



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S4 (PG 64-22 OK) Mat'l. Code: asco012

Binder ID: B1

(Material Full Name and Material Code)

(Design Type and Design Type ID)

Cummins Const Co P/S # m00556

WS4c00931700700

(Producer/Supplier Name and Producer/Supplier Code)

(Mix ID)

Cummins Const Co #2754 (Durant, OK.) - 300TPH PLANT ID # m00556-15

(Plant Name and Plant ID)

Aggregate	Producer/Supplier	% USED
5/8" Chips	Western Aggregates, LLC (Carnegie, OK) P/S # m006583803	10
1/2" Chips	Western Aggregates, LLC (Carnegie, OK) P/S # m006583803	20
Stone Sand	Dolese Co. (Richards Spur, OK) P/S # m002761601	29
Scrns.	Western Aggregates, LLC (Carnegie, OK) P/S # m006583803	8
Sand (Unlisted Source)	GMI Sand OKC, OK	8
Fine R.A.P.	Contractor / Project Site P/S # Contractor	25
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 64-22 OK, acem003, Asphalt Terminals and Transp LLC (Muskogee, OK), m00783 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		

Sieve Size	Producer/Supplier:							Comb. Agg.	% Tol.		
	5/8" Chips	1/2" Chips	Stone Sand	Scrns.	Sand (Unlisted Source)	Fine R.A.P.	JMF		Min.	Max.	(±)
3/4 in (19 mm)	100	100	100	100	100	100	100	100	100	100	0
1/2 in (12.5 mm)	35	100	100	100	100	100	94	94	87	100	7
3/8 in (9.5 mm)	5	84	100	99	100	95	86	86	79	93	7
#4 (4.75 mm)	2	4	97	79	99	83	64	64	57	71	7
#8 (2.36 mm)	2	1	68	55	99	67	49	49	44	54	5
#16 (1.18 mm)	1	1	32	33	97	46	31	31	27	35	4
#30 (.600 mm)	1	1	17	21	91	32	22	22	18	26	4
#50 (.300 mm)	1	1	8	16	59	21	14	14	10	18	4
#100 (.150 mm)	1	1	5	14	12	14	7	7	4	10	3
#200 (.075 mm)	0.9	0.8	4.1	13.1	2.5	8.5	4.8	4.8	2.8	6.8	2
AC Content %						5.2	4.9	4.9	4.5	5.3	0.4

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

Warm Mix Asphalt (WMA) Additive %

2.0

	<b>°F (°C)</b>	<b>Required</b>
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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Tests on Compressed Mixtures (@ Design AC)			
	# Gyr.	% Density of Gmm	% Density Required
Nini	6	88.4	85.5 - 91.5
Ndes	50		96.0

Tests on Aggregates	Required	Units
Durability Index	79	40 min. %
F.A.A. %U		N/A %
Flat and Elongated	10	max. %
Fractured Faces	100/100	85/80 min. %
Insoluble Residue	20.9	N/A %
LA Abrasion	25	40 max. %
Micro-Deval	12.7	N/A %
Permeability	10.2	12.5 max. 10 <sup>-5</sup> cm/s
Sand Equivalent	81	40 min. %
Pba	0.35	
IOC	0.21	%
Gse	2.707	
Gsb	2.682	
Specimen Weight	4800	g

Tests on Compressed Mixtures								
%AC	Gmb	Gmm	% Density of Gmm	% Density Required	% VMA	% VMA Required	% VFA	% VFA Required
4.4	2.385	2.521	94.6	Design / Field	15.0	Design / Field	64.0	72 - 77
4.9	2.400	2.501	96.0	96.0 / 94.5 - 97.4	14.9	14.5 / 14.0	73.2	
5.4	2.418	2.482	97.4		14.7		82.3	

Dust Prop.	Dust Prop. Req.	ITS (PSI)	TSR	Compacted Wt. (lbs/sy/1" thick) =	% Asphalt Cement	% New Asphalt Cement
1.2		165.8	0.82	110.0	4.9	3.6
1.0	0.6 - 1.6					
0.9						

Hamburg Rut Test Depth (mm) 3.71 12.50 max. @ 10,000 cycles

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

Comments: Similar to wS4qc0101700900 (Plant ID Change) divavanco 11/09/2017

Last Modified By: Suitor, Kevin ksutor  
(User Name and User ID)

Date: 11/9/2017  
(mm/dd/yyyy)