



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 (Woodward, OK) - 12000 lb Batch PLANT ID # m00556-14
 (Plant Name and Plant ID)

Binder - Recycled ID: B2
 (Design Type and Design Type ID)
 WS4qc0101300700
 (Mix ID)

Aggregate	Producer/Supplier	% USED
5/8" Chips	Dolese Co (Cooperton, OK) P/S # m002723801	20
3/8" Chips	Dolese Co (Cooperton, OK) P/S # m002723801	10
Man. Sand	Martin-Marietta (Snyder, OK) P/S # m002323802	15
Scrns.	Dolese Co (Cooperton, OK) P/S # m002723801	20
Sand	Kline Sand (Camargo, OK) P/S # m005932206	10
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	3/8" Chips	Man. Sand	Scrns.	Sand	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)	98	100	100	100	100	97	99	99	92	100	7	
3/8 in (9.5 mm)	57	95	100	100	100	85	87	87	80	94	7	
#4 (4.75 mm)	3	12	95	91	100	75	63	63	56	70	7	
#8 (2.36 mm)	2	3	70	59	100	55	47	47	42	52	5	
#16 (1.18 mm)	1	2	47	37	100	42	35	35	31	39	4	
#30 (.600 mm)	1	1	25	25	94	30	26	26	22	30	4	
#50 (.300 mm)	1	1	14	20	47	20	16	16	12	20	4	
#100 (.150 mm)	1	1	8	15	3	15	9	9	6	12	3	
#200 (.075 mm)	0.9	1.3	4.0	12.5	2.2	9.5	6.0	6.0	4.0	8.0	2	
AC Content %						4.0	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

Mix temperature @ discharge from mixer: 275 (135) ± 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	81	40 min. %
F.A.A. %U	N/A	%
Flat and Elongated	10	max. %
Fractured Faces	100/100	85/80 min. %
Insoluble Residue	11.5	N/A %
LA Abrasion	24.7	40 max. %
Micro-Deval	10.7	N/A %
Permeability	2.9	12.5 max. 10 ⁻⁵ cm/s
Sand Equivalent	78	40 min. %
Pba	0.46	
IOC	0.25	%
Gse	2.698	
Gsb	2.665	
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	6	89.3	85.5 - 91.5
Ndes	50		96.0

Tests on Compressed Mixtures							
%AC	Gmb	Gmm	% Density of Gmm	% Density Required	% VMA	% VMA Required	% VFA
4.4	2.355	2.513	93.7	Design / Field	15.5	Design / Field	59.4
4.9	2.395	2.494	96.0	96.0 / 94.5 - 97.4	14.5	14.5 / 14.0	72.4
5.4	2.408	2.475	97.3		14.5		81.4

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

ITS (PSI) 246.8 N/A min.
TSR 0.86 0.80 / 0.75 min. (Design / Field)
 Compacted Wt. (lbs/sy/1" thick) = 109.7 @ 4.9 % Asphalt Cement
 3.9 % New Asphalt Cement

Hamburg Rut Test Depth (mm) 1.40 12.50 max. @ 10,000 cycles

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

Comments: _____

Last Modified By: Schratwieser, Edward P. eschratw
 (User Name and User ID)

Date: 6/15/2016
 (mm/dd/yyyy)