



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S4 (PG 64-22 OK) Mat'l. Code: asco012  
 (Material Full Name and Material Code)  
 Cummins Const Co P/S # m00556  
 (Producer/Supplier Name and Producer/Supplier Code)  
 Cummins Const Co #2747 (Beggs) - 400TPH PLANT ID # m00556-08  
 (Plant Name and Plant ID)

Binder ID: B1  
 (Design Type and Design Type ID)  
 WS4c00931800600  
 (Mix ID)

Aggregate	Producer/Supplier	% USED
3/4" Chips	APAC-Central, 46th St (NW pit Tulsa, OK) P/S # m001197201	15
1/2" Chips	APAC-Central, 46th St (NW pit Tulsa, OK) P/S # m001197201	20
Man. Sand	APAC-Central, 46th St (NW pit Tulsa, OK) P/S # m001197201	25
Scrns.	APAC-Central, 46th St (NW pit Tulsa, OK) P/S # m001197201	25
Sand	Holiday Sand & Gravel (Bixby, OK) P/S # m001657231	15
Warm Mix Asphalt (WMA) Technology: MAXAM (Foaming Process) qual028 Maxam Equipment m00802 (Product Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		
Asphalt Cement: Asphaltic Cement Type PG 64-22 OK, acem003, HollyFrontier (Catoosa, OK), m01028 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		

Sieve Size	Producer/Supplier:						Comb. Agg.	% Tol. (±)			
	3/4" Chips	1/2" Chips	Man. Sand	Scrns.	Sand			JMF	Min.	Max.	
3/4 in (19 mm)	100	100	100	100	100		100	100	100	100	0
1/2 in (12.5 mm)	68	100	100	100	100		95	95	88	100	7
3/8 in (9.5 mm)	34	96	100	100	100		89	89	82	96	7
#4 (4.75 mm)	5	28	93	82	99		65	65	58	72	7
#8 (2.36 mm)	3	5	61	60	91		45	45	40	50	5
#16 (1.18 mm)	3	3	33	43	75		31	31	27	35	4
#30 (.600 mm)	3	3	18	32	50		21	21	17	25	4
#50 (.300 mm)	2	2	9	24	25		13	13	9	17	4
#100 (.150 mm)	2	2	5	19	8		8	8	5	11	3
#200 (.075 mm)	2.2	2.1	4.9	13.9	2.1		5.8	5.8	3.8	7.8	2
AC Content %							5.1	5.1	4.7	5.5	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

°F (°C) Required  
 Mix temperature @ discharge from mixer: 275 (135) ± 20 °F (± 10 °C)  
 Optimum roadway compaction temperature: 260 (127)  
 Laboratory mixing temperature: 325 (163)  
 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	88.0	85.5 - 91.5
Ndes	50		96.0

Tests on Aggregates	Required	Units
Durability Index	68	40 min. %
F.A.A. %U		N/A %
Flat and Elongated	0	10 max. %
Fractured Faces	100/100	85/80 min. %
Insoluble Residue	8.1	N/A %
LA Abrasion	23	40 max. %
Micro-Deval	14.9	N/A %
Permeability	11.2	12.5 max. 10 <sup>-5</sup> cm/s
Sand Equivalent	71	40 min. %
Pba	0.61	
IOC	0.19	%
Gse	2.659	
Gsb	2.617	
Specimen Weight	4800	g

Tests on Compressed Mixtures								
%AC	Gmb	Gmm	% Density		% VMA	% VMA Required		% VFA
			of Gmm	% Density Required		Design / Field	Design / Field	
4.6	2.313	2.473	93.5	Design / Field	15.7	Design / Field	58.6	% VFA Required
5.1	2.356	2.455	96.0	96.0 / 94.5 - 97.4	14.6	14.5 / 14.0	72.6	72 - 77
5.6	2.390	2.436	98.1		13.8		86.2	

**ITS (PSI)** 128.6 N/A min.  
**TSR** 0.84 0.80 / 0.75 min. (Design / Field)  
**Compacted Wt. (lbs/sy/1" thick) =** 108.0 @ 5.1 % Asphalt Cement

**Dust Prop.**  
 1.5 **Dust Prop. Req.**  
 1.3 0.6 - 1.6  
 1.2

**Hamburg Rut Test Depth (mm)** 10.10 #N/A

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

**Comments:** Similar to WS4qc0101683600 (Plant ID Change)

**Last Modified By:** Suitor, Kevin ksuito

**Date:** 3/26/2018  
 (mm/dd/yyyy)