



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S5 (PG 70-28 OK) Mat'l. Code: asco014  
 (Material Full Name and Material Code)

Insoluble - Recycled ID: I2  
 (Design Type and Design Type ID)

Cummins Const Co P/S # m00556  
 (Producer/Supplier Name and Producer/Supplier Code)

WS5qc0101492702  
 (Mix ID)

Cummins Const Co (Ada, OK) - 300TPH PLANT ID # m00556-05  
 (Plant Name and Plant ID)

Aggregate	Producer/Supplier	% USED
1/4" Chips	Martin-Marietta (Mill Creek, OK) P/S # m002303502	20
'D' Rock	Martin-Marietta (North Troy, OK) P/S # m007003506	20
Man. Sand	TXI Mill Creek Stone Plant P/S # m005253504	30
Scrns.	Martin-Marietta (Mill Creek, OK) P/S # m002303502	15
Fine R.A.P.	Contractor / Project Site P/S # Contractor	15
Warm Mix Asphalt (WMA) Technology: TEREX (Foaming Process) qual028 Terex Roadbuilding m00801 (Product Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		
Asphalt Cement: Asphaltic Cement Type PG 70-28 OK, acem002, Lion Oil Co. (Muskogee, OK), m00511 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		

Sieve Size	1/4" Chips	'D' Rock	Man. Sand	Scrns.	Fine R.A.P.	Comb. Agg.	% Tol. (±)		
	JMF	Min.	Max.	(±)					
1/2 in (12.5 mm)	100	100	100	100	100	100	100	100	0
3/8 in (9.5 mm)	99	94	100	100	89	97	97	90	100
#4 (4.75 mm)	45	30	100	89	72	69	70	63	77
#8 (2.36 mm)	14	5	92	65	54	49	44	39	49
#16 (1.18 mm)	9	4	56	44	40	32	31	27	35
#30 (.600 mm)	7	3	35	29	30	21	22	18	26
#50 (.300 mm)	4	2	11	19	20	10	16	12	20
#100 (.150 mm)	2	1	6	12	13	6	11	8	14
#200 (.075 mm)	1.5	0.9	4.0	8.4	7.3	4.0	5.7	3.7	7.7
AC Content %					4.9	5.4	5.4	5.0	5.8

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Warm Mix Asphalt (WMA) Additive %

2.0

Mix temperature @ discharge from mixer: 275 (135) °F (°C) ± 20 °F (± 10 °C) Required  
 Optimum roadway compaction temperature: 260 (127)  
 Laboratory mixing temperature: 300 (149)  
 Laboratory compaction temperature: 300 (149)

Tests on Aggregates	Required	Units
Durability Index	67	40 min. %
F.A.A. %U		N/A %
Flat and Elongated	10	max. %
Fractured Faces	100/100	95/90 min. %
Insoluble Residue	44.5	40 min. %
LA Abrasion	25.3	40 max. %
Micro-Deval	13.2	N/A %
Permeability	3.1	12.5 max. 10 <sup>-5</sup> cm/s
Sand Equivalent	80	45 min. %
Pba	0.59	
IOC	0.48	%
Gse	2.740	
Gsb	2.697	
Specimen Weight	4800	g

Tests on Asphalt Cement	Found
Specific Gravity @ 77 ° F	1.0100

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Tests on Compressed Mixtures (@ Design AC)			
	# Gyr.	% Density of Gmm	% Density Required
Nini	7	88.1	85.5 - 90.5
Ndes	65		96.0

Tests on Compressed Mixtures							
%AC	Gmb	Gmm	% Density of Gmm	% Density Required Design / Field	% VMA	% VMA Required Design / Field	% VFA
4.9	2.366	2.528	93.6	96.0 / 94.5 - 97.4	16.6	15.5 / 15.0	61.4
5.4	2.407	2.508	96.0		15.6		74.4
5.9	2.433	2.489	97.8		15.1		85.4

Dust Prop. 0.9, 0.8, 0.8  
 Dust Prop. Req. 0.6 - 1.6  
 ITS (PSI) 161.2 N/A min.  
 TSR 0.88 0.80 / 0.75 min. (Design / Field)  
 Compacted Wt. (lbs/sy/1" thick) = 110.3 @ 5.4 % Asphalt Cement / 4.7 % New Asphalt Cement

xxx 3rd JMF Revision

Hamburg Rut Test Depth (mm) 3.17 12.50 max. @ 15,000 cycles

**MEETS SPECIFICATION REQUIREMENTS PER SPECIAL PROVISION 708-26(a-f) 09**

Comments: JMF Change by Contractor: Effective 05.09.2017

Last Modified By: Williams, Bobby Ray bwili01 (User Name and User ID)

Date: 5/9/2017 (mm/dd/yyyy)