



ENERGY-SECTOR BRIEF

Maintenance Division, Roadway Asset Management



15-05 SURFACE TREATMENT/SEAL COAT/CHIP SEAL

A variety of roadway maintenance repair techniques and materials are used by TxDOT Districts to extend pavement life. This brief documents techniques and materials most used by districts in South and West Texas for “Seal Coating” of pavements damaged by traffic generated by the development of the energy sector of the Texas economy. Other Energy Sector Briefs available include the following:

- 14-03 Shoulder/Edge Repair Techniques
- 15-01 Maintenance Repair Techniques
- 15-02 Shallow Patching
- 15-03 Deep Patching
- 15-04 Level-Up Patching
- 15-06 Pavement Strengthening

The maintenance methods summarized in these briefs represent current practices of the districts in these two regions of the state. As materials and equipment change, these methods will be altered. Feedback on performance of various maintenance treatments used in the energy sector will also result in change to these methods, materials and techniques. Report 409186-01 “Current TxDOT Practices for Repair of Road Damage Associated with Energy Development and Production” provides additional details for these routine maintenance operations. This report and related documents are available on the TxDOT Maintenance Division (MNT) SharePoint site at <https://txdot.sharepoint.com/sites/division-mnt/SitePages/Home.aspx>.

DESCRIPTION

- One or more application of a single layer of asphalt binder followed by an application of single layer of aggregate
- Roll aggregate into asphalt binder with pneumatic tired roller(s)

CONDITIONS FAVORING USE

- Use as a wearing surface
- Use to seal surface of pavement or patches against the entry of water and air
- Use to reduce raveling of pavements and patches
- Use to provide friction
- Use to provide uniform color and texture for lane/shoulder demarcation
- Use for edge repairs along shoulders of pavement
- Place in warm, dry weather when rainfall is not expected for 24-48 hours



PROCEDURE

- Perform preliminary shallow and deep patching as necessary
- Broom/clean surface
- Spray uniform application of asphalt emulsion
- Apply uniform application of aggregate/chips
- Use pneumatic tired rollers to “seat” aggregate/chips into binder
- Broom surface to remove loose aggregates/chips

SCHEDULING

- Best to schedule in warm or hot/dry weather
- Avoid wet weather at time of construction, and, if possible, avoid wet weather 24-48 hours after construction
- Do not allow traffic on surface for 2 hours minimum if use emulsions

PERFORMANCE

- The life of seal coat/chip seal is typically 6 to 8 years
- The performance of seal coats/chip seals placed on patches will depend on the quality of the patch
- Bleeding of seal coat/chip seal when using cutback asphalts is common



MATERIALS/EQUIPMENT/CREW SIZE/PRODUCTION

Typical materials, equipment, crew size and production as reported by districts are shown below.

Surface Treatment/Seal Coat with Maintenance Crews-South Texas

Materials	Equipment	Crew Size	Comments
HFRS-2 (0.45 gal./sq. yd.) and Grade 3 aggregate	Pneumatic roller, 10 cu. yd. dump trucks with spreader box, distributor, broom	6-8	<ul style="list-style-type: none"> Spot seal May bleed in summer
RC-250 with Grade 5 traprock			May bleed in summer
RC-250 and Grade 5 aggregate			<ul style="list-style-type: none"> Shoulder repair, travel lanes repair Used as inverted prime

Surface Treatment/Seal Coat with Maintenance Crews-West Texas

Materials	Equipment	Crew Size	Comments
CRS-1, CRS-2P, MC-250, MC-800, RC-250 with Gr. 4 aggregate	3 small distributors, chip spreader, lease rollers		
CRS-2, CRS-2P with Gr. 4, 0.45 to 0.50 gal./sq. yd.	Distributor, chip spreader, rollers		
CSS-1h, MS-2, 0.32 to 0.42 gal./sq. yd, blow sand	Distributor, use rubber blade on a maintainer, rollers		Sand seal, fill voids, cracks, use SC on higher traffic facilities
Emulsion, Gr. 5 aggregate	Distributor, chip spreader, rollers, brooms		Scrub seal
CRS-2TR	Two distributors, chip spreader and heater	Special seal coat crew district wide	Strip SC with MS-2 and Gr 5, scrub seal used
CMS-1P, 0.28 gal./sq. yd., Gr. 5 aggregate	Distributor, chip spreader, roller		Scrub seal placed in one location

CMS-Catatonic Medium Set Emulsion

MC-Medium Curing Cutback Asphalt

SC-Seal Coat

CRS-Catatonic Rapid Set Emulsion

MS-Anionic Medium Set Emulsion

TR-Tire Rubber

CSS-Catatonic Slow Set Emulsion

P-Polymer

HFRS-High Float Rapid Set Emulsion

RC-Rapid Curing Cutback Asphalt

COMMENTS

- Emulsified asphalt binders are typically used by maintenance crews
- Cutback asphalt binders are used for "inverted prime" (typically RC 250 with Gr. 5 aggregate) surface treatments and under cooler weather conditions
- Follow department and district guidance regarding traffic control plan
- References
 - "Seal Coat and Surface Treatment Manual", Texas Department of Transportation, Revised May 2010. <http://onlinemanuals.txdot.gov/txdotmanuals/scm/scm.pdf>
 - "MNT 702 Seal Coat Inspection and Application Training Course", Texas Department of Transportation.
 - "MNT 703 Seal Coat Design, Inspection and Construction Training Course" Texas Department of Transportation.



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