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)

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

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

WS4qc0101385000
(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	10
Man. Sand	TXI Mill Creek Stone Plant P/S # m005253504	25
'D' Sand	Martin-Marietta (Mill Creek, OK) P/S # m002303502	10
Sand (Unlisted Source)	Cummins Sand (Ada, OK)	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, 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	'D' Rock: Martin-Marietta (North Troy , OK) P/S # m007003506	Man. Sand: TXI Mill Creek Stone Plant P/S # m005253504	'D' Sand: Martin-Marietta (Mill Creek, OK) P/S # m002303502	Sand (Unlisted Source): Cummins Sand (Ada, OK)	Fine R.A.P.: Contractor / Project Site P/S # Contractor			Comb. Agg.	JMF	Min.	Max.	% Tol. (±)
3/4 in (19 mm)	100	100	100	100	100	100			100	**100**	100	100	0
1/2 in (12.5 mm)	75	100	100	100	100	98			95	**95**	88	100	7
3/8 in (9.5 mm)	40	95	100	100	100	89			85	**85**	78	92	7
#4 (4.75 mm)	9	18	95	97	100	72			65	**65**	58	72	7
#8 (2.36 mm)	3	5	82	76	100	54			53	**53**	48	58	5
#16 (1.18 mm)	2	4	58	52	100	40			41	**41**	37	45	4
#30 (.600 mm)	1	3	39	35	99	30			31	**31**	27	35	4
#50 (.300 mm)	1	2	25	22	87	20			23	**23**	19	27	4
#100 (.150 mm)	1	1	10	13	50	13			12	**12**	9	15	3
#200 (.075 mm)	0.8	0.6	5.2	8.4	16.2	7.3			5.8	**5.8**	3.8	7.8	2
AC Content %						4.9			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	46.8	N/A		%
LA Abrasion	23	40	max.	%
Micro-Deval	13.2	N/A		%
Permeability	3.5	12.5	max.	10^{-5}cm/s
Sand Equivalent	81	40	min.	%
Pba	0.38			
IOC	0.46			%
Gse	2.697			
Gsb	2.670			
Specimen Weight	4800			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	2.366	2.512	94.2	96.0 / 94.5 - 97.4	15.3	14.5 / 14.0	62.1	72 - 77
4.9	2.393	2.493	96.0		14.8		73.0	
5.4	2.401	2.474	97.0		14.9		79.9	

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

ITS (PSI) 198.9 N/A min.
TSR 0.81 0.80 / 0.75 min. (Design / Field)
Compacted Wt. (lbs/sy/1" thick) = 109.7 @ 4.9 % Asphalt Cement
3.7 % New Asphalt Cement

Hamburg Rut Test Depth (mm) 1.50 #N/A

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

Comments:

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

Date: 10/23/2018
(mm/dd/yyyy)