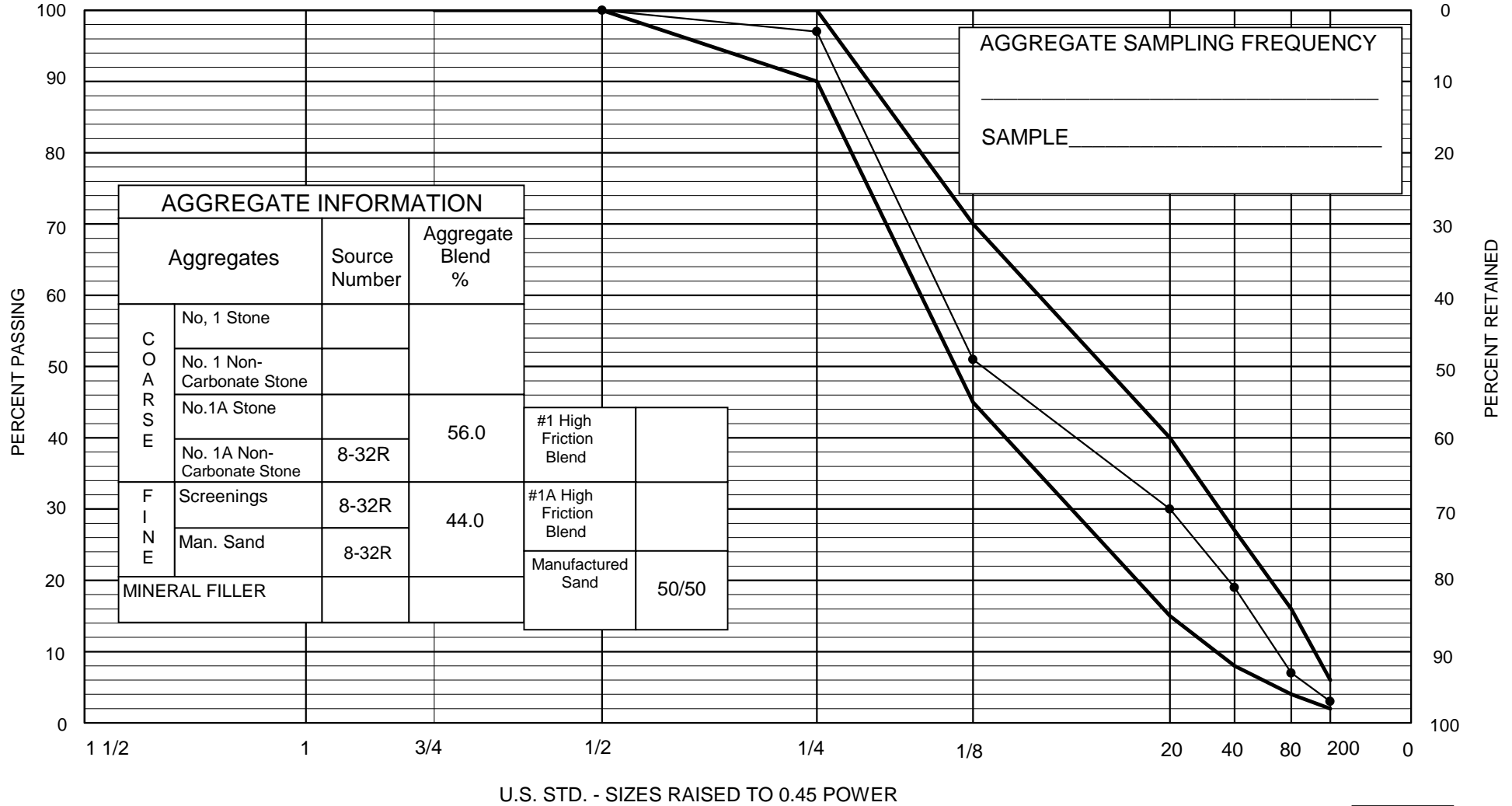


NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
MATERIALS BUREAU
JOB MIX FORMULA

Facility No. _____ Formula No. _____
Plant Willets Point Asphalt Region 11
Plant Location Flushing, NY
Submitted Willets Point Asphalt Date 3/3/2019

NYS DOT TYPE 7F TOP



Sieve Size		1 1/2"	1"	3/4"	1/2"	1/4"	1/8"	No. 20	No. 40	No. 80	No. 200	Asphalt Content (Percent)
% Passing	1. General Limits				100	90-100	45-70	15-40	8-27	4-16	2-6	6.0-8.0
	2. JMF Range				100	90-100	44-58	22-37	12-26	3-11	1-5	5.7-6.4
	3. Target Value				100	97	51	30	19	7	3	6.0

Asphalt Grade
PG 64-22

Recommended for Approval by Regional Director _____

Date: _____

Approved by Director, Materials Bureau _____

Date: _____

Remarks: _____

**NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
MATERIALS BUREAU
MARSHALL GRADATION ANALYSIS WORKSHEET**

REGION	11
ITEM	
MIX TYPE	7, 7F
PRODUCER	Willets Point Asphalt
LOCATION	Flushing, NY

NO. OF COMPOSITE/STOCKPILES NYSDOT TYPE 71 10

AVERAGE BIN BREAKDOWN

AGGREGATE INFORMATION				
AGGREGATES		SOURCE NUMBER	AGGREGATE BLEND %	
COARSE	No. 2 Stone			
	No. 1 Stone			# 1 High
	No. 1 Non-Carbonate Stone			Friction Blend
	No. 1A Stone			# 1A High
	No. 1A Non-Carbonate Stone	8-32R	56.0	Friction Blend
	Screenings	8-32R	44.0	Manuf./ Sand
FINE	Man. Sand	8-32R		50/50
	R.A.P.			
MINERAL FILLER				

Sieve Size	BIN NO. 5		BIN 3/4" NO. 4		BIN 3/8" NO. 3		BIN 1/4" NO. 2		BIN composite NO. 1		MF	
	%		%		%		%		%		%	
	ret.	pass.	ret.	pass.	ret.	pass.	ret.	pass.	ret.	pass.	ret.	pass.
1 1/2"									-	100.0		
1"									0.0	100.0		
3/4"									0.0	100.0		
1/2"									0.0	100.0		
1/4"									2.7	97.3		
1/8"									46.0	51.3		
20									21.6	29.7		
40									11.2	18.5		
80									11.3	7.2		
200									4.2	3.0		
PAN			100.0	-	100.0	-	100.0	-	3.0	-	100.0	-
Totals			100.0	-	100.0	-	100.0	-	100.0	-	100.0	-

COMBINED AVERAGE GRADATION

BIN	% Batched	% PASSING SIEVE									
		1 1/2"	1"	3/4"	1/2"	1/4"	1/8"	20	40	80	200
-	0.0										
3/4"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/8"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1/4"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
composite	100.0	100.0	100.0	100.0	100.0	97.3	51.3	29.7	18.5	7.2	3.0
MF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	97.3	51.3	29.7	18.5	7.2	3.0
Specification Limits		100	100	100	100	90-100	45-70	15-40	8-27	4-16	2-6

REMARKS _____

TESTED BY Willets Point Asphalt ON 3/3/2019

**COMBINED MARSHALL GRADATION
AT THE % ASPHALT CEMENT INDICATED**

% A.C.	AGGREGATE COMPONENT	% BATCH	GRAMS BATCH	WEIGHT RETAINED (GRAMS)										Total WGT. RET.
				1	3/4	1/2	1/4	1/8	20	40	80	200	Pan	
5.6	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1	100.0	1132.8	0.0	0.0	0.0	30.6	521.1	244.7	126.9	128.0	0.0	81.5	1132.8
	MF	0.0	0.0	(Specimen wtg)= $\frac{1200}{}$ x $\frac{5.6}{}$ %A.C. = $\frac{67.2}{}$ gr. A.C.										
	Total	100.0	1132.8	(Specimen wtg)= $\frac{1200}{}$ - $\frac{67.2}{}$ gr. A.C. = $\frac{1132.8}{}$ gr. Aggregate										

% A.C.	AGGREGATE COMPONENT	% BATCH	GRAMS BATCH	WEIGHT RETAINED (GRAMS)										Total WGT. RET.
				1	3/4	1/2	1/4	1/8	20	40	80	200	Pan	
6.0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1	100.0	1128.0	0.0	0.0	0.0	30.5	518.9	243.6	126.3	127.5	0.0	81.2	1128.0
	MF	0.0	0.0	(Specimen wtg)= $\frac{1200}{}$ x $\frac{6.0}{}$ %A.C. = $\frac{72.0}{}$ gr. A.C.										
	Total	100.0	1128.0	(Specimen wtg)= $\frac{1200}{}$ - $\frac{72.0}{}$ gr. A.C. = $\frac{1128.0}{}$ gr. Aggregate										

% A.C.	AGGREGATE COMPONENT	% BATCH	GRAMS BATCH	WEIGHT RETAINED (GRAMS)										Total WGT. RET.
				1	3/4	1/2	1/4	1/8	20	40	80	200	Pan	
6.4	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1	100.0	1123.2	0.0	0.0	0.0	30.3	516.7	242.6	125.8	126.9	0.0	80.9	1123.2
	MF	0.0	0.0	(Specimen wtg)= $\frac{1200}{}$ x $\frac{6.4}{}$ %A.C. = $\frac{76.8}{}$ gr. A.C.										
	Total	100.0	1123.2	(Specimen wtg)= $\frac{1200}{}$ - $\frac{76.8}{}$ gr. A.C. = $\frac{1123.2}{}$ gr. Aggregate										

% A.C.	AGGREGATE COMPONENT	% BATCH	GRAMS BATCH	WEIGHT RETAINED (GRAMS)										Total WGT. RET.
				1	3/4	1/2	1/4	1/8	20	40	80	200	Pan	
6.8	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1	100.0	1118.4	0.0	0.0	0.0	30.2	514.5	241.6	125.3	126.4	0.0	80.4	1118.4
	MF	0.0	0.0	(Specimen wtg)= $\frac{1200}{}$ x $\frac{6.8}{}$ %A.C. = $\frac{81.6}{}$ gr. A.C.										
	Total	100.0	1118.4	(Specimen wtg)= $\frac{1200}{}$ - $\frac{81.6}{}$ gr. A.C. = $\frac{1118.4}{}$ gr. Aggregate										

% A.C.	AGGREGATE COMPONENT	% BATCH	GRAMS BATCH	WEIGHT RETAINED (GRAMS)										Total WGT. RET.
				1	3/4	1/2	1/4	1/8	20	40	80	200	Pan	
7.2	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1	100.0	1113.6	0.0	0.0	0.0	30.1	512.3	240.5	124.7	125.8	0.0	80.2	1113.6
	MF	0.0	0.0	(Specimen wtg)= $\frac{1200}{}$ x $\frac{7.2}{}$ %A.C. = $\frac{86.4}{}$ gr. A.C.										
	Total	100.0	1113.6	(Specimen wtg)= $\frac{1200}{}$ - $\frac{86.4}{}$ gr. A.C. = $\frac{1113.6}{}$ gr. Aggregate										

**NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
MATERIALS BUREAU**

**COMPUTATION OF MARSHALL
MIX PROPERTIES**

ITEM _____ REGION 11
MIX TYPE 7, 7F
LOCATION Flushing, NY

NYS DOT TYPE 7F TOP COURSE (HIGH FRICTION PRODUCER Willets Point Asphalt)

Specimen	Asphalt Content	Weight - Grams			Volume CC	Bulk Specific Gravity Gmb	Unit Wt. lb/cu. Ft.	Stability - Lbs.			Flow 0.01 in	Marshall Quotient lb/0.01 in.
		In Air	In Water	S.S.D.				Measured	Correction Factor	Corrected		
a	b	c	d	e	f	g	h	i	j	k	l	m
					e-d	c/f	g*62.4					k/l
A		1202.2	704.4	1204.0	499.6	2.406		1650	1.04	1716	6.5	
B		1214.7	708.9	1215.9	507.0	2.396		1500	1.04	1560	7.5	
C		1210.6	707.9	1212.2	504.3	2.401		1525	1.04	1586	9.0	
AVG.	5.6					2.401	149.8			1621	7.7	211
A		1208.7	707.8	1210.0	502.2	2.407		1850	1.04	1924	10.0	
B		1205.9	706.4	1206.7	500.3	2.410		1700	1.04	1768	10.0	
C		1198.7	701.5	1200.1	498.6	2.404		1725	1.04	1794	9.0	
AVG.	6.0					2.407	150.2			1829	9.7	189
A		1200.6	704.3	1201.4	497.1	2.415		1990	1.04	2070	11.0	
B		1194.5	700.1	1195.4	495.3	2.412		1750	1.09	1908	12.0	
C		1196.0	699.1	1196.8	497.7	2.403		1730	1.04	1799	10.0	
AVG.	6.4					2.410	150.4			1926	11.0	175
A		1197.0	701.0	1197.9	496.9	2.409		1700	1.04	1768	13.0	
B		1206.2	706.8	1207.0	500.2	2.411		1875	1.04	1950	13.5	
C		1201.5	702.2	1202.0	499.8	2.404		1700	1.04	1768	13.5	
AVG.	6.8					2.408	150.3			1829	13.3	138
A		1199.9	700.6	1200.6	500.0	2.400		1575	1.04	1638	17.0	
B		1207.4	704.6	1208.1	503.5	2.398		1550	1.04	1612	16.5	
C		1211.6	710.5	1212.0	501.5	2.416		1700	1.04	1768	15.5	
AVG.	7.2					2.405	150.1			1673	16.3	103

PREPARED BY Willets Point Asphalt

DATE 3/3/2019

BR 76 M (12/94)

**NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
MATERIALS BUREAU**

MIX TYPE 7, 7F REGION 11

PRODUCER Willets Point Asphalt

LOCATION Flushing, NY

**MAXIMUM SPECIFIC GRAVITY NYSDOT TYPE 7F TOP COURSE (HIGH FRICTION)
AASHTO T209**

- Gmm** = Maximum Specific Gravity of Hot Mix Asphalt
- A** = Weight of sample in air (grams)
- D** = Weight of pycnometer filled with airless water at 25 C (grams)
- E** = Weight of pycnometer filled with water and sample at 25 C (grams)
- Gmm** = $\frac{A}{A+D-E}$

ASPHALT CONTENT	5.6 %		6.0 %		6.4 %		6.8 %		7.2 %	
TEST NO.	1	2	1	2	1	2	1	2	1	2
A	1307.6	1393.6	1196.8	1255.7	1879.1	1841.1	1279.6	1347.2	1408.7	1312.7
D	7414.0	7414.0	7414.0	7414.0	7414.0	7414.0	7414.0	7414.0	7414.0	7417.0
E	8205.7	8257.4	8133.0	8172.9	8540.8	8516.7	8179.8	8220.3	8253.8	8195.2
A+D-E	515.9	550.2	477.8	496.8	752.3	738.4	513.8	540.9	568.9	534.5
Gmm	2.535	2.533	2.505	2.528	2.498	2.493	2.490	2.491	2.476	2.456
Average Gmm	2.534		2.517		2.496		2.491		2.466	

TESTED BY Willets Point Asphalt ON 3/3/2019

**NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
MATERIALS BUREAU**

ITEM _____ REGION 11
MIX TYPE 7, 7F
PRODUCER Willets Point Asphalt
LOCATION Flushing, NY
COMPACTION 50 BLOWS PER SIDE

WORKSHEET FOR ANALYSIS OF
COMPACTED PAVING MIXTURE

(Analysis by weight of total mixture)
COMPOSITION OF PAVING MIXTURE

NYS DOT TYPE 7F TOP COURSE (HIGH FRICTION)

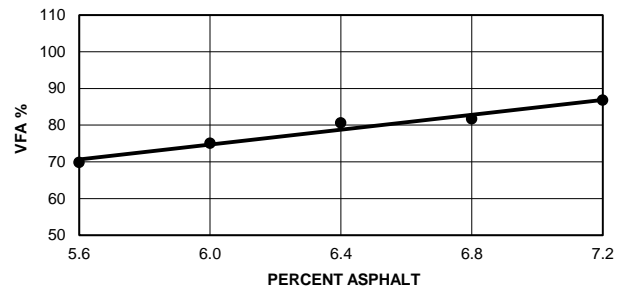
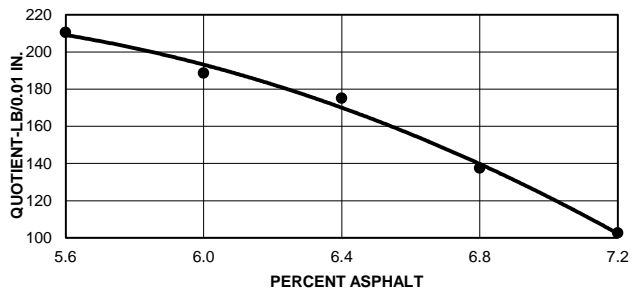
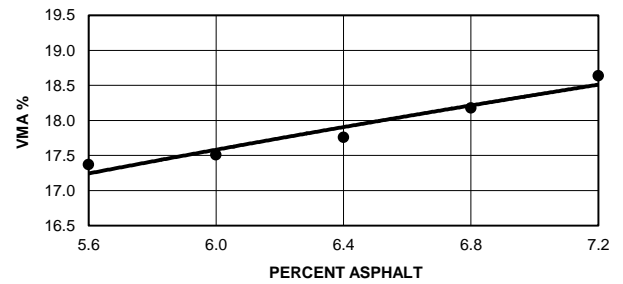
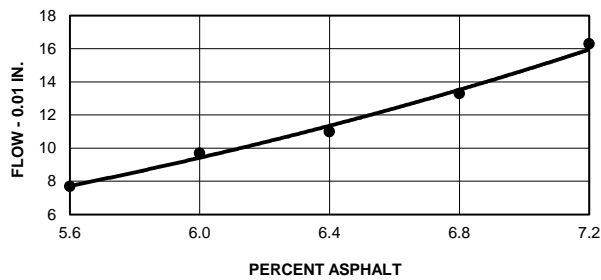
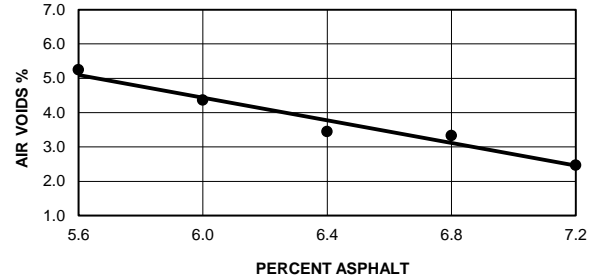
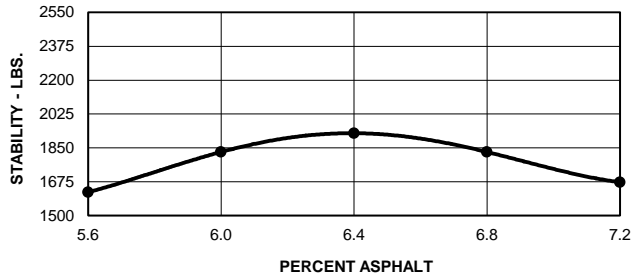
CONSTITUENT MATERIAL		NYS DOT	Specific Gravity		Mix Composition, % by weight of Total Mix, P					
			Source Number	Apparent	Bulk	Region Verification	Mix or Trial Number			
		1					2	3	4	5
CA	No. 2 Stone				P1					
	No. 1 Stone				P2					
	No. 1 Non-Carbonate Stone				P3					
	No. 1A Stone				P4					
	No. 1A Non-Carbonate Stone	8-32R	2.801	2.768	P5	52.86	52.64	52.42	52.19	51.97
FA	Screenings	8-32R	2.900	2.810	P6	20.77	20.68	20.59	20.51	20.42
	Manufactured Sand	8-32R	2.653	2.620	P7	20.77	20.68	20.59	20.51	20.42
	R.A.P.				P8					
MINERAL FILLER					P9	0.00	0.00	0.00	0.00	0.00
TOTAL AGGREGATE					Ps	94.4	94.0	93.6	93.2	92.8
ASPHALT CEMENT @ 25 C				1.031	PB	5.6	6.0	6.4	6.8	7.2
Gmm	Max Sp. Gr. of Paving Mix (AASHTO T209)					2.534	2.517	2.496	2.491	2.466
Gmb	Bulk Sp. Gr. of compacted mix (AASHTO T166)					2.401	2.407	2.410	2.408	2.405
Gsb	Bulk Sp. Gr. of total aggregate*					2.743	2.743	2.743	2.743	2.743
Gse	Effective Sp. Gr. of total aggregate*					2.774	2.772	2.765	2.778	2.765
Gsa	Apparent Sp. Gr. of total aggregate					2.788	2.788	2.788	2.788	2.788
VMA	100 - (Gmb x Ps/Gsb)					17.37	17.51	17.76	18.18	18.64
Pa	Pa = 100[(Gmm - Gmb)/Gmm]					5.25	4.37	3.45	3.33	2.47
VFA	VFA = 100 [(VMA - Pa)/VMA]					69.78	75.04	80.57	81.68	86.75
Pbe	Effective Asphalt Content = Gb(VMA - Pa)/Gmb					5.20	5.63	6.12	6.36	6.93
	Stability (CORRECTED)					1621	1829	1926	1829	1673
	Flow					7.7	9.7	11.0	13.3	16.3
	Marshall Quotient = Stability(corrected)/Flow					211	189	175	138	103
	Unit Weight					149.8	150.2	150.4	150.3	150.1

* EQUATIONS FROM CHAPTER V, SECTION E, NY MATERIALS METHOD 5.13

Prepared By Willets Point Asphalt

On 3/3/2019

NYS DOT MARSHALL TEST PROPERTY CURVES AND RANGE DATA



COMMON OVERLAP RANGE 5.6-6.4
 MID POINT 6.0
 (OPTIMUM AC CONTENT) 6.0

SUBMITTED BY Willets Point Asphalt
 DATE 3/3/2019

VALUES AT OPTIMUM AC CONTENT

PROPERTY	STABILITY	FLOW	QUOTIENT	AIR VOIDS	VMA	VFA
SPECIFICATION	1500 min.	8.0 min	150 min	3.0-5.0	15.5 min.	-
ACTUAL	1829	9.7	188.6	3.8	17.5	-