



Montana Department of Transportation  
 PO Box 201001  
 Helena, MT 59620-1001

**Memorandum**

To: e-Distribution  
 See Below

From: Lesly Tribelhorn, P.E. **LT**  
 Highways Engineer

Date: June 17, 2016

Subject: Tack and Fog Seal

**Emulsified Asphalt**

Emulsified asphalt will be measured and paid for under separate items for tack and fog seal. This memo supersedes previous guidance for tack and fog seal. The effective date for plan changes is for all projects let to contract after November 1, 2016.

Any applications that are not on the finished top surface are considered Tack, regardless of the rate.

Fog Seal, when specified, is for applications on the finished top surface.

In all cases, the method of measurement and basis of payment shown in the plans, is per gallon at the undiluted rate.

The new bid items are:

- Emulsified Asphalt – Tack
- Emulsified Asphalt – Fog Seal

Round the total quantities for tack and fog seal to the nearest gallon. There are different rates in the basis of plan quantities specific to each application as shown below.

**Guidance for Basis of Plan Quantities**

Show the following application rates in the basis of plan quantities unless project specific guidance is provided from Surfacing Design:

Tack applied on concrete surfaces	0.10 gallon/S.Y.(undiluted)
Tack applied on all other surfaces; whether paving on top of plant mix, a milled surface, treated aggregate, or cement treated base	0.05 gallon/S.Y.(undiluted)
Fog seal application on top of seal and cover	0.075 gallon/S.Y.(undiluted)
Fog seal application on top of rumble strips that will not be chip sealed	0.10 gallon/S.Y.(undiluted)

**Note:** Always show aggregate treatment when paving directly on top of aggregate, regardless of whether traffic is allowed or not.

**Showing Tack in the Plans**

Use the bottom width (largest application width) of the plant mix for all applications when computing tack quantities for PMS lifts. Unless otherwise specified, assume 0.2' as the maximum lift thickness. There is one application of tack under the plant mix and one application in between each lift. Identify (on the typical quantity frame) the number of applications assumed to calculate the quantity. For example, a typical section showing a 0.22' isolation lift and overlay would utilize two applications.

Tack is paid for whether the plant mix is commercial or non-commercial.

**Showing Fog Seal in the Plans:**

Fog Seal is always one application, although the application rates may vary for different treatments and/or operations.

For fog sealing on top of the chip seal, show the dimension on the typical section and calculate a pay item quantity (at the rate shown in the Basis of Plan Quantities) in the Surfacing frame.

If fog seal is identified in the specifications as necessary for rumble strips or chip seal sequencing, based on anticipated contractor operations, it is measured for information only, and included in the cost of rumble strips in the Rumble Strips frame.

Fog Seal is typically not applied to any 3/8" plant mix. Contact Surfacing Design for any special circumstances (i.e., bike paths that are not using 3/8" mix).

If you have any questions concerning this memo, please contact me at 444-6242.

Attachment (design sheet examples)

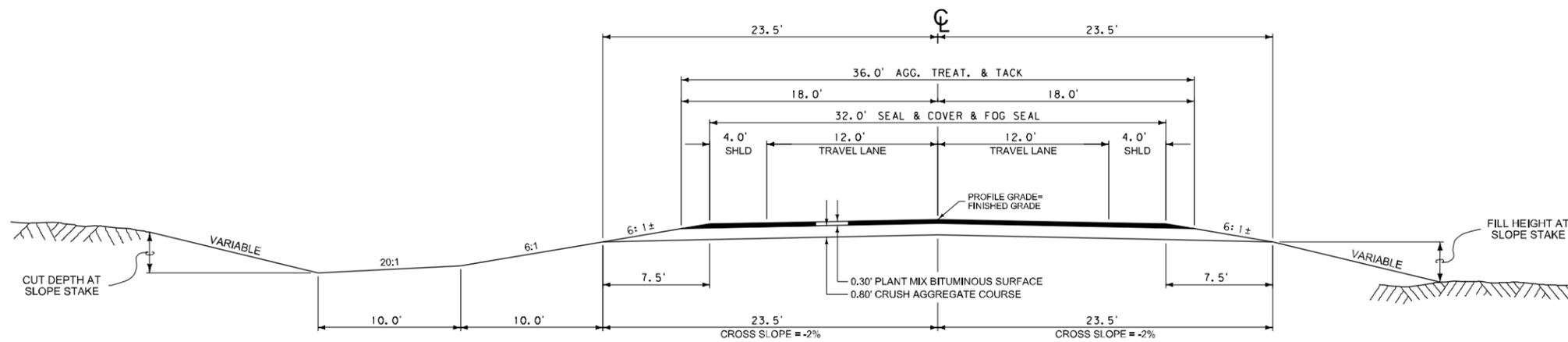
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# TYPICAL SECTION

MAINLINE

10+00.00 TO 14+75.00



QUANTITIES												
UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL					
	COVER	PLANT MIX	CR. AGG. COURSE				ASPHALT CEMENT	SEAL	AGG. TREATMENT	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL	
AREA square feet						square yards PER STATION					800	356
cubic yards PER STATION						tons PER STATION					40.0	26.7
tons PER STATION						gals. PER STATION						
square yards PER STATION												

\* BASED ON 2 APPLICATIONS

## BASIS OF PLAN QUANTITIES

### (QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. AGGREGATE WEIGHT	= 3700 LBS. PER CUBIC YARD
COMP. WEIGHT OF PL. MIX BIT. SURF.	= 3855 LBS. PER CUBIC YARD
ASPHALT CEMENT - GRADE S - 3/4" AGG.	= 5.4% OF PL. MIX BIT. SURF.
HYDRATED LIME	= 1.4% OF PL. MIX BIT. SURF.
BITUMINOUS MATERIAL	= 8.5 LBS. PER GAL.
EMULSIFIED ASPHALT - TACK (ALL OTHER SURFACES)	= 0.05 GAL. PER SQ. YARD (UNDILUTED)
EMULSIFIED ASPHALT - TACK (CONCRETE SURFACES)	= 0.10 GAL. PER SQ. YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (S&C)	= 0.075 GAL. PER SQ. YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (RUMBLE STRIPS)	= 0.10 GAL. PER SQ. YARD (UNDILUTED)
SEAL	= 0.42 GAL. PER SQ. YARD
COVER	= 25 LBS. PER SQ. YARD

## SURFACING

STATION		linear feet				FOR	AGGREGATE					BITUMINOUS MATERIAL					REMARKS	
		GROSS	NET	+	-		tons	square yards	tons	cubic yards			tons		gals			
							HYDRATED LIME	COVER TYPE 1	PLANT MIX BIT. SURF. GRADE S		CRUSHED AGG. COURSE	TRAFFIC GRAVEL	ASPHALT CEMENT PG 64-28	SEAL CRS- P	EMULSIFIED ASPHALT TACK	EMULSIFIED ASPHALT FOG SEAL		AGG. TREATMENT
FROM	TO																	
10+00.00	14+75.00	475.00	475.00												190	127		
TOTAL																		