift is placed. Fill and tamp holes within the same working day.

**D. Limitations.****1. General.**

- a. Do not stress attachments to new concrete or to bolts set in epoxy resin until the new concrete or epoxy resin has attained an age of 3 calendar days. Concrete foundations for posts and end anchors may be subjected to cable tensioning after 3 calendar days. These time requirements may be lengthened by the Engineer during cool weather.
- b. Complete grading work, if required, prior to removal of existing guardrail or installation of new guardrail.
- c. When a roadway is open to traffic during construction, complete guardrail installations within 5 working days from the day the structure, barrier rail, pavement, or shoulder (whichever is the controlling item of work) is sufficiently completed to allow guardrail installation. Each installation exceeding the 5 working day completion requirement will be subject to a contract price adjustment of \$100 per working day. For high tension cable guardrail, this price adjustment will be waived when the installation serves as crossover protection only and no guardrail or concrete barrier has been removed.
- d. When a roadway is closed to public traffic for construction, complete all guardrail installations before opening the road to traffic.

2. **Steel Beam Guardrail and Low Tension Cable Guardrail.**
  - a. In areas where guardrail construction is not restricted by other construction, remove existing guardrail (if any) and construct new guardrail, except for end anchors requiring concrete, on the same working day. Place concrete for the final end anchor no later than the next working day.
  - b. For steel beam guardrail installations requiring end anchors, use a Type E Terminal Section, a Type II Barricade, and a Type A Warning Light to end the installations until the final anchor is finished.
  
3. **High Tension Cable Guardrail.**
  - a. In case of a discrepancy between these Specifications and the manufacturer's recommendations, these Specifications will govern.
  - b. At locations where the proposed guardrail installation does not interfere with the functioning of the existing guardrail, do not remove the existing guardrail until the high tension cable guardrail system is fully functional. Once the installation is fully functional, remove existing guardrail within 5 working days.

#### **2505.04 METHOD OF MEASUREMENT.**

Measurement will be as follows:

##### **A. Steel Beam Guardrail Installation.**

1. **Steel Beam Guardrail.**  
Linear feet (meters) shown in the contract documents.
2. **Steel Beam Guardrail Barrier Transition Section.**  
By count.
3. **Steel Beam Guardrail End Anchors.**  
By count for each type of end anchor constructed. Installations continued across a bridge will not be counted as end anchors.
4. **End Terminals.**  
By count for each type of end terminal constructed.

##### **B. Low Tension Cable Guardrail Installation.**

1. **Low Tension Cable Guardrail.**
  - a. Linear feet (meters) shown in the contract documents.
  - b. Length will be calculated using one of the cables of cable guardrail, with no deductions for turnbuckles or compensating devices.
2. **Low Tension Cable Guardrail, End Anchor.**  
By count.

##### **C. High Tension Cable Guardrail Installation.**

1. **High Tension Cable Guardrail.**
  - a. Linear feet (meters) shown in the contract documents.
  - b. Length will be calculated as the protection length, not including lengths of end anchors.
2. **High Tension Cable Guardrail, End Anchor.**  
By count.
3. **High Tension Cable Guardrail, Spare Parts Kit.**  
By count for the number of spare parts kits delivered.

**D. Removal of Guardrail.**

1. Steel beam guardrail: linear feet (meters) to the nearest 0.5 foot (0.1 m) by measuring along the front of the rail from bolt hole to bolt hole.
2. Cable guardrail: in linear feet (meters) to the nearest 1 foot (0.1 m) by measuring along the front of one of the cables with no deductions for turnbuckles or compensating devices.

**2505.05 BASIS OF PAYMENT.**

Payment for guardrail items will be the contract unit price as described below. Payment includes furnishing all materials, equipment, tools, and labor necessary to complete the removal and installation of the guardrail, including excavation and placing backfill. However, excavation in unexpected rock will be paid for as extra work according to Article 1109.03. Unexpected rock will be considered as rock encountered during excavation that was not visible from the roadway and was not indicated in the contract documents.

**A. Steel Beam Guardrail Installation.****1. Steel Beam Guardrail.**

- a. Per linear foot (meter).
- b. Payment for nested steel beam guardrail will be included in the contract unit price.
- c. Posts, spacer blocks, object markers, delineators, guardrail markers, barrier markers, offset brackets, and remaining hardware are incidental.

**2. Steel Beam Guardrail Barrier Transition Section.**

- a. Each.
- b. Payment for nested steel beam guardrail will be included in the contract unit price.
- c. Posts, spacer blocks, object markers, delineators, guardrail markers, barrier markers, offset brackets, and remaining hardware are incidental.

**3. Steel Beam Guardrail End Anchors.**

- a. Each for the type of end anchor constructed.
- b. Payment for nested steel beam guardrail will be included in the contract unit price.
- c. Drilling new bolt holes for guardrail connection is incidental.

**4. End Terminals.**

- a. Each for the type of end terminal constructed.
- b. Payment for nested steel beam guardrail will be included in the contract unit price.
- c. Posts, spacer blocks, object markers, delineators, guardrail markers, offset brackets, and remaining hardware are incidental.

**B. Low Tension Cable Guardrail Installation.****1. Low Tension Cable Guardrail.**

- a. Per linear foot (meter).
- b. Posts, spacer blocks, object markers, delineators, guardrail markers, barrier markers, offset brackets, hook bolts, turnbuckles, compensating devices, concrete, and remaining hardware are incidental.

**2. Low Tension Cable Guardrail, End Anchor.**

Each.

**C. High Tension Cable Guardrail Installation.****1. High Tension Cable Guardrail.**

- a. Per linear foot (meter).
- b. Posts and accessories required by the manufacturer, additional hardware and concrete, and grading required to meet cable height tolerance are incidental.

**2. High Tension Cable Guardrail, End Anchor.**

Each. Grading required to meet the manufacturer's recommendations is incidental.

**3. High Tension Cable Guardrail, Spare Parts Kit.**

Each. Payment is full compensation for delivering spare parts kit to the location identified in the contract documents.

**D. Removal of Guardrail.**

1. Per linear foot (meter) for removal of guardrail, including steel beam guardrail, cable guardrail, end anchors, and terminal devices.
2. Payment includes hauling salvaged material to the stockpile site. Placing backfill material around posts and in end anchor footing holes is incidental.
3. Payment for nested steel beam guardrail will be included in the contract unit price.
4. Posts, spacer blocks, object markers, delineators, guardrail markers, offset brackets, end anchors, terminal devices, and remaining hardware are incidental.
5. For low tension cable guardrail, the following additional items are incidental: hook bolts, turnbuckles, compensating devices, and remaining hardware.

**Section 2506****2506.02, F, 1.**

**Replace** the first sentence of the Article:

Measure the fluidity of the flowable mortar using the ~~Corps of Engineers flow cone method CRD-C611-80~~ method described by Materials I.M. 375.

**Section 2508****2508.01, B, 1, a.**

**Replace** the Article:

- a. Apply Article 2508.01, B, only to structures previously painted with lead based paints and for structures with Scratch Tests indicating a hazardous waste is expected to be generated during the project. Scratch tests are provided elsewhere in the contract documents for information per Iowa Code Section 89B.8, Subsection 1.

**Section 2511****2511.03, C, 3, a, 1.**

**Replace** the second sentence of the Article:

Ensure the finished surface has a cross slope of ~~1/4 inch per foot (20 mm/m)~~ between 1% and 2% for drainage, unless shown otherwise.

**2511.04, D, Detectable Warnings for Curb Ramps.**

**Replace** the Article:

~~Square feet (square meters) shown in the contract documents.~~ The Engineer will measure in square feet, to the nearest square foot (square meters to the nearest 0.1 square meter), the surface area of Detectable Warnings for Curb Ramps.

**Section 2513****2513.03, A, 1, a.**

**Replace** the first sentence of the Article:

- a. Use concrete specified in ~~Article 2513.03, A, 2, or as approved by the Engineer, and complying with Section 2403~~ 2407.

**2513.04, A.****Replace** the Article:

- A.** Concrete Barrier: linear feet (meters) shown in the contract documents, based on the contract quantity from end to end of the barrier ~~including~~ ~~excluding~~ end sections, width transition sections, and height transition sections.

**2513.04, B.****Renumber** and **Replace** the Article:

- BC.** Reinforcement in For concrete barrier railing for bridge structures: ~~as provided in~~ apply Article 24014.04 2414.04.

**Add** the Article:

- B.** End sections, width transition sections, and height transition sections: By count for each type of end section, width transition section, or height transition section.

**2513.04, C.****Renumber** the Article:

- CD.** Reinforcement in concrete barrier for other than bridge structures will not be measured separately.

**2513.05, B.****Renumber** and **Replace** the Article:

- BC.** Reinforcement in For concrete barrier railing for ~~new~~ bridge structures: ~~as provided in~~ apply Article 24014.05 2414.05. ~~The quantities will be included in the quantities for the superstructure or abutments.~~

**Add** the Article:

- B.** End sections, width transition sections, and height transition sections: Each for the type of end section, width transition section, or height transition section specified.

**2513.05, C.****Renumber** and **Replace** the Article:

- CD.** Reinforcement in ~~retrofit~~ concrete barrier for other than bridge structures: not paid for separately.

**2513.05, D.****Renumber** and **Replace** the Article:

- DE.** Payment as described above is considered full compensation for all work involved.

**Section 2514****2514.05, C, Shoulders.****Replace** the Article:

According to Article 2302.05, D.

**Section 2518****2518.03, A, 1, b****Replace** the second sentence of the Article:

- b.** Place a Type III barricade, described in Part 6 of the MUTCD, immediately in front of the fence at the approximate roadway centerline. Mount a ROAD CLOSED (R11-2) sign ~~over the top two rails of~~ on the Type III barricade.

**Section 2522****2522.03, E, 4, Anchor Bolts, Washers, and Nuts.****Replace** the first sentence of the Article:

Ensure galvanizing for anchor bolts, washers, and nuts meets the requirements of ASTM A 153, Class C F 2329; or ASTM B 695, Class 50, Type I coating.

**Section 2525****2525.02, H, 1, General.****Replace** the Article:

Meet the requirements of Article 2523.03, N and Article 4185.10.

**2525.03, H, 3, Hardware.****Replace** the third sentence of the Article:

All hardware shall be steel, hot-dipped galvanized according to ASTM A 153, Class C F 2329, or ASTM B 695, Class 50, Type I coating, or shall have an electro deposited coating of the same coating thickness, and so designed for this purpose.

**2525.03, H, 3, b.****Delete** the second bullet of the Article:

- ~~Galvanizing according to ASTM A 153, Class C, or ASTM B 695, Class 50.~~

**Section 2527****2527.03, C, 5.****Replace** the second sentence of the Article:

When symbols or legends are removed, remove the entire area of the existing symbol or legend; in a rectangular shape so no directionality may be observed from the removed symbol or legend.

**Section 2528****2528.01, A.****Add** new Article:

10. Provide ten calendar days advance notification of a pedestrian path closure to the following:
  - Iowa Department of the Blind: [Curtis.chong@blind.state.ia.us](mailto:Curtis.chong@blind.state.ia.us).
  - National Federation of the Blind of Iowa: [m.barber@mchsi.com](mailto:m.barber@mchsi.com).
  - Engineer

**2528.01, A, 5.****Replace** the Article:

5. Ensure all traffic control complies with the current edition of the MUTCD, Part VI 6 as adopted by the Department.

**2528.01, A, 6.****Replace** the Article:

6. On Interstate and Primary Road projects, use crashworthy Category I and Category II traffic control signs and devices that meet NCHRP Report 350 requirements. ~~Category I devices are defined as low mass, single piece traffic cones, tubular markers, single piece drums, and delineators. In order for these devices to meet the Category I limitations, no lights or signs may be attached to them. Category II devices are defined as vertical panels, Type I, II, and III barricades, and moveable skid mounted sign stands.~~

**2528.01, A, 7.****Replace the Article:**

7. Upon request, provide the following to the Engineer for the purpose of documenting the crashworthiness of Category I and Category II traffic signs and traffic control devices:
  - a. The vendor's self-certification for Category I traffic control devices.
  - b. FHWA NCHRP Report 350 approval memos for Category II signs and traffic control devices.

**2528.01, A, 8.****Replace the Article:**

8. A list of approved Category II traffic control devices is found on the World Wide Web at the following URL: [http://safety.fhwa.dot.gov/roadway\\_dept/policy\\_guide/road\\_hardware/wzd/](http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/wzd/)  
[http://safety.fhwa.dot.gov/roadway\\_dept/policy\\_guide/road\\_hardware/wzd/](http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/wzd/).

**2528.03, C.****Add new Article:**

5. For pedestrian path closures, use Type II Barricades meeting the following requirements:
  - The top of the top rail of the barricade is 36 to 42 inches (900 to 1050 mm) above the adjacent surface. The top rail of the barricade is parallel to the bottom rail and situated to allow pedestrians to use the rail as a guide for their hands for way-finding purposes.
  - The bottom of the bottom rail of the barricade is no higher than 1.5 inches (38 mm) above the adjacent surface. The top of the bottom rail is no lower than 6 inches (150 mm) above the adjacent surface.
  - The barricade is continuous, stable, and non-flexible.
  - Install across the full width of the closed pedestrian path.
  - Locate to minimize sight distance restrictions for road users.

**2528.03, C, 1, b, Cones, Vertical Panels, 42 inch (1050 mm) Channelizers, Drums, and Tubular Markers.****Add a new paragraph:**

- 5) 42-inch (1050 mm) channelizers may be used in place of drums in work areas remaining in place for up to three days. Spacing of channelizers shall be half the spacing required for drums or double the number of drums required.

**2528.04, H, 1.****Replace the Article:**

1. By count for the number of days each pilot cars was used during each work shift. A shift is a scheduled period of work for the Contractor's operations.

**2528.04, H, 2.****Replace the Article:**

2. For a pilot car to be counted:
  - a. Use of the pilot car is necessary and it is used as part of preplanned work that is started that day shift and is intended to proceed for a major part of the day shift. If used less than 4 hours in a calendar day during a shift, the operation will be counted as a half day one half pilot car will be counted. If a pilot car is used for more than 16 hours in a calendar day, the pilot car will be counted as 2 days.
  - b. Use of other pilot cars is necessary and they are used for at least 1 hour during the day shift, perhaps intermittently, and this shall be the primary duty of the employee. If used less than 4 hours in a calendar day shift, the one-half pilot car will be counted as a half day.

**2528.04, I, 1.****Replace the Article:**

1. By count for the number of days each flaggers was used during each work shift. A shift is a scheduled period of work for the Contractor's operations.

**2528.04, I, 2.****Replace the Article:**

2. For flaggers to be counted:
  - a. Use of the flaggers is necessary and they are used as part of preplanned work that is started that day shift and is intended to proceed for a major part of the day shift. If used less than 4 hours in a calendar day during a shift, the one-half flagger will be counted as a half day.
  - b. Use of other flaggers is necessary and they are used for at least 1 hour during the day shift, perhaps intermittently, and this shall be the primary duty of the employee. If used less than 4 hours in a calendar day shift, the one-half flagger will be counted as a half day. If a flagger is used for more than 16 hours in a calendar day, the flagger will be counted as 2 days.

**2528.05, E, Temporary Crash Cushions.****Replace the Article:**

Article 2551.05, A, applies.

**2528.05, H, Pilot Cars.****Replace the Article:**

Predetermined contract unit price per day each for the number of days shifts each pilot car was operated.

**2528.05, I, 1.****Replace the Article:**

1. Predetermined contract unit price per day each for the number of days shifts each flagger was used.

**Section 2529****2529.05, A, 2, c.****Replace the Article:**

When the average thickness of the existing pavement a patch at any one patch location varies from the patch thickness shown in the plans, the square yard (square meter) patching quantity will be adjusted per Table 2529.05-1. Quantities will be increased when pavement patch thickness is greater than shown in the plans and decreased when less than shown in the plans. Adjustments will not be made for increased thickness due to damaged subgrade, base, or subbase as described in Article 2529.03, D, 2.

**Section 2532****2532.03, B, 3, a.****Replace the Article:**

- a. Grind and longitudinally groove the entire surface of the bridge deck according to Article 2412.03, D, 4, a.

**Section 2536****2536.02, A, Bidding.****Replace the Article:**

Bids will be received for this project from bidders who hold a valid permit for this type of work issued by the Iowa Workforce Development, Labor Services Division, and from bidders who can provide documentation the work will be subcontracted to a contractor holding a valid permit.

**Section 2538****2538.03, D, 7, a, 2.**

**Replace** the Article:

- 2) Remove septic tanks and place backfill in the excavation according to Article 2538.03, D, 9. Removed septic tanks become property of the Contractor. Transport off the project.

**2538.03, D, 7, b, Cisterns**

**Replace** the Article:

Remove all cisterns and place backfill in the excavation according to Article 2538.03, D, 9. Cisterns will be considered demolition debris. Remove from the site.

**Section 2539****2539.02, B, Fluidity.**

**Replace** the first sentence of the Article:

Measure the fluidity of the grout slurry using the ~~Corps of Engineers flow cone method according to their specification CRD-C611-80~~ method described by Materials I.M. 375.

**Section 2550****2550.05, Method of Measurement and Basis of Payment.**

**Replace** the Article:

All costs associated with furnishing, installing, operating, maintaining, moving, and removing night work lighting and other traffic control requirements required by this specification, are incidental to the lump sum bid price for Mobilization.

**Section 2551****2551.03, B, 3.**

**Replace** the Article:

3. When a temporary crash cushion is no longer required, remove it. The crash cushion becomes the property of the Contractor. Remove anchor bolts, if used, and fill the bolt holes with one of the non-shrink grouts listed in Materials I.M. 491.13, Appendix A.

**Section 2553****2553.02, A, 2, Carrier Pipe Installed without a Casing Pipe.**

**Add** new Article:

- e. **Roadway Pipe Culvert.  
Reinforced Concrete Pipe:** Apply Section 4145.

**2553.02, D, Backfill Material for Abandoned Tunnels.**

**Add** the Article:

3. **Option 3:** CLSM according to Article 2552.02, E, 3.

**2553.02, D, 2, Option 2.**

**Replace** the Article:

2. **Option 2:** Flowable mortar according to Article 2506.02.

**2553.02, E, 2, c, Controlled Low Strength Material (CLSM).**

Replace the Article:

- c. **Controlled Low Strength Material (CLSM):** Apply Article 2552.02, E, 3.

**Section 2555****2555, Deliver and Stockpile Salvaged Materials.**

Add entire new Section:

**Section 2555. Deliver and Stockpile Salvaged Materials****2555.01 DESCRIPTION.**

Deliver and stockpile salvaged materials as tabulated on the plans.

**2555.02 MATERIALS.**

None.

**2555.03 CONSTRUCTION.**

- A. Materials to be salvaged, delivered, and stockpiled will be tabulated on the plans. Plans will identify the quantity of each item to be salvaged, delivery location, and stockpiling requirements.
- B. Salvage without damage, disassemble, clean, match mark (if required) items to be stockpiled, and bundle in lots normal to the product being salvaged. Replace items damaged from Contractor's operations with new materials (at no additional cost to the Contracting Authority).
- C. Deliver salvaged materials, to the location identified on the contract documents, during normal business hours. Contact the Engineer to schedule delivery and stockpiling of materials at stockpile site.
- D. Stockpile salvaged materials to ensure items are not in contact with soil in an orderly fashion. Provide blocking as necessary.

**2555.04 METHOD OF MEASUREMENT.**

None. Lump sum item.

**2555.05 BASIS OF PAYMENT.**

The lump sum price for Deliver and Stockpile Salvaged Materials will be full payment for salvaging, disassembly, cleaning, match marking, bundling, delivery, blocking, and stockpiling.

**Division 26. Roadside Development.****Section 2601****2601.03, B, 4, j, 2.**

Replace the Article:

- 2) A rotary tiller will be required for the preparation of seedbed according to Article 2601.03, B, 4, a. Prior to the application of seed, ensure the seedbed is firm, smooth, and free of any material 1 1/2 inches (40 mm) in diameter or greater including clods, rocks, and other debris. Roll the seedbed both before and after the application of seed. For rolling, use either open grid type equipment or cultipacker type equipment modified by covering with expanded metal mesh.

**2601.03, B, 4, i, 3.**

Replace the Article:

- 3) Seeding after August 31 consists of stabilizing crop seed, hairy vetch (legume seed), and grass seed except native grass. Sow other legume seed and native grass seed the following spring as soon as

possible after March 1, and before April 1, when the ground is friable from frost action, as directed by the Engineer and according to Article 2601.03, B, 4, f.

**2601.03, G, 3, b, 3.**

**Replace** the Article:

- 3) For both of the above applications, if the type of fertilizer is not specified, apply 13-13-13 (or equivalent) commercial fertilizer. Spread the fertilizer with a mechanical spreader which will secure a uniform rate of application. Manipulation or mixing with the soil, other than that incidental to Article 2601.03, G, 3, d, will not be required.

**2601.03, G, 3, d, 4.**

**Replace** the Article:

- 4) After sodding and seeding, water the sod, sodbed, and disturbed areas according to Article 2601.03, G, 3, e.

**2601.03, J, 1.**

**Replace** the Article:

1. Shape the ditch channel in the same manner as preparing a ditch for sod as provided in Article 2601.03, G, 3, a.

**2601.03, M, 1, e.**

**Replace** the Article:

- e. Use staples meeting the requirements of Article 4169.10, A. Space staples as shown in the contract documents.

**2601.03, Q, Watering of Special Ditch Control, Turn Reinforcement, and Slope Protection.**

**Replace** the Article title:

**Q, Watering of Special Ditch Control, Turf Reinforcement Mat, and Slope Protection**

**2601.04, A.**

**Delete** the third bulleted item of the Article:

- ~~Pneumatic Seeding~~

**2601.05, A, 1.**

**Replace** the Article:

1. Contract unit price per acre to the nearest 0.1 acres (hectare to the nearest 0.1 hectares) for the following. Payment is full compensation for preparing the area and furnishing and applying each material.
  - Overseeding and Fertilizing,
  - Seeding and Fertilizing,
  - Compost,
  - Native Grass Seeding,
  - Wetland Grass Seeding,
  - Wildflower Seeding,
  - Stabilizing Crop Seeding and Fertilizing, and
  - Crownvetch Seeding.

**2601.05, A, 11.**

**Replace** the Article:

11. When a large area is to be watered, the contract documents will include an item for watering. For the quantity of water applied to sod, Article 2601.03, G, 3, e, and to special ditch control and slope protection, Article 2601.03, Q, payment will be the predetermined contract unit price per 1000 gallons

(kiloliter). When an item for watering is not included, the cost of watering is included in the amount paid for the item to be watered.

**Division 41. Construction Materials.**

**Section 4100**

**4100.07, C, Drive Screws and Bolts (over 3/8 inch (8.5 mm) inch diameter), Washers 3/16 inch (4.8 mm) and 1/4 inch (6.4 mm) Thick, and Similar Articles.**

**Replace the Article:**

Apply ASTM A 153, Class C F 2329.

**4100.07, D, Screws, Stove Bolts and Bolts (3/8 inch (9.5 mm) and under in diameter), Washers Under 3/16 inch (4.8 mm) Thick, Rivets, Nails, and Similar Articles.**

**Replace the Article:**

Apply ASTM A 153, Class D F 2329.

**Section 4115**

**4115.04, A.**

**Replace Table 4115.04-1:**

**Table 4115.04-1: Aggregate Use Durability Requirements**

Specification Section Number	Minimum Durability Class Required			Use
	3i	3	2	
2122, 2201 2212, 2213, 2301, 2302, 2310, 2529, 2530 Interstate System Primary System Other	X*	X*	X	PCC Paved Shoulders, Base, Base Repair, Base Widening PCC Pavement, Widening, PCC Overlay, Finish Patches, and Bridge Approaches
2403			X	Structural Concrete, <del>Concrete Structures</del>
2406 (See 2403)			X	Concrete Structures
2407			X	Precast Units
2407, 2501		X		Prestressed Units, Concrete Piles
2412 (See 2403)			X	Concrete Bridge <del>Floors</del> Decks
2413 (See 2413.02, D, 1)		X	X	Bridge Deck Surfacing, Repair, & Overlay of Bridge Floors
2414 (See 2403)			X	Concrete Railings
2415 (See 2403)			X	Concrete Box, Arch, & Circular Culverts
2416 (See 4145)			X	Rigid Pipe Culverts
2424			X	Shotcrete
2503 (See 2403)			X	Storm Sewers (Catch Basins, Intakes, & Utility Access)
2505 (See 2403)			X	Guardrails (Concrete End Anchorage)
2511, 2515 (See 2403)			X	PCC Sidewalks, Paved Driveways
2512 (See 2403)			X	PCC Curb & Gutter
2513 (See 2403)			X	Concrete Barrier
2516 (See 2403)			X	Concrete Walls and Steps
2517 Primary System Other		X	X	Railroad Approach Sections
2522 (See 2403)			X	Tower Lighting (Concrete Footings & Foundations)
2523 (See 2403)			X	Highway Lighting (Concrete Footings & Foundations)
2524 (See 2403)			X	Highway Signing (Concrete Footings & Foundations)
2525 (See 2403)			X	Traffic Signals (Concrete Footings & Foundations)
* For patches and PCC base repair, Class 2 durability or better aggregate will be required if the existing pavement was constructed of Class 2 or lower durability aggregate. If the existing pavement was constructed of Class 3 or Class 3i durability aggregate, use Class 3 aggregate or better and Class 3i aggregate, respectively, in the repair.				

**4115.05, Coarse Aggregate for Bridge Deck Surfacing and Repair and Overlay.**

**Replace Article title and first sentence:**

**4115.05, COARSE AGGREGATE FOR BRIDGE DECK SURFACING, AND REPAIR, AND OVERLAY.**  
Acquire from a Class 2 3 durability or better source meeting the following requirements:

**4115.05, A.**

**Replace Table 4115.05-1:**

Table 4115.05-1: Aggregate Quality		
Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
Alumina(a)	0.4	Office of Materials Test Method No. Iowa 222
A Freeze	4-6	Office of Materials Test Method No. Iowa 211, Method A
Absorption	2.5	Office of Materials Test Method No. Iowa 201
(a) If the Alumina value fails, determine the A Freeze value for specification compliance. Office of Materials Test Method No. Iowa 222 does not apply to gravels.		

**Section 4137**

**4137.01.**

**Add new Article:**

**D.** For asphalt binder grades with a temperature spread of 92° or greater, use binders that meet the PG+ requirements established by the Combined State Binder Group as follows:

Table 4137.01-1: PG+ Requirements

Temperature Spread <sup>1,2</sup>	92	98	104
Elastic Recovery: AASHTO T 301 at 77° F. (RTFO Aged AASHTO T 240)	65% min.	65% min.	65% min.
DSR Phase Angle; degrees (original binder)	77.0 max.	75.0max.	73.0 max.

1 Temperature spread is determined by subtracting low temperature from high temperature; for example PG 64-28: 64 - (-28) = 92

2 When a grade change is required to compensate for binder in recycled materials, the virgin binder provided shall meet the above requirements for the original grade specified in the contract documents.

**4137.01, B.**

**Replace the second sentence of the Article:**

**B.** Determine performance grade according to AASHTO ~~PP-6~~ R 29.

**Section 4138**

**4138.01, D.**

**Replace the first sentence of the Article:**

In Table 1 of AASHTO M 81, the distillation test requirements are as follows:

**Section 4145****4145.06, I, Tongue and Groove.****Replace** the Article:

Ensure the tongue and groove are compatible so that when the pipe is laid, it will be possible for the contractors to comply with Article 2416.03, D, 5.

**Section 4151****4151.02, C, Reinforcement For Bridge Approach Sections, Reinforced Paved Shoulders, and Full-Width Reinforcement of Pavements.****Replace** the first bulleted item:

- Deformed bars meeting the requirements of ASTM A 615/A 615M, Grade 40 or 60 (300 or 400); or ASTM A 706/A 706M, Grade 60,

**4151.03, A, 1.****Replace** the first sentence of the Article:

Unless otherwise specified, use deformed bars meeting the requirements of ASTM A 615/A 615M, ASTM A 706/A 706M, or ASTM A 996/A 996M.

**Section 4153****4153.06, A, 3.****Replace** the first sentence of the Article:

Where galvanized fasteners are specified, zinc is applied by hot dipped galvanizing to meet the requirements of ASTM A 153 F 2329.

**4153.07, C, Galvanizing.****Replace** the Article:

Ensure all bolts, nuts, and washers are zinc coated to meet the requirements of ASTM A 153, Class D F 2329.

**4153.07, D, 4.****Replace** the Article:

Ensure the galvanized coating meets the requirements of ASTM A 153, Class D F 2329.

**4153.07, E, Lag Bolts.****Replace** the Article:

Use lag bolts meeting the requirements of ANSI B18.2.1, galvanized according to ASTM A 153, Class D F 2329.

**Section 4155****4155, Guardrail.****Replace** the Section:**Section 4155. Guardrail****4155.01 GENERAL REQUIREMENTS.**

Provide guardrail materials meeting the requirements for the type of guardrail specified. Provide guardrail posts of wood or steel as specified in the contract documents.

**4155.02 STEEL BEAM GUARDRAIL.**

Comply with the following:

- A. Rail elements and terminal sections:** meet the requirements of AASHTO M 180, Class A, 12 gauge (2.67 mm thickness), Type I, unless a greater thickness is required.
- B. Bolts used to attach steel beam guardrail to concrete barrier or bridge rail:** full-length galvanized and meet the requirements of ASTM A 325 or A 449, Type 1.
- C. All other bolts:** meet the requirements of ASTM A 307, Grade A.
- D. Washers used to attach steel beam guardrail to concrete barrier or bridge rail:** meet the requirements of ASTM F 436.
- E. All other washers:** meet the requirements of ASTM F 844.
- F. Nuts used to attach steel beam guardrail to concrete barrier or bridge rail:** heavy hex, Class 2B meeting the requirements of ASTM A 563, DH.
- G. All other nuts:** meet the requirements for ASTM A 563, Grade A, hex.
- H. Galvanizing:** meet the requirements of ASTM A 153, Class C F 2329 or B 695 Class 50, Type I coating.

#### **4155.03 CABLES.**

##### **A. Cable Guardrail.**

1. Meet the requirements of AASHTO M 30, Type I, Class A.
2. For high tension cable guardrail, meet the manufacturer's requirements.

##### **B. Anchor Cable.**

Meet the requirements of AASHTO M 30, Type II, Class A.

#### **4155.04 POSTS.**

##### **A. Wood Posts.**

Use posts sawed to the dimensions shown in the contract documents and meeting the requirements of Section 4164.

##### **B. Steel Posts.**

1. Use steel posts of the dimensions shown in the contract documents and that meet the requirements of ASTM A 36/A 36M structural steel.
2. Ensure bolt holes comply with Article 2408.03, S, 2.
3. Ensure steel posts and blocks are galvanized according to the requirements of ASTM A 123. Ensure galvanizing is done after fabrication and after all bolt holes have been drilled.

#### **4155.05 BLOCKOUTS.**

**A.** For wood blockouts, meet the requirements for wood posts.

**B.** Blockouts manufactured from alternate materials that have received FHWA acceptance for use on the National Highway System may be substituted for wood blockouts.

#### **4155.06 MISCELLANEOUS ITEMS.**

**A.** Ensure the following:

1. All miscellaneous items and materials are of the type, size, and dimension shown in the contract documents.
  2. All metal parts are galvanized. However, any items or parts of items to be covered with 2 inches (50 mm) or more of concrete need not be galvanized.
  3. All cable fittings required for cable guardrail installation are designed and fabricated so as to develop the full strength of a single cable or the multiple cable assembly, as applicable.
- B. Internal threads of fasteners may be oversize, tapped after galvanizing.
- C. When specific requirements are not stated in the contract documents, obtain the Engineer's approval for anchor angles, anchor cable, turnbuckles, hook bolts, compensating devices, and any other fittings or special hardware which may be required.

### Section 4167

#### 4167.01, B, 1.

##### Replace the Article:

1. When pipe piles are allowed in the contract documents as an option to steel H-piles, furnish pipe piles of the dimensions shown, manufactured within the physical and chemical requirements of ASTM A 252, Grade 2 or 3. Furnish test results from at least one random sample taken from pieces furnished to the project. Ensure the chemical analysis ~~includes carbon, sulphur, and manganese.~~ indicates no more than 0.05% phosphorous.

#### 4167.01, B, 2.

##### Replace the Article:

2. Only field welds will be permitted, and only at air temperatures above 0°F (-18°C). Ensure all welding is done by welders certified by the Department. When welding, the surfaces of the pipe being welded, within 3 inches (75 mm) laterally and in advance of welding, must be preheated to a minimum of ~~400~~ 50°F (204 10°C). Maintain this temperature during welding. Weld the joint with a prequalified AWS Joint B-U2a. For manual shielded metal arc welding, use an E701~~8~~ electrode and for semi-automatic Flux Core Arc welding, use an E71T-X electrode. Use a backup ring of the same steel as that of the pipe.

### Section 4184

#### 4184.01, A.

##### Replace the Article:

- A. This specification covers two types of glass spheres, ~~dual~~ coated and uncoated, for the production of reflectorized pavement markings.
- Waterborne ~~and VOC compliant solvent borne~~ traffic paint: use dual coated beads (silicone and silane).
  - Epoxy pavement markings: use silicone only coated beads (no silane).
  - ~~VOC compliant, solvent borne paint: use uncoated beads.~~

#### 4184.01, B.

##### Add as the first sentence of the Article:

The glass beads shall not exhibit a characteristic of toxicity, relative to heavy metals when tested in accordance with EPA 40CFR 261.24.

**4184.02, A.**

Replace Table 4184.02-1:

Sieve Size	Percent Passing
16 (1180 µm)	100
20 (850 µm)	<del>95-100</del> 90-100
30 (600 µm)	<del>75-95</del> 50-75
40 (425 µm)	15-45
50 (300 µm)	<del>15-35</del> 0-15
80 (180 µm)	0-5
<del>100 (150 µm)</del>	<del>0-5</del>

**4184.02, F, Properties of Uncoated Spheres.**

Delete the Article:

- F. Properties of Uncoated Spheres.**  
 Passes the free flow test.

**Section 4185****4185.02, B, 2.**

Replace the second bulleted item of the Article:

- Are full-length galvanized according to ASTM ~~A 153, Class C~~ F 2329, and

**Section 4186****4186.09, A, 5, b.**

Replace the second sentence of the Article.

- b. Ensure galvanizing meets requirements of ASTM ~~A 153, Class D~~ F 2329, or ASTM B 633, Class Fe/Zn ~~12, Type 1~~ 25, Type II or Type IV.

**4186.09, B, Type B Signs.**

Replace the third sentence of the Article.

Galvanizing is to meet the requirements of ASTM ~~A 153, Class D~~ F 2329, or ASTM B 633, Class Fe/Zn ~~12, Type 1~~ 25.

**4186.10, B, 5.**

Replace the Article:

5. Furnish bolts (including the entire length of the anchor bolts), nuts, and washers, that are galvanized according to ASTM ~~A 153, Class A~~ F 2329 or B 695 Class 50, Type I coating.

**Section 4187****4187.01, C, 2, Anchor Bolts, Nuts, and Washers.**

Replace the first sentence of the Article:

Use bolts, nuts, and washers galvanized according to the requirements of ASTM ~~A 153, Class C~~ F 2329 or ASTM B 695, Class 50, Type I coating.

**Appendix.**

**Replace** the Table of Contents:

Table 2501.03-1 (English Units) ----- 1174

Table 2501.03-2 (Metric Units)----- 1176

Table 2550.02-1 ----- 1178

Table 2552.02-1 ----- 1179

Table 2552.02-2 ----- 1180

Table 2552.02-3 ----- 1181

Table 2552.02-4 ----- 1182

Table 2552.02-5 ----- 1183

Aggregate Gradation Table (English)----- 1184

Aggregate Gradation Table (Metric) ----- 1188

Theoretical Rate of Evaporation Chart (English Units)----- 1192

Theoretical Rate of Evaporation Chart (Metric Units)----- 1193

**Renumber** Table 2553.02-1: Class II Material:  
 Table 2552.02-1: Class II Material

**Renumber** Table 2553.02-2: Class III Material:  
 Table 2552.02-2: Class III Material

**Renumber** Table 2553.02-3: Class IVA Material:  
 Table 2552.02-3: Class IVA Material

**Renumber** Table 2553.02-4: Class IVB Material:  
 Table 2552.02-41: Class IVB Material

**Renumber** Table 2553.02-5: Class V Material:  
 Table 2552.02-5: Class V Material

**Index.**

**Delete** entry:

~~Class A subbase.....2114~~

**Replace** entry:

Flaggers.....~~2528.03, H~~ 2528.03, K

**Replace** entry:

Grout, concrete and stone  
 revetment.....~~2527.03, E~~ 2507.03, E

**Replace** entry:

Patches--finish  
 full depth finish.....2529  
 partial depth finish.....2530

**Replace entry:**

Quantities, increased or decreased.....~~4104.03~~ 1104.03

**Replace entry:**

Trenchless Construction.....~~2554~~ 2553