



Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S4 (PG 70-28 OK) Mat'l. Code: asco011
 (Material Full Name and Material Code)
 Cummins Const Co P/S # m00556
 (Producer/Supplier Name and Producer/Supplier Code)
 Cummins Const Co #2 (Enid) - 400TPH PLANT ID # m00556-08
 (Plant Name and Plant ID)

Insoluble ID: I1
 (Design Type and Design Type ID)
 WS4c00931700301
 (Mix ID)

Aggregate	Producer/Supplier	% USED
5/8" Chips	Martin-Marietta (Snyder, OK) P/S # m002323802	25
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	20
Scrns.	APAC-Central, 46th St (NW pit Tulsa, OK) P/S # m001197201	20
Sand	Holliday 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 70-28 OK, acem002, Lion Oil Co. (Muskogee, OK), m00511 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		

Sieve Size	Producer/Supplier:						Comb. Agg.	%			
	Martin-Marietta (Snyder, OK) P/S # m002323802	APAC-Central, 46th St (NW pit Tulsa, OK) P/S # m001197201	APAC-Central, 46th St (NW pit Tulsa, OK) P/S # m001197201	APAC-Central, 46th St (NW pit Tulsa, OK) P/S # m001197201	Holliday Sand & Gravel (Bixby, OK) P/S # m001657231			JMF	Min.	Max.	Tol. (±)
5/8" Chips	100	100	100	100	100	100	100	100	100	0	
1/2" Chips	93	100	100	100	100	98	98	91	100	7	
Man. Sand	57	96	100	100	100	88	88	81	95	7	
Scrns.	9	28	93	82	91	57	57	50	64	7	
Sand	4	5	61	60	91	40	40	35	45	5	
	3	3	33	43	75	28	28	24	32	4	
	2	3	18	32	50	19	19	15	23	4	
	1	2	9	24	25	11	11	7	15	4	
	1	2	5	19	8	7	7	4	10	3	
	0.9	2.1	4.9	13.9	2.1	4.7	4.7	2.7	6.7	2	
AC Content %						5.3	5.3	4.9	5.7	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) °F (°C) Required ± 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	7	87.6	85.5 - 90.5
Ndes	65		96.0

Tests on Aggregates	Required	Units
Durability Index	68	40 min. %
F.A.A. %U	N/A	%
Flat and Elongated	10	max. %
Fractured Faces	100/100	95/90 min. %
Insoluble Residue	44.4	40 min. %
LA Abrasion	23	40 max. %
Micro-Deval	14.9	N/A %
Permeability	0	12.5 max. 10 ⁻⁵ cm/s
Sand Equivalent	71	45 min. %
Pba	0.76	
IOC	0.17	%
Gse	2.647	
Gsb	2.595	
Specimen Weight	4750	g

Tests on Compressed Mixtures							
%AC	Gmb	Gmm	% Density of Gmm	% Density Required	% VMA	% VMA Required	% VFA
4.8	2.292	2.456	93.3	Design / Field	15.9	Design / Field	57.9
5.3	2.340	2.438	96.0	96.0 / 94.5 - 97.4	14.6	14.5 / 14.0	72.6
5.8	2.362	2.420	97.6		14.3		83.2

Dust Prop.
 1.1
 1.0
 0.9

Dust Prop. Req.
 0.6 - 1.6

ITS (PSI) 118.9 N/A min.
TSR 0.81 0.80 / 0.75 min. (Design / Field)
 Compacted Wt. (lbs/sy/1" thick) = 107.2 @ 5.3 % Asphalt Cement

Hamburg Rut Test Depth (mm) 11.51 12.50 max. @ 15,000 cycles

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

Comments: Revised IOC

Last Modified By: McComack, Hunter J. hmccomac
 (User Name and User ID)

Date: 9/18/2018
 (mm/dd/yyyy)