



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 ID: I1
 (Design Type and Design Type ID)
 WS4qc0611800200
 (Mix ID)

Aggregate	Producer/Supplier	% USED
3/4" Chips	Klotz Sand and Gravel (Lakin, KS) P/S # m008758021	15
Crusher Run	Klotz Sand and Gravel (Lakin, KS) P/S # m008758021	33
Scrs.	Prowers Aggregate West Farm Pit (Lamar, CO) P/S # m010578112	37
Sand	J & R Sand Co, Winchell Pit (Beaver Co., OK) P/S # m002050402	15
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	3/4" Chips	Crusher Run	Scrs.	Sand	Comb. Agg.	% Tol. (±)			
						JMF	Min.	Max.	% Tol. (±)
3/4 in (19 mm)	100	100	100	100	100	100	100	100	0
1/2 in (12.5 mm)	65	90	100	100	91	91	84	98	7
3/8 in (9.5 mm)	38	80	100	100	84	84	77	91	7
#4 (4.75 mm)	6	52	83	99	64	64	57	71	7
#8 (2.36 mm)	4	33	57	88	46	46	41	51	5
#16 (1.18 mm)	3	22	42	60	32	32	28	36	4
#30 (.600 mm)	3	16	32	36	23	23	19	27	4
#50 (.300 mm)	2	11	24	14	15	15	11	19	4
#100 (.150 mm)	2	8	15	3	9	9	6	12	3
#200 (.075 mm)	1.3	5.0	11.0	2.0	6.2	6.2	4.2	8.2	2
AC Content %					5.0	5.0	4.6	5.4	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

°F (°C) **Required**
 Mix temperature @ discharge from mixer: 285 (141) ± 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)			
	% Density		
	# Gyr.	of Gmm	% Density Required
Nini	7	89.6	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	95.1	40 min. %
LA Abrasion	30	40 max. %
Micro-Deval	6.7	N/A %
Permeability	1.9	12.5 max. 10 ⁻⁵ cm/s
Sand Equivalent	80	45 min. %
Pba	0.38	
IOC	0.14	%
Gse	2.634	
Gsb	2.608	
Specimen Weight	4750	g

Tests on Compressed Mixtures								
%AC	Gmb	Gmm	% Density		% VMA	% VMA Required		% VFA
			of Gmm	% Density Required		Design / Field	Design / Field	
4.5	2.317	2.456	94.3	96.0	15.2	14.5 / 14.0	62.5	% VFA Required
5.0	2.340	2.438	96.0	96.0 / 94.5 - 97.4	14.8	14.5 / 14.0	73.0	72 - 77
5.5	2.362	2.420	97.6	97.6	14.4		83.3	

ITS (PSI) 545.4 N/A min.
TSR 0.85 0.80 / 0.75 min. (Design / Field)
Compacted Wt. (lbs/sy/1" thick) = 107.3 @ 5.0 % Asphalt Cement

Hamburg Rut Test Depth (mm) 2.05 12.50 max. @ 15,000 cycles

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

Comments:

Last Modified By: Smith, Jerry D. jsmith
 (User Name and User ID)

Date: 3/27/2018
 (mm/dd/yyyy)