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TERMINAL BLEND  
ASPHALT RUBBER CHIP  
SEAL

PG76-22TR

TECHNICAL REPORT

A COST EFFECTIVE ALTERNATIVE FOR HOT  
APPLIED CHIP SEAL SYSTEMS

Prepared by:

**INTERMOUNTAIN**

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SLURRY SEAL, INC.

# Terminal Blend Asphalt Rubber Chip Seal PG76-22TR

## A COST EFFECTIVE ALTERNATIVE FOR HOT APPLIED CHIP SEAL SYSTEMS

### THE PROCESS

On Tuesday October 17 2006, Intermountain placed a test section of PG76-22TR chip seal on Kenmar Road in Sacramento, California. The test section was placed adjacent to a field blended Asphalt Rubber Seal Coat that was placed in the summer of 2006. The test section was placed with ½ by number 4 pre-coated chip seal aggregate with a polymer modified type two slurry seal to make a cape seal. We started the application at 10:30 am and finished about 12:00 pm. The ambient air temperature at the start of the test was about 45 degrees Fahrenheit and the surface temperature was 55 degrees Fahrenheit. The test location covered a section of Kenmar road 498 ft. by 48 ft. wide. We placed three different application rates in three longitudinal sections. The first strip was placed (shot) at an application rate of 0.50 gal/sy, the second strip (the middle of the roadway) had an application rate of 0.55 gal/sy, and the final strip was also placed at an application rate of 0.58gal/sy. The application rate range for the aggregate was 31.5 lb/sy – 33.5 lb/sy for all three strips. The aggregate used was ½ x 4 inch pre-coated with 1/2 of one per cent pre -coated with PG 64-10.

Next an application of slurry seal was placed over the PG76-22TR to create a cape seal. The slurry seal was placed one week later at an average application rate of 12 lb/sy. The aggregate used was type II slurry aggregate from the Granite Bradshaw quarry. The slurry seal was placed with the emulsion PMCQS-1H percentage at 14.5% (based on dry aggregate weight). The aluminum sulfate used was 0.25%, with a water content of about 4%.

The PG70-22TR and BearCat asphalt distributor for the test was supplied by Paramount Petroleum; the pre-coated aggregate source was Teichert Perkins plant in Sacramento. Transfers were provided by West Coast Trucking.

**Equipment used:**

Chip Spreader—BearCat 2002/CRC Tandem Super Chipper

Asphalt Distributors—BearCat 501/CRC Super Spreader (Standard Equipment)

9 wheel pneumatic rubber roller

Steel drum roller

**Time Line for test section**

9:00 am—Streets swept, utilities covered with roofing paper and duct tape

10:20 am—Boot truck and Transfers arrive

10:30 am—Application of test section

10:45 am—Rolling of surface begins

12:00 pm—Test application finished

Sweeping: Was performed twice over this existing Terminal Blend Chip Seal prior to the slurry seal placement. Rock loss was very minimal.

The PG76-22TR meets and exceeds the product expectations set forth by the Caltrans Pavement Preservation Task Group (PPTG). The benefits of PG76-22TR include improved driving comfort, protection from oxidation, prolonged pavement lifespan, fast application with quick return to traffic, cost effective, and long lasting. Standard spreading equipment was used as the means to apply the Terminal Blend Asphalt Rubber and visible VOC were very minimal. We estimated the VOC to be in the range of a standard paving operation. This product can and is being used as an additional surface treatment for agencies around Northern California. Our opinion is that this type of product will

enhance agency and taxpayer savings as the availability of contractors and equipment for placement is readily available.

As you can see from the pictures and a sight visit, the product is capable of filling voids and cracks to bring the road surface to a more uniform appearance while rejuvenating the structural capabilities of the pavement structure and surface.

A report done by the Texas Department of Transportation found that PG76-22TR treatments, reduced alligator, transverse, and longitudinal cracking. They also noted that PG76-22TR treatments are advantageous because “the roadway can be opened for traffic early.”

The Oregon Department of Transportation evaluated construction on asphalt cement chip seals constructed on OR route 126, U.S. route 101, for Clackamas County roads, and on Deschutes County road. They asked the question, “Would asphalt cement chip seals do a better job of protecting the road surface?” The chip seals were applied using conventional construction techniques. Asphalt cement pavement, air temperature and humidity measurement were recorded throughout construction operations. Samples of aggregate and asphalt cement were taken for laboratory analysis. Additionally skid resistance testing was conducted on Or Route 126 and U.S. Route 101. They concluded asphalt cement chip seals have performed well since constructed in 1999. Test results show high performance in the areas tested with an outlook of continued high performance. They concluded the product remains a viable preventive maintenance option on roads where traffic impacts need to be minimized. As well as the chips embed quickly, traffic may be allowed on the sealed pavement sooner than on an emulsified asphalt chip seal. In addition pavement maintenance has not been needed on these roads since 1999.

In conclusion we believe that PG76-22TR is a cost effective alternative to similar products that meet and exceed the performance characteristics for Hot applied chip seals. PG76-22TR is a proven

product that can and should be in the forefront of agency's minds for a viable way to improve the road system for taxpayers and doing so in a cost effective manner.



*Type 2 applied over chip*



*chip immediately rolled*



*Chip spreader following distributor truck*



Elasticity of the product



Chip spreader at work spreading product



Slurry seal type 2 being placed with slurry unit



Finished Slurry Seal before fully cured

**BEFORE**



**AFTER**



**BEFORE**



**AFTER**



## BEFORE



## AFTER



**BEFORE**



**AFTER**



# TEICHERT AGGREGATES

## PERKINS HOT MIX ASPHALT PLANT

1/2" Pre-coated Chips  
SMARA #91-34-0006  
PG 64-16

Asphalt Content: 0.75% - Dry Weight Aggregate

Sieve Size				1/2" chips		Spec. Limits
12.5mm	1/2"			100		100
9.5mm	3/8"			77		70-85
4.75mm	#4			8		0-15
2.36mm	#8			3		0-5
600µm	#30			2		
300µm	#50			1		
150µm	#100			1		
75µm	#200			.6		0-1