

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**WARRANTY WORK REQUIREMENTS FOR DOUBLE CHIP SEALS
(CAPITAL PREVENTIVE MAINTENANCE)**

CFS:EMC

1 of 4

APPR:ARB:KPK:07-13-16
FHWA:APPR:07-13-16

a. Description. This special provision must be used in conjunction with 12SP-500B to construct warranted double chip seals. The work consists of furnishing all materials, equipment and labor necessary for the surface preparation and application of a double chip seal.

b. Limits of Warranted Work. The warranted work includes all double chip seal applications on driving lanes and shoulders within the project limits unless otherwise indicated on the proposal.

c. Warranty Period. The length of warranty will be 2 years from the Acceptance Date of Warranted Work.

d. Amount of Warranty Bond. Supply a warranty bond equal to 100 percent of the warranted work for double chip seals.

e. Materials. Provide materials in accordance with subsection 505.02 of the Standard Specifications for Construction with the following exceptions:

1. Asphalt Emulsion. For jobs north of M-46 with ADT<5000, CRS-2M as specified in section 904 of the Standard Specifications for Construction is an approved alternate. The emulsified asphalt must conform to certification procedures described in the Materials Quality Assurance Procedures Manual.

2. Coarse Aggregate. Coarse aggregates for all chip seals will be tested materials or provided by a prequalified aggregate supplier. CS-T must meet the gradation and physical requirements in Table 1.

A. For double chip seal top courses, use a CS-T coarse aggregate.

B. Copper Smelter Slag is prohibited for use as a chip seal aggregate

Table 1: Gradation and Physical Requirements for Double Chip Seal Aggregates

Sieve Analysis (<i>MTM 109</i>), Total Percent Passing (a)		
Sieve Size	CS-T	34CS-M
3/4 inch	100	100
1/2 inch	100	100
3/8 inch	100	90-100
1/4 inch	85-100	N/A
No. 4	N/A	0-15
No. 8	0-15	0-5
No. 200 (Loss by Wash)	2.0 maximum	2.0 maximum
Physical Requirements for Coarse Aggregates (CS-T & 34CS-M)		
Test – Description	Specification	
<i>MTM 102</i> – L.A. Abrasion Resistance	35% maximum (b) 45% maximum (c)	
<i>MTM 117</i> – Percent of Crushed Particles	ADT > 4,000 100% minimum on single face, 90% on 2 faces ADT < 4,000 95% minimum on single face 85% on 2 faces	
<i>MTM 110</i> – Deleterious Particles in Aggregate	3.5% maximum (d)	
<i>ASTM D 4791</i> – Flat and Elongated Ratio, 3:1(e)	N/A	15.0% maximum
<i>MTM 111</i> – Aggregate Wear Index (f)	ADT > 4,000 60/40 Weighted Average > 260 (g) ADT < 4,000 220 minimum	
Moisture Content at time of placement(h)	4% maximum	
a. All aggregate must be washed. b. Natural aggregate. c. Iron Blast-Furnace slag aggregate. d. Includes the sum of shale, silt stone, structurally weak and clay ironstone. e. As determined for material retained on the No.4 sieve. The ratio between any combination of length, width or thickness. f. Does not apply to a shoulder chip seal. g. The top course will be weighted at 60% and base course will be weighted at 40% with the higher AWI aggregate as the top course. h. As described in MDOT Procedures for Aggregate Inspection.		

f. Construction. Perform all construction in accordance with subsection 505.03 of the Standard Specifications for Construction with the following exceptions

1. Double Chip Seal Seasonal Limitations. Place double chip seals in accordance with the following:

- A. From June 1 to August 1, in the Upper Peninsula;
- B. From May 15 to August 15, in the Lower Peninsula north of M-46; and
- C. From May 15 to August 31, in the Lower Peninsula south of M-46.

2. Longitudinal Construction Joints in Double Chip Seal.

A. For sections without corrugations and sections with shoulder corrugations construct per subsection 505.03.D.8.b in the Standard Specifications for Construction.

B. Where centerline corrugations are present place the first course up to the corrugations on both bounds. For the second course construct joint at the far edge of the corrugation on the first pass. Only one pass of the top course should cover the corrugations.

3. Application Rates.

A. Asphalt Emulsion. Apply asphalt emulsion from 0.28 gallons per square yard to 0.32 gallons per square yard for the top course of the double chip seal.

B. Course Aggregate. Apply course aggregate from 16 pounds per square yard to 20 pounds per square yard for the top course of the double chip seal.

g. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
Chip Seal, Double, Warranty	Square Yard

Chip Seal, Double, Warranty includes all materials, equipment, labor for placement of a double application of asphalt emulsion and coarse aggregate to a pavement and the accompanying shoulders as specified on the plans. Payment also includes all materials sampling and testing, surface preparation, brooming, and documentation.

h. Warranty Requirements. If any of the following performance criteria are not met, warranty work is required.

1. Surface Cracking. Each individual driving lane will be reviewed for measuring and quantifying surface cracking. One segment (528 feet in length) per 2 miles for each separate driving lane will be randomly chosen to review in detail. One segment will be reviewed for all projects or remaining portions of projects less than 2 miles, but greater than 1 mile. All open cracks will be logged within the chosen segments by crack type. The total length of

longitudinal cracks will be logged for each segment. The transverse cracks will be logged by those between 6 inches and 6 feet in length and those equal or exceeding 6 feet in length. Transverse cracks and longitudinal cracks will be converted to defective cracks by the following;

- A. One transverse crack 6 feet or greater, in length = one defective crack.
- B. Five transverse cracks between 6 inches and 6 feet in length = one defective crack.
- C. A total of 125 feet of longitudinal crack(s) = one defective crack.

If the number of defective cracks equal or exceed the values in Table 2, the segment is considered defective. Warranty work is required when the average of all segments reviewed exceed the following values in Table 2.

Table 2: Warranty Requirements for Surface Cracking

Chip Seal Treatment	Pavement Type	Number of Defective Cracks
Double Chip Seal	Flexible	30
Double Chip Seal	Composite	30

Corrective action for this parameter requires the Contractor to overband crack fill all cracks on the entire site, including shoulders if part of the double chip seal work.

2. Loss of Cover Aggregate. The allowable threshold limit for loss of cover aggregate must not exceed 40 percent of the segment length. All segments in the driving lane or shoulder (528 feet in length) will be measured where the aggregate loss is evident. This measurement is linear and not dependent on area of aggregate loss. Warranty work, full-width across the driving lane or shoulder, will be required for each defective segment and shall be approved by and completed to the satisfaction of the Engineer.

3. Bleeding/Flushing. The allowable threshold limit for bleeding or flushing must not exceed 40 percent of the segment length. All segments in the driving lane or shoulder (528 feet in length) will be measured where the bleeding or flushing is evident. This measurement is linear and not dependent on area of bleeding or flushing. Warranty Work, full-width across the driving lane or shoulder, will be required for each defective segment and must be approved by and completed to the satisfaction of the Engineer.