



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S4 (PG 76-28 OK) Mat'l. Code: asco010  
 (Material Full Name and Material Code)

Insoluble ID: I1

(Design Type and Design Type ID)

Cummins Const Co P/S # m00556

WS4qc0101880300

(Producer/Supplier Name and Producer/Supplier Code)

(Mix ID)

Cummins Const Co #2728 (Sawyer, OK) - 300TPH PLANT ID # m00556-03  
 (Plant Name and Plant ID)

Aggregate	Producer/Supplier	% USED
Pile # 5	Martin-Marietta (Sawyer, OK) P/S # m002311206	20
'D' Rock	Martin-Marietta (Sawyer, OK) P/S # m002311206	15
Coarse Scrns.	Martin-Marietta (Sawyer, OK) P/S # m002311206	25
Man. Sand	Martin-Marietta (Sawyer, OK) P/S # m002311206	25
Sand (Unlisted Source)	Drake Sand Gay, OK	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 76-28 OK, acem001, Valero (Ardmore, OK), m00352 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		

Sieve Size	Producer/Supplier:					Sand (Unlisted Source)	Comb. Agg.	%			
	Martin-Marietta (Sawyer, OK) P/S # m002311206	Martin-Marietta (Sawyer, OK) P/S # m002311206	Martin-Marietta (Sawyer, OK) P/S # m002311206	Martin-Marietta (Sawyer, OK) P/S # m002311206	Drake Sand Gay, OK			JMF	Min.	Max.	Tol. (±)
Pile # 5	100	100	100	100	100	100	100	100	100	0	
'D' Rock	74	100	100	100	100	95	95	88	100	7	
Coarse Scrns.	17	94	97	100	100	82	82	75	89	7	
Man. Sand	3	29	68	99	100	62	62	55	69	7	
Sand (Unlisted Source)	3	8	48	70	99	46	46	41	51	5	
3/4 in (19 mm)	2	3	36	47	98	36	36	32	40	4	
1/2 in (12.5 mm)	2	3	30	34	90	30	30	26	34	4	
3/8 in (9.5 mm)	1	3	26	25	46	20	20	16	24	4	
#4 (4.75 mm)	1	2	19	12	3	9	9	6	12	3	
#8 (2.36 mm)	0.5	1.2	11.6	3.5	1.1	4.2	4.2	2.2	6.2	2	
#16 (1.18 mm)						5.5	5.5	5.1	5.9	0.4	
#30 (.600 mm)											
#50 (.300 mm)											
#100 (.150 mm)											
#200 (.075 mm)											
AC Content %											

Requires Form 93-E0 signed by the Department for production use. -Oklahoma D.O.T. Materials-

Warm Mix Asphalt (WMA) Additive %

2.0

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

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

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	% Density		
	# Gyr.	of Gmm	% Density Required
Nini	8	88.6	85.5 - 89.0
Ndes	80		96.0

Tests on Aggregates	Required	Units
Contabro	85.0	N/A
Durability Index	85	40 min. %
F.A.A. %U	N/A	%
Flat and Elongated	10	max. %
Fractured Faces	100/100	98/95 min. %
Insoluble Residue	99.4	40 min. %
LA Abrasion	35	40 max. %
Micro-Deval	9.4	25 max. %
Permeability	4.6	12.5 max. 10 <sup>-5</sup> cm/s
Sand Equivalent	67	50 min. %
Pba	0.68	
IOC	0.40	%
Gse	2.577	
Gsb	2.533	
Specimen Weight		g

Tests on Compressed Mixtures							
%AC	Gmb	Gmm	% Density		% VMA	% VMA Required	% VFA
			of Gmm	% Density Required			
5.0	2.271	2.391	95.0	Design / Field	14.8	Design / Field	66.2 % VFA Required
5.5	2.279	2.374	96.0	96.0 / 94.5 - 97.4	15.0	14.5 / 14.0	73.3 72 - 77
6.0	2.297	2.358	97.4		14.8		82.4

Dust Prop.	1.0	Dust Prop. Req. 0.6 - 1.6	ITS (PSI) 111.9	75 min.
	0.9		TSR 0.88	0.80 / 0.75 min. (Design / Field)
	0.8		Compacted Wt. (lbs/sy/1" thick) = 104.5 @ 5.5 % Asphalt Cement	

Hamburg Rut Test Depth (mm) 2.18 12.50 max. @ 20,000 cycles

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

Comments:

Last Modified By: Vivanco, David dvivanco  
 (User Name and User ID)

Date: 5/8/2018  
 (mm/dd/yyyy)