SP-154048
(New)

SPECIAL PROVISIONS
FOR
OTTA SEAL CONSTRUCTION

Page County
FM-C073(138)--55-73

Effective Date
July 21, 2020

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

Make the following revisions to Section 2307 of the Standard Specifications:

2307.02 MATERIALS.

Replace the Article:

Use materials meeting the following requirements:

A. Aggregates.

1. Use cover aggregate meeting requirements of Section 4125 for the size designated. Unless designated otherwise, use sand for shoulders and winter seals, and use the 1/2 inch size crushed aggregate for other work. On Primary projects, when 1/2 inch size cover aggregate is specified, use crushed stone or crushed gravel.

2. For each contract, each load of each size of aggregate is to be similar in type and gradation. Source changes require the Engineer's approval.

3. For Primary projects, furnish the aggregate size designated in the contract. Do not use the 1/2 inch size when the 3/8 inch size is designated.

B. Bituminous Material.

Meet the requirements of Section 4140 or 4138.

1. Emulsified Asphalt.

Unless specified otherwise in the contract documents, use binder bitumen meeting the requirements for CRS-2P as specified in Section 4140.

2. Cutback Asphalt.

Furnish cutback asphalt with an approved anti-stripping additive as described in Article 4138.01.

3. Asphalt Emulsion for Dust Control.

Use grade CSS-1, CSS-1H, or SS-1H as specified in Section 4140. Dilute with water prior to application. Use an initial dilution rate of seven parts water to one part emulsion.

A. Aggregates.

Use locally available aggregate from Schildberg Quarry, Braddyville, Iowa. Aggregate shall meet the following gradation:

Table 2307.02-1: Aggregate Gradation

Sieve Size	Percent Passing
3/4"	100%
1/2"	70-95%
3/8"	45-75%
#4	20-40%
#8	5-20%
#16	0-15%
#30	0-10%
#50	0-5%
#100	0-3%
#200	0-2%

B. Bituminous Material.

Provide Asphalt Cut-Back, MC-3000, meeting the requirements of "Standard Specification for Cutback Asphalt (medium-curing Type)" (ASTM D2027/D2027M–13). Penetration grade of base asphalt used for producing cut-back asphalt should be within the range of 150 to 200 (0.1 mm).

C. Water.

Potable water as compatible with the Otta seal and meeting the requirements of "Quality of water to be used on concrete" (AASHTO-T 26).

2307.03, B, 2, a.

Replace Table 2307.03-1:

Table 2307.03-1: Bituminous Material Temperatures

Designation	Temperature ºF*
~~CRS-1 and 2 and CRS-2P~~	~~150 - 185~~
~~MC-800~~	~~175 - 255~~
MC-3000	~~215 – 290~~ 275 - 310
~~HFMS-2s~~	120 - 185
~~MC-70~~	~~145 - 165~~
* Some temperatures listed may be above the flash point of the material. Use extreme caution when handling to reduce fire hazard.	

2307.03, A, 5, Rollers.

Replace the Article:

~~**a.** Use self propelled, pneumatic tired rollers meeting the requirements of Article 2001.05, C, to embed the cover aggregate.~~

~~**b.** One pneumatic tired roller will be required for work involving sand cover aggregate.~~

~~**c.** A minimum of two pneumatic tired rollers will be required for work involving other cover aggregate.~~

Provide a minimum of three 12 ton gross weight pneumatic-tired rollers. The roller tire sizes, ratings, and pressures must comply with the manufacturer's recommendations. The tire pressure must be the same on all tires and the tire surface must be smooth.

2307.03, B, 3, c, Joints.

Delete the Article:

~~**c. Joints.**~~

~~**1)** Secure binder bitumen distribution at the specified rate of application using paper placed at the start of each distributor run. Use commercial grade building paper that is approved by the Engineer and is no less than 36 inches wide.~~

~~**2)** When the end of the run joins newly placed seal coat, place paper at that joint also. Cut the joint straight along the off edge of the paper. Remove the seal coat material on the paper adjacent to the off edge from the roadbed surface. Ensure a smooth ride is obtained.~~

2307.03, B, 5, Rolling.

Replace the Article:

a. After the aggregate has been spread, ~~promptly roll to secure early aggregate embedment in the bitumen~~ on day of construction, 30 passes on each lane is required with minimum 12-ton pneumatic rollers. ~~Complete rolling no later than 30 minutes after the bitumen is spread.~~

~~**b.** Do not apply succeeding applications of binder bitumen until the most recent one applied as been covered with aggregate and all rolling operations completed.~~

~~**c.** Satisfactory embedment usually will be secured by one roller coverage of sand cover and five roller coverages of other cover aggregate. One roller coverage is interpreted as the number of passes of the roller required to ensure that the entire area has been touched at least once by the entire roller.~~

~~**d**~~ **b.** Operate rollers at a speed of no more than 5 mph.

2307.03, B, 6, One Course Seal Coats.

Replace the title and Article:

6. One Course Otta Seal ~~Coats~~ Construction.

In addition to requirements of Articles 2307.03, B, 4 and 5, apply the following:

a. Spreading Binder Bitumen.

Apply bitumen to the prepared base or surface at the rate the Engineer designates in the contract documents, usually within the ranges of Table 2307.03-2:

~~**Table 2307.03-2: Bitumen Spreading Rates**~~

~~Aggregate Size~~	~~Spreading Rate Gal. per Sq. Yds.~~	~~Basic Rate[(a)] Gal. per Sq. Yds.~~
~~Sand~~	~~0.15 - 0.20~~	~~0.15~~
~~3/8 inch~~	~~0.25 - 0.35~~	~~0.30~~
~~1/2 inch~~	~~0.35 - 0.45~~	~~0.40~~
~~(a) The basic rate will be used for design purposes.~~		

Table 2307.03-2: Cut-back Asphalt Spraying Rates for Otta Seal (gal/yd^2)

Type of Otta Seal		Aggregate Gradation Type			
		Open	Medium	Dense (AADT < 100)	Dense (AADT > 100)
Double	First Layer	0.35	0.38	0.40	0.38
	Second Layer	0.33	0.35	0.44	0.42
Single		0.38	0.40	0.44	0.42
Maintenance reseal (Single)		0.33	0.35	0.40	0.38

Note: If the aggregate has a water absorption percentage more than 2%, the cutback spraying rate should be increased by 0.07 gal/yd^2

b. Spreading Cover Aggregates.

1) Uniformly spread cover aggregate of the size specified, over the treated area promptly after the spread of bitumen has been completed on any section.

2) Unless otherwise specified, use a rate of ~~10 pounds per square yard for shoulders, 15 pounds per square yard for winter seals, and 30~~ 50 pounds per square yard for ~~other~~ all applications.

3) When bituminous seal coat is placed on two lanes, spread the aggregate ~~for the first lane to a width of 50% of the roadway to be treated~~ with a 2 inch to 4 inch overlap of the lanes to prevent longitudinal cracking.

2307.03, B, 7, Two Course Seal Coats.

Replace the title and Article:

7. Two Course Otta Seal ~~Coats~~ Construction.

In addition to requirements of Articles 2307.03, B, 4 and 5, apply the following:

a. First Course Construction.

1) Spreading Binder Bitumen.

Apply bitumen to the prepared base of surface at the rate of ~~0.35 gallon per square yard~~ shown in the contract documents or as shown in Table 2307.03-2.

2) Spreading Cover Aggregate.

a) Uniformly spread cover aggregate of the size specified over the treated area at the rate listed in the contract documents or ~~30~~ 50 pounds per square yard promptly after spreading bitumen on any section.

b) When bituminous seal coat is placed in each lane separately, spread the aggregate ~~for the first lane to a width of 12 inches greater than 50% of the width of the lane to be surfaced~~ with a 2 inch to 4 inch overlap of the lanes to prevent longitudinal cracking.

c) When the full width is surfaced integrally, spread the aggregate to a width such that the junction of the two aggregate spreads is offset 12 inches from the center of the full width surface.

b. Second Course Construction.

1) Preparation of Roadbed.

a) After ~~completing the first course~~ a minimum of 8 weeks (cure time for MC-3000), or time approved by Engineer, prepare roadbed for the second course by either:

- A vacuum machine, or
- By lightly brooming the full surfaced width with the power broom to remove loose material.

~~**b)** After cleaning, roll the entire surface once with the steel roller.~~

~~**c**~~ **b)**Complete the preparation of the roadbed in sections just prior to application of bitumen for the second course.

2) Spreading Binder Bitumen.

Apply bitumen to the prepared base of surface at the rate of ~~0.30 gallon per square yard~~ shown in the contract documents or as shown in Table 2307.03-2.

3) Spreading Cover Aggregate.

a) Spread cover aggregate of the size specified over the treated area at the rate shown in the contract documents or ~~25~~ 50 pounds per square yard promptly after spreading bitumen on any section of roadbed.

b) ~~For two lane roadways, place the two aggregate spreads so the seam between the two spreads is near the centerline.~~ When bituminous seal coat is placed in each lane separately, spread the aggregate with a 2 inch to 4 inch overlap of the lanes to prevent longitudinal cracking.

2307.03, B, 9, Dust Control Treatment.

Delete the Article:

~~**9. Dust Control Treatment.**~~

~~**a.** On Primary Road projects where limestone or crushed gravel cover aggregate is used, apply diluted asphalt emulsion to the completed bituminous seal coat surface to control dust. Uniformly spread diluted asphalt emulsion at the initial rate of 0.12 gallon per square yard.~~

~~**b.** On non-Primary Road projects, apply dust control as specified in the contract documents.~~

~~**c.** Apply dust control following the removal of particles and before other work continues. Apply dust control within 24 hours after bituminous seal coat placement unless directed otherwise by the Engineer.~~

~~**d.** Broom off loose material and apply dust control on the calendar day following placement of bituminous seal coat.~~

2307.03, B, 10, Traffic Control.

Delete Articles c, d, and e, and **renumber** following Articles:

~~**c.** Unless otherwise stated in the contract documents, furnish and install the following signs, including mounting devices:~~

~~**1) "NO PAVEMENT MARKINGS NEXT __ MILES" signs.**~~

~~Place at each end of the area where pavement markings have been obliterated, on each side of towns, and on each side of all intersections with Primary and Secondary Roads.~~

~~**2) "LOOSE STONE - REDUCE SPEED" signs.**~~

~~Place, along with a 35 mph advisory speed plate, approximately 500 feet in advance of the "No Pavement Markings" signs.~~

~~**3) "DO NOT PASS" signs.**~~

~~Place on the right-hand side of the road at the beginning of each no-passing zone.~~

~~**4) "PASS WITH CARE" signs.**~~

~~Place on the right hand side of the road at the end of each no-passing zone.~~

~~**d.** Mount signs on posts.~~

~~**e.** The Contracting Authority will place new pavement markings and remove the signs when the project is complete.~~

~~**f**~~ **c.** Provisions for handling other traffic are as follows:

1) Direct traffic through restricted portions of the project using pilot cars described in Article 2528.03, D. Furnish pilot cars and pilot car signs.

2) Station one flagger immediately ahead of the application of the bitumen, one immediately behind the bitumen, and one immediately behind the section being rolled. Display suitable warning, speed limit, and fresh oil signs. Move the signs forward with the flagger as the work progresses.

3) After the bituminous seal coat has been spread, smoothed, rolled, and cured for a minimum of 2 hours, the road may be open to traffic.

4) In some areas it is more practical to place the bituminous seal coat in short sections and to allow traffic to use the completed bituminous seal coat immediately after the surface treatment has been completed. In these areas, control traffic on the newly placed bituminous seal coat to a speed of no more than 25 mph for a minimum of 2 hours. The Engineer will specifically authorize such areas. The Engineer may extend the minimum 2 hour period due to low temperature and visually observed damage to the bituminous seal coat under traffic or when turning movements may damage the bituminous seal coat. (The intent of traffic modifications is to not allow traffic on completed bituminous seal coat sections until satisfactorily cured. This requires a minimum of 2 hours, depending on climatic conditions.)

~~**g**~~ **d.** Traffic Control will be paid per Section 2528.

2307.03, B,12 Surfacing Intersecting Roads, Driveways, and Turnouts.

Delete the Article:

12. Surfacing Intersecting Roads, Driveways, and Turnouts.

a. Use seal coat applied at the same rate provided for the roadway to cover the area of any fillets of base courses constructed at driveways to farmsteads and commercial establishments, unless otherwise specified in the contract documents.

b. Surface remaining areas within the right-of-way on earth or gravel surfaced approach roads and driveways and turnouts for mail boxes according to Section 2315. These areas will be measured and paid for according to Section 2315.

2307.04, METHOD OF MEASUREMENT.

Delete Articles C and D.

C. Driveway Surfacing Material.

Computed as and provided in Section 2315, for granular surfacing placed at intersecting roads, drives, and turnouts. Excavation required for placing this surfacing is considered incidental to the work and will not be measured for payment.

D. Asphalt Emulsion for Dust Control.

Undiluted asphalt emulsion measured as provided in Article 2307.04, B.

2307.05, BASIS OF PAYMENT.

Delete Articles C and D.

C. Driveway Surfacing Material.

As provided in Section 2315 for the quantity of granular surfacing placed at intersecting roads, drives, and turnouts.

D. Asphalt Emulsion for Dust Control.

1. Per gallon for the number of gallons placed.

2. Payment is full compensation for sweeping, furnishing, mixing with water and applying the asphalt emulsion, and curing of the dust control material.