



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)
 J & R Sand Co P/S # m00560
 (Producer/Supplier Name and Producer/Supplier Code)
 J & R Sand #AP 40 (Portable) - 400TPH PLANT ID # m00560-03
 (Plant Name and Plant ID)

Insoluble - Recycled ID: I2
 (Design Type and Design Type ID)
 WS4qc0611800401
 (Mix ID)

Aggregate	Producer/Supplier	% USED
3/4" Chips	Klotz Sand and Gravel (Lakin, KS) P/S # m008758021	8
Crusher Run	Klotz Sand and Gravel (Lakin, KS) P/S # m008758021	18
3/4" 3A Chips	Prowers Aggregate West Farm Pit (Lamar, CO) P/S # m010578112	18
W. Scrns.	Prowers Aggregate West Farm Pit (Lamar, CO) P/S # m010578112	20
Sand	J & R Sand Co, Winchell Pit (Beaver Co., OK) P/S # m002050402	11
Coarse R.A.P.	Contractor / Project Site P/S # Contractor	25
Warm Mix Asphalt (WMA) Technology: EVOTHERM (Chem. Add.) qual028 Ingevity m00941 (Product Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		
Asphalt Cement: Asphaltic Cement Type PG 70-28 OK, acem002, Valero (Halstead, KS), m00964 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		

Sieve Size	Producer/Supplier:							Comb. Agg.	% Tol. (±)			
	3/4" Chips	Crusher Run	3/4" 3A Chips	W. Scrns.	Sand	Coarse 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)	65	90	88	100	100	96	92	92	85	99	7	
3/8 in (9.5 mm)	38	80	75	100	100	90	84	84	77	91	7	
#4 (4.75 mm)	6	52	52	93	99	74	67	67	60	74	7	
#8 (2.36 mm)	4	33	38	66	88	59	51	51	46	56	5	
#16 (1.18 mm)	3	22	29	46	60	47	37	37	33	41	4	
#30 (.600 mm)	3	16	23	31	36	36	26	26	22	30	4	
#50 (.300 mm)	2	11	18	19	14	24	17	17	13	21	4	
#100 (.150 mm)	2	8	12	7	3	14	9	9	6	12	3	
#200 (.075 mm)	1.3	5.0	11.0	2.0	2.0	9.2	5.9	5.9	3.9	7.9	2	
AC Content %						5.2	4.9	5.2	4.8	5.6	0.4	

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

Warm Mix Asphalt (WMA) Additive % 0.5

Mix temperature @ discharge from mixer: 285 (141) °F (°C) Required ± 20 °F (± 10 °C)
 Optimum roadway compaction temperature: 245 (118)
 Laboratory mixing temperature: 275 (135)
 Laboratory compaction temperature: 235 (113)

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	90.2	85.5 - 90.5
Ndes	65		96.0

Tests on Aggregates	Required	Units
Durability Index	96	40 min. %
F.A.A. %U		N/A %
Flat and Elongated	0	10 max. %
Fractured Faces	96/91	95/90 min. %
Insoluble Residue	75.3	40 min. %
LA Abrasion	30	40 max. %
Micro-Deval	6.7	N/A %
Permeability	1.6	12.5 max. 10 ⁻⁵ cm/s
Sand Equivalent	83	45 min. %
Pba	0.38	
IOC	0.03	%
Gse	2.642	
Gsb	2.616	
Specimen Weight	4750	g

Tests on Compressed Mixtures							
%AC	Gmb	Gmm	% Density		% VMA	% VMA Required	% VFA
			of Gmm	% Density Required			
4.4	2.329	2.467	94.4	Design / Field	14.9	Design / Field	62.4
4.9	2.350	2.448	96.0	96.0 / 94.5 - 97.4	14.6	14.5 / 14.0	72.6
5.4	2.364	2.430	97.3		14.5		81.4

ITS (PSI) 307 N/A min.
 TSR 0.85 0.80 / 0.75 min. (Design / Field)
 Compacted Wt. (lbs/sy/1" thick) = 107.2 @ 4.9 % Asphalt Cement
 3.6 % New Asphalt Cement

x 1st JMF Revision

Hamburg Rut Test Depth (mm) 3.09 12.50 max. @ 15,000 cycles

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

Comments: Revised JMF by contractor: Effective 5/11/2018

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

Date: 5/18/2018
 (mm/dd/yyyy)