Version: V03.40

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)

Insoluble ID: I1
(Design Type and Design Type ID)

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

WS4qc0101301300
(Mix ID)

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

Aggregate	Producer/Supplier	% USED
5/8" 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
'D' Sand	Martin-Marietta (Mill Creek, OK) P/S # m002303502	20
Sand (Unlisted Source)	Cummins Sand (Ada, OK)	10

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, Valero (Ardmore, OK), m00352
(Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)

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

Sieve Size	Producer/Supplier: Martin-Marietta (Mill Creek, OK) P/S # m002303502 — 5/8" Chips	Martin-Marietta (North Troy , OK) P/S # m007003506 — 'D' Rock	TXI Mill Creek Stone Plant P/S # m005253504 — Man. Sand	Martin-Marietta (Mill Creek, OK) P/S # m002303502 — 'D' Sand	Cummins Sand (Ada, OK) — Sand (Unlisted Source)				Comb. Agg.	JMF	Min.	Max.	% Tol. (±)
3/4 in (19 mm)	100	100	100	100	100				100	**100**	100	100	0
1/2 in (12.5 mm)	75	100	100	100	100				95	**95**	88	100	7
3/8 in (9.5 mm)	40	95	100	100	100				87	**87**	80	94	7
#4 (4.75 mm)	9	18	95	97	100				63	**63**	56	70	7
#8 (2.36 mm)	3	5	82	76	100				51	**51**	46	56	5
#16 (1.18 mm)	2	4	58	52	100				39	**39**	35	43	4
#30 (.600 mm)	1	3	39	35	99				29	**29**	25	33	4
#50 (.300 mm)	1	2	25	22	87				21	**21**	17	25	4
#100 (.150 mm)	1	1	10	13	50				11	**11**	8	14	3
#200 (.075 mm)	0.8	0.6	5.2	8.4	16.2				5.1	**5.1**	3.1	7.1	2
AC Content %									4.9	**4.9**	4.5	5.3	0.4

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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Tests on Compressed Mixtures (@ Design AC)	# Gyr.	% Density of Gmm	% Density Required
Nini	6	89.8	85.5 - 91.5
Ndes	50		96.0

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	85/80	min.	%
Insoluble Residue	50.6	30	min.	%
LA Abrasion	23	40	max.	%
Micro-Deval	13.2	N/A		%
Permeability	2.1	12.5	max.	10^{-5}cm/s
Sand Equivalent	78	40	min.	%
Pba	0.46			
IOC	0.50			%
Gse	2.741			
Gsb	2.707			
Specimen Weight	4850			g

Tests on Compressed Mixtures

%AC	Gmb	Gmm	% Density of Gmm	% Density Required Design / Field	% VMA	% VMA Required Design / Field	% VFA	% VFA Required
4.4	2.377	2.549	93.3	96.0 / 94.5 - 97.4	16.1	14.5 / 14.0	58.4	72 - 77
4.9	2.427	2.529	96.0		14.7		72.8	
5.4	2.433	2.509	97.0		15.0		80.0	

Dust Prop.
1.3
1.1
1.0

Dust Prop. Req. 0.6 - 1.6

ITS (PSI) 210.9 N/A min.

TSR 0.86 0.80 / 0.75 min. (Design / Field)

Compacted Wt. (lbs/sy/1" thick) = 111.2 @ 4.9 % Asphalt Cement

Hamburg Rut Test Depth (mm) 2.80 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: 3/7/2014
(mm/dd/yyyy)