



Construction • Materials • Technologies
 Geotechnical, Environmental, & Materials Engineering/Testing/Research

MARSHALL METHOD BITUMINOUS MIX DESIGN ASTM D-1559 AND ASPHALT INSTITUTE MS-2

Prepared for: ASPHALT MATERIALS Lab #: _____
 Project: UDOT Cold Mix Date: October 15, 2013

Gentlemen:

CMT Engineering Labs performed an Asphalt Mix Design in accordance with UDOT Specification 838, to determine the optimum binder content for the Job Mix Target listed below. The aggregate physical properties were determined and are listed on page 2, the asphalt physical properties were measured and are provided below.

RECOMMENDED DESIGN CRITERIA

Viscosity	_____	Recommended Oil Content:	7.85
Ductility	_____	Residual Oil Content:	5.50
Penetration	_____	Lottman (TSR):	0.0
Flash Point	_____	Oil Supplier/Grade:	Sinclair PG 58-28
Residue	_____	Bulk Unit Weight:	139.7
		No. of Blows:	50

Job Mix Formula

	(inch)	(mm)	Percent Passing	Specification
	1	25	_____	_____
	3/4"	19	_____	_____
	1/2"	12.5	100	90 - 100
	3/8"	9.5	90	<90
	#4	4.75	64	_____
	#8	2.36	42	28 - 58
	#16	1.18	25	_____
	#30	0.6	18	_____
	#50	0.3	13	_____
	#100	0.15	10	_____
	#200	0.075	5.4	2 - 10

Lab#: 0

Blend # 2

Aggregate Source Proportions

Aggregate Source	Product Name	Proportions (%)
ASPHALT MATERIALS	3/4" ROCK	0
ASPHALT MATERIALS	1/2" ROCK	30
ASPHALT MATERIALS	1/4" CHIP	28
ASPHALT MATERIALS	MANUF. SAND	42
		0
		0
		0
	lime	0
Total		100

Aggregate Blend Physical Properties

Test Method	Results	Specification
MgSo4 Soundness (coarse) ASTM C-88	1.4	16 % Max.
MgSo4 Soundness (fine) ASTM C-88	1.4	16 % Max.
Fine Aggregate angularity AATO T-304	45.1	45 Min.
Fracture Face Count - One Face	94.9	90% Min.
Los Angeles Wear ASTM C-131	22.1	40% Max.
Flat and Elongated Particles	3.0	20%Max
Sand Equivalency AASHTO-176	Non-Plastic	6 Max.
Liquid Limit ASTM D-4316	Non-Plastic	25 Max