



**Department of
Design and
Construction**

Thomas Foley
Acting Commissioner

**Safety & Site Support Division
Office of Quality Assurance**

Alla Ayzenshtat
Associate Commissioner
Safety & Site Support

Asphalt Generic Mix Design Approval # 2022-002

30-30 Thomson Avenue
Long Island City, NY 11101

Date: 1/3/2022

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To: **Larry Santana**
Willets Point Asphalt Corp.

From: **Juan Martinez, PE, Deputy Director**
Office of Quality Assurance

Date Submitted: 12/28/2021

Plant: Willets Point Asphalt Corp.

NYSDOT Facility Numbers: H0354

Laboratory: N/A

Mix Design Type: 6FRA Top

Generic Mix Design Serial Number: WilletsPointAsphalt/6FRA/Top/Generic/NYCDDC/002/22

Generic Mix Design – Mix Design Date: 12/27/2021

Generic Mix Design – Expiration Date: 1/31/2024 *(See Comment 1 Below)*

- Comments:**
- 1) This mix design is approved only for the NYSDOT Facility Numbers listed above.
 - 2) Approval is limited to the material sources and aggregate sizes shown on the mix design.
 - 3) Dosage of admixtures may be adjusted by the plant within manufacturer's written guidelines, but admixtures not listed may not be added.

Reviewed & Prepared by: Christopher Vagnone, QA Inspector

Christopher Vagnone

Recommended for Acceptance by: Kelvin Law, PE, Engineer In Charge

KL

QA & CONSTRUCTION SAFETY BUREAU

ASPHALT JOB MIX FORMULA SHEET - 6F RA TOP MIX

PLANT NAME: **WILLETS POINT ASPHALT CORP**
 NYSDOT FACILITY #: **H0354**
 PLANT ADDRESS: **FLUSHING**
NEW YORK

MIX DESIGN DATE: **12/27/2021**
 PREPARED BY: **LARRY SANTANA**
 COMPANY: **WILLETS POINT ASPHALT**
 PLANT QC MGR: **LARRY SANTANA**

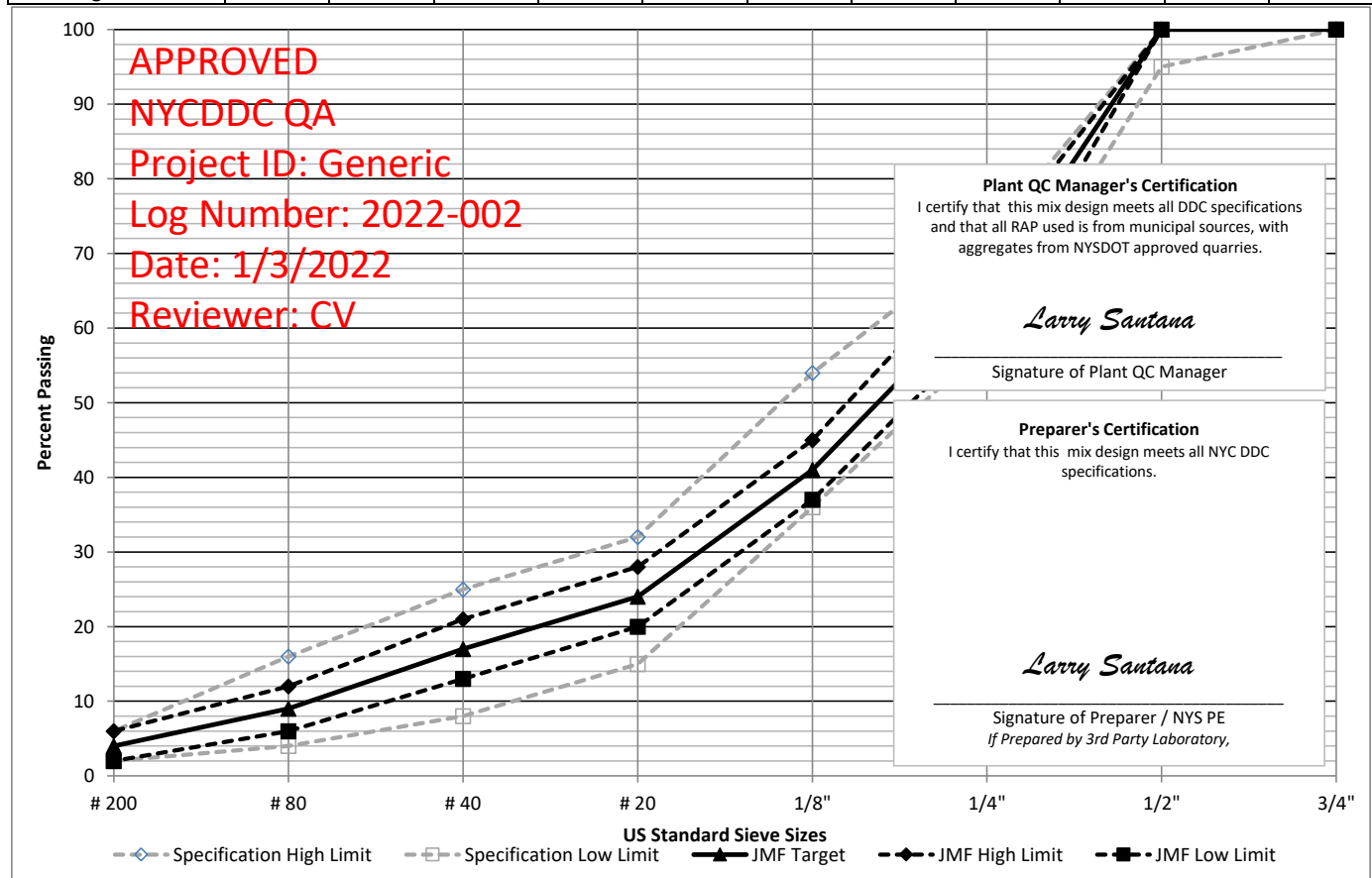
Item	Supplier / Quarry	NYSDOT Source	Friction Agg.	Agg. Blend %	Mix %	Lbs / Ton	
					0.0%	0	
#1 Stone	Tilcon, Mt Hope,NJ	8-32R	Yes	30.0%	28.9%	578	
#1A Stone	Tilcon, Mt Hope,NJ	8-32R	Yes	17.0%	16.4%	328	
					0.0%	0	
Manufactured Sand	Tilcon, Mt Hope,NJ	8-32R	N/A	23.0%	22.2%	443	
Screenings	Tilcon, Mt Hope,NJ	8-32R	N/A	0.0%	0.0%	0	
RAP	Willets Pt Asphalt Corp.	N/A	Yes	30.0%	28.9%	578	
	RAP % Asphalt: 6.2%				RAP AC 1.8%	36	
All RAP to be from Municipal Sources - Aggregates from State Quarries						RAP Aggregate 27.1%	542
		N/A			0.0%	0	
	RAP % Asphalt:				RAP AC 0.0%	0	
All RAP to be from Municipal Sources - Aggregates from State Quarries						RAP Aggregate 0.0%	0
Virgin Asphalt	Grade: PG64-22	SG (G _b):	1.034		3.6%	72	
Total Asphalt Content (P _b)					5.4%	108	
					100.0%	2,000	

QA&CS APPROVAL STAMP

WilletsPointAsphalt/6FRA/Top/Generic/NYCDDC/002/22 Expires: 1/31/2024

QA&CS SERIAL NUMBER & EXPIRATION DATE

Sieve Size	1-1/2"	1"	3/4"	1/2"	1/4"	1/8"	# 20	# 40	# 80	# 200	P _b
Specification Limits	100-100	100-100	100-100	95-100	58-72	36-54	15-32	8-25	4-16	2-6	5-6.2
JMF Target	100	100	100	100	65	41	24	17	9	4	5.4
JMF Range	100-100	100-100	100-100	100-100	60-70	37-45	20-28	13-21	6-12	2-6	5-6.1



QA & CONSTRUCTION SAFETY BUREAU
ASPHALT COMBINED GRADATION WORKSHEET - 6F RA TOP MIX

PLANT NAME: WILLETS POINT ASPHALT CORP

NYSDOT FACILITY #: H0354

MIX DESIGN DATE: 12/27/2021

Average Bin Gradations

Sieve	Not Used		#1 Stone		#1A Stone		Not Used		Manufactured Sand		Screenings		RAP		Not Used	
	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass
1.5"		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0
1"		100.0	0.0	100.0	0.0	100.0		100.0	0.0	100.0	0.0	100.0	0.0	100.0		100.0
3/4"		100.0	0.0	100.0	0.0	100.0		100.0	0.0	100.0	0.0	100.0	0.0	100.0		100.0
1/2"		100.0	1.1	98.9	0.0	100.0		100.0	0.0	100.0	0.0	100.0	0.0	100.0		100.0
1/4"		100.0	83.5	15.4	11.1	88.9		100.0	0.0	100.0	0.0	100.0	25.2	74.8		100.0
1/8"		100.0	14.0	1.4	73.1	15.8		100.0	5.5	94.5	13.3	86.7	21.9	52.9		100.0
#20		100.0	0.0	1.4	13.5	2.3		100.0	38.0	56.5	40.5	46.2	19.5	33.4		100.0
#40		100.0	0.0	1.4	0.0	2.3		100.0	19.0	37.5	13.0	33.2	9.2	24.2		100.0
#80		100.0	0.0	1.4	0.0	2.3		100.0	20.5	17.0	15.0	18.2	10.8	13.4		100.0
#200		100.0	0.0	1.4	0.0	2.3		100.0	13.5	3.5	8.0	10.2	5.2	8.2		100.0
Pan			1.4		2.3				3.5		10.2		8.2			
Totals	0.0		100.0		100.0		0.0		100.0		100.0		100.0		0.0	

Stockpiles Sampled By: DAWID JANIK Date Sampled: 12/20/2021

Gradation Technician: DAWID JANIK Date Tested: 12/20/2021

Coarse Aggregate Specific Gravity per ASTM C127

Discard portion of sample that passes the 1/4 sieve.

Only Perform this test if aggregate is 10% or more coarse (less than 90% passing the 1/4" sieve)

	Not Used	#1 Stone	#1A Stone	Not Used	Manufactured Sand	Screenings	RAP	Not Used
% Coarse Agg.	---	84.6%	11.1%	---	0.0%	0.0%	25.2%	---
Test Required?	NO	YES	YES	NO	NO	NO	YES	NO
A) Wt. in Air		1513.0	1470.1				1015.0	
B) Wt. SSD		1517.5	1475.0				1021.1	
C) Wt. in Water		955.2	927.0				638.2	
G _{sb} (A/(B-C))	---	2.691	2.683	---	---	---	2.651	---
G _{sa} (A/(A-C))	---	2.712	2.707	---	---	---	2.694	---

Fine Aggregate Specific Gravity per ASTM C128

Discard portion of sample that does not pass the #4 sieve.

Only Perform this test if 10% or more passes the 1/4" Sieve.

	Not Used	#1 Stone	#1A Stone	Not Used	Manufactured Sand	Screenings	RAP	Not Used
% Fine Agg.	---	15.4%	88.9%	---	100.0%	100.0%	74.8%	---
Test Required?	NO	YES	YES	NO	YES	YES	YES	NO
A) Wt. in Air		1513.0	1470.1		499.2	498.4	1015.0	
B) Wt. Flask + Water		0.0	0.0		679.0	682.4	0.0	
C) Wt. Flask + Water + Sample		955.2	927.0		993.0	996.1	638.2	
S) Wt. SSD		1517.5	1475.0		502.2	502.0	1021.1	
G _{sb} (A/(B+S-C))	---	2.691	2.683	---	2.652	2.647	2.651	---
G _{sa} (A/(B+A-C))	---	2.712	2.707	---	2.695	2.698	2.694	---

Combined Aggregate Specific Gravity

	Not Used	#1 Stone	#1A Stone	Not Used	Manufactured Sand	Screenings	RAP	Not Used
Combined G _{sb}	---	2.691	2.683	---	2.652	2.647	2.651	---
Combined G _{sa}	---	2.712	2.707	---	2.695	2.698	2.694	---

S. G. Technician: DAWID JANIK Date Tested: 12/20/2021

Combined Average Gradations, % Passing

Bin	Agg Blend	1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200
Not Used	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
#1 Stone	30.0%	30.0	30.0	30.0	29.7	4.6	0.4	0.4	0.4	0.4	0.4
#1A Stone	17.0%	17.0	17.0	17.0	17.0	15.1	2.7	0.4	0.4	0.4	0.4
Not Used	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufactured Sand	23.0%	23.0	23.0	23.0	23.0	23.0	21.7	13.0	8.6	3.9	0.8
Screenings	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAP	30.0%	30.0	30.0	30.0	30.0	22.4	15.9	10.0	7.3	4.0	2.5
Not Used	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	99.7	65.2	40.7	23.8	16.7	8.7	4.1
Specification Limits		100-100	100-100	100-100	95-100	58-72	36-54	15-32	8-25	4-16	2-6

QA & CONSTRUCTION SAFETY BUREAU
 ASPHALT TRIAL GRADATION WORKSHEET - 6F RA TOP MIX

PLANT NAME: WILLETTS POINT ASPHALT CORP

NYSDOT FACILITY #: H0354

MIX DESIGN DATE: 12/27/2021

BATCH 1 Batch P_b: 4.5%
 Batch Grams: 1225.0

Batch Weights, Retained on Sieve - Grams															
Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan
Not Used	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	0.0
#1 Stone	30.0%	28.7%	351.0		0.0	0.0	0.0	3.9	293.1	49.1	0.0	0.0	0.0	0.0	4.9
#1A Stone	17.0%	16.2%	198.9		0.0	0.0	0.0	0.0	22.1	145.4	26.8	0.0	0.0	0.0	4.6
Not Used	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	0.0
Manufactured Sand	23.0%	22.0%	269.1		0.0	0.0	0.0	0.0	0.0	14.8	102.2	51.1	55.2	36.3	9.4
Screenings	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	0.0
RAP	30.0%	30.5%	374.2	23.2	0.0	0.0	0.0	0.0	94.3	81.9	73.0	34.4	40.4	19.5	7.5
Not Used	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	0.0	0.0
Virgin Asphalt		2.6%	31.9	31.9											31.9
Total Mix	100.0%	100.0%	1225.0	55.1	0.0	0.0	0.0	3.9	409.4	291.3	202.1	85.5	95.6	55.8	26.4

4.50%

BATCH 2 Batch P_b: 5.0%
 Batch Grams: 1225.0

Batch Weights, Retained on Sieve - Grams															
Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan
Not Used	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	0.0
#1 Stone	30.0%	28.5%	349.1		0.0	0.0	0.0	3.8	291.5	48.9	0.0	0.0	0.0	0.0	4.9
#1A Stone	17.0%	16.2%	197.8		0.0	0.0	0.0	0.0	22.0	144.6	26.7	0.0	0.0	0.0	4.6
Not Used	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	0.0
Manufactured Sand	23.0%	21.9%	267.7		0.0	0.0	0.0	0.0	0.0	14.7	101.7	50.9	54.9	36.1	9.4
Screenings	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	0.0
RAP	30.0%	30.4%	372.2	23.1	0.0	0.0	0.0	0.0	93.8	81.5	72.6	34.2	40.2	19.4	7.4
Not Used	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	0.0	0.0
Virgin Asphalt		3.1%	38.2	38.2											38.2
Total Mix	100.0%	100.0%	1225.0	61.3	0.0	0.0	0.0	3.8	407.3	289.7	201.0	85.1	95.1	55.5	26.3

5.00%

BATCH 3 Batch P_b: 5.5%
 Batch Grams: 1225.0

Batch Weights, Retained on Sieve - Grams															
Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan
Not Used	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	0.0
#1 Stone	30.0%	28.4%	347.3		0.0	0.0	0.0	3.8	290.0	48.6	0.0	0.0	0.0	0.0	4.9
#1A Stone	17.0%	16.1%	196.8		0.0	0.0	0.0	0.0	21.8	143.9	26.6	0.0	0.0	0.0	4.5
Not Used	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	0.0
Manufactured Sand	23.0%	21.7%	266.3		0.0	0.0	0.0	0.0	0.0	14.6	101.2	50.6	54.6	35.9	9.3
Screenings	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	0.0
RAP	30.0%	30.2%	370.2	23.0	0.0	0.0	0.0	0.0	93.3	81.1	72.2	34.1	40.0	19.3	7.4
Not Used	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	0.0	0.0
Virgin Asphalt		3.6%	44.4	44.4											44.4
Total Mix	100.0%	100.0%	1225.0	67.4	0.0	0.0	0.0	3.8	405.1	288.2	199.9	84.7	94.6	55.2	26.1

5.50%

BATCH 4 Batch P_b: 6.0%
 Batch Grams: 1225.0

Batch Weights, Retained on Sieve - Grams															
Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan
Not Used	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	0.0
#1 Stone	30.0%	28.2%	345.5		0.0	0.0	0.0	3.8	288.5	48.4	0.0	0.0	0.0	0.0	4.8
#1A Stone	17.0%	16.0%	195.8		0.0	0.0	0.0	0.0	21.7	143.1	26.4	0.0	0.0	0.0	4.5
Not Used	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	0.0
Manufactured Sand	23.0%	21.6%	264.8		0.0	0.0	0.0	0.0	0.0	14.6	100.6	50.3	54.3	35.8	9.3
Screenings	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	0.0
RAP	30.0%	30.1%	368.3	22.8	0.0	0.0	0.0	0.0	92.8	80.7	71.8	33.9	39.8	19.2	7.4
Not Used	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	0.0	0.0
Virgin Asphalt		4.1%	50.7	50.7											50.7
Total Mix	100.0%	100.0%	1225.0	73.5	0.0	0.0	0.0	3.8	403.0	286.7	198.9	84.2	94.1	54.9	26.0

6.00%

BATCH 5 Batch P_b: 6.5%
 Batch Grams: 1225.0

Batch Weights, Retained on Sieve - Grams															
Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan
Not Used	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	0.0
#1 Stone	30.0%	28.1%	343.6		0.0	0.0	0.0	3.8	286.9	48.1	0.0	0.0	0.0	0.0	4.8
#1A Stone	17.0%	15.9%	194.7		0.0	0.0	0.0	0.0	21.6	142.3	26.3	0.0	0.0	0.0	4.5
Not Used	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	0.0
Manufactured Sand	23.0%	21.5%	263.4		0.0	0.0	0.0	0.0	0.0	14.5	100.1	50.1	54.0	35.6	9.2
Screenings	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	0.0
RAP	30.0%	29.9%	366.3	22.7	0.0	0.0	0.0	0.0	92.3	80.2	71.4	33.7	39.6	19.0	7.3
Not Used	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	0.0	0.0
Virgin Asphalt		4.6%	56.9	56.9											56.9
Total Mix	100.0%	100.0%	1225.0	79.6	0.0	0.0	0.0	3.8	400.8	285.2	197.8	83.8	93.6	54.6	25.8

6.50%

QA & CONSTRUCTION SAFETY BUREAU

ASPHALT MAXIMUM DENSITY & MARSHALL PROPERTIES WORKSHEET - 6F RA TOP MIX

PLANT NAME: WILLETS POINT ASPHALT CORP NYSDOT FACILITY #: H0354 MIX DESIGN DATE: 12/27/2021

Theoretical Maximum Specific Gravity G_{mm} per ASTM D2041

Trial Batch	1		2		3		4		5	
P_b	4.5%		5.0%		5.5%		6.0%		6.5%	
A) Sample in Air (grams)	2020.0	2015.2	2013.2	2010.2	2005.2	2001.5	2030.2	2027.1	2069.0	2055.5
B) Pycnometer in Water (Grams)	1285.5	1293.1	1285.5	1293.1	1285.5	1293.1	1285.5	1293.1	1285.5	1293.1
C) Sample & Pycnometer in Water (Grams)	2503.1	2507.5	2493.2	2498.2	2480.9	2487.5	2490.0	2495.0	2507.2	2505.0
$G_{mm} (A/(A+B-C))$	2.517	2.516	2.499	2.497	2.476	2.480	2.459	2.456	2.442	2.437
Average G_{mm}	2.517		2.498		2.478		2.458		2.439	

Density Technician: DAWID JANIK Date Tested: 12/20/2021

Computation of Marshall Mix Properties (75 Blows per Side)

Weight In Air	SSD Weight	Weight In Water	Sample Volume	Bulk SG G_{mb}	Max SG G_{mm}	% Air P_a	Unit Weight	Meas. Stability	Corr. Factor	Corr. Stability	Marshall Flow	Marshall Quotient
Grams	Grams	Grams	CC	---	---	%	PCF	lbs	lbs	lbs	0.01"	lb/0.01"
A	B	C	D	E	F	G	H	J	K	L	M	N
---	---	---	B-C	A/D	---	(F-E)/F	E*62.4	---	---	J*K	---	L/M

TRIAL BATCH 1 $P_b = 4.5\%$													
Specimen A	1222.5	1224.3	702.5	521.8	2.343	2.517	6.92%		2600	1	2600	10.0	260
Specimen B	1220.4	1222.2	701.8	520.4	2.345	2.517	6.83%		2595	1	2600	9.5	274
Specimen C	1223.2	1225.6	704.0	521.6	2.345	2.517	6.83%		2615	1	2620	10.5	250
Average					2.344	2.517	6.87%	146.3			2610	10.0	261

TRIAL BATCH 2 $P_b = 5.0\%$													
Specimen A	1225.0	1226.8	710.0	516.8	2.370	2.498	5.11%		2710	1	2710	10.5	258
Specimen B	1221.1	1222.9	704.2	518.7	2.354	2.498	5.76%		2790	1	2790	10.0	279
Specimen C	1223.8	1225.2	704.8	520.4	2.352	2.498	5.86%		2845	1	2850	9.0	317
Average					2.359	2.498	5.56%	147.2			2780	9.8	285

TRIAL BATCH 3 $P_b = 5.5\%$													
Specimen A	1224.0	1226.0	711.0	515.0	2.377	2.478	4.09%		3000	1	3000	10.5	286
Specimen B	1224.5	1226.2	710.8	515.4	2.376	2.478	4.12%		2945	1	2950	10.0	295
Specimen C	1223.9	1225.4	709.5	515.9	2.372	2.478	4.26%		2990	1	2990	11.5	260
Average					2.375	2.478	4.16%	148.2			2980	10.7	280

TRIAL BATCH 4 $P_b = 6.0\%$													
Specimen A	1235.0	1236.5	717.5	519.0	2.380	2.458	3.19%		3025	1	3030	11.5	263
Specimen B	1236.1	1237.9	719.2	518.7	2.383	2.458	3.05%		3015	1	3020	11.0	275
Specimen C	1238.0	1239.9	720.3	519.6	2.383	2.458	3.07%		2965	1	2970	11.0	270
Average					2.382	2.458	3.09%	148.6			3010	11.2	269

TRIAL BATCH 5 $P_b = 6.5\%$													
Specimen A	1239.0	1241.5	722.2	519.3	2.386	2.439	2.18%		2675	1	2680	11.0	244
Specimen B	1240.0	1242.0	723.0	519.0	2.389	2.439	2.04%		2500	1	2500	12.0	208
Specimen C	1240.9	1241.8	721.0	520.8	2.383	2.439	2.31%		2475	1	2480	11.5	216
Average					2.386	2.439	2.17%	148.9			2550	11.5	223

Marshall Technician: DAWID JANIK Date Tested: 12/20/2021

QA & CONSTRUCTION SAFETY BUREAU

MIX VOLUMETRIC PROPERTIES WORKSHEET - 6F RA TOP MIX

PLANT:	WILLETS POINT ASPHALT CORP	NYSDOT FACILITY #:	H0354	MIX DESIGN DATE:	12/27/2021
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Agg. Blend %	Constituent Material	NYSDOT Source	G _{sa}	G _{sb}	Total Mix Composition by Weight				
					Trial Batch				
					1	2	3	4	5
0.0%	Not Used	---	---	---	0.0%	0.0%	0.0%	0.0%	0.0%
30.0%	#1 Stone	8-32R	2.712	2.691	28.7%	28.5%	28.4%	28.2%	28.1%
17.0%	#1A Stone	8-32R	2.707	2.683	16.2%	16.2%	16.1%	16.0%	15.9%
0.0%	Not Used	---	---	---	0.0%	0.0%	0.0%	0.0%	0.0%
23.0%	Manufactured Sand	8-32R	2.695	2.652	22.0%	21.9%	21.7%	21.6%	21.5%
0.0%	Screenings	8-32R	2.698	2.647	0.0%	0.0%	0.0%	0.0%	0.0%
30.0%	RAP		2.694	2.651	30.5%	30.4%	30.2%	30.1%	29.9%
0.0%	Not Used		---	---	0.0%	0.0%	0.0%	0.0%	0.0%
	Virgin Asphalt				2.6%	3.1%	3.6%	4.1%	4.6%
100.0%					100.0%	100.0%	100.0%	100.0%	100.0%

Mix General Properties				Trial Batch				
				1	2	3	4	5
P _b	Percent Total Asphalt Binder, %			4.5%	5.0%	5.5%	6.0%	6.5%
P _{ba}	Percent Absorbed Asphalt Binder, %			0.45%	0.45%	0.42%	0.39%	0.36%
P _{be}	Percent Effective Asphalt Binder, %			4.07%	4.58%	5.11%	5.64%	6.16%
DP	Dust Proportion (0.6 - 1.2 desired)			1.0	1.1	1.2	1.4	1.5
G _{mm}	Mix Maximum Specific Gravity			2.517	2.498	2.478	2.458	2.439
G _{mb}	Mix Bulk Specific Gravity			2.344	2.359	2.375	2.382	2.386
G _{sb}	Aggregate Bulk Gravity			2.668	2.668	2.668	2.668	2.668
G _{se}	Aggregate Effective Gravity			2.699	2.699	2.697	2.695	2.693
G _{sa}	Aggregate Apparent Specific Gravity			2.702	2.702	2.702	2.702	2.702

Mix Acceptance Properties		Low Limit	High Limit	Trial Batch				
				1	2	3	4	5
VMA	Voids in Mineral Aggregate, %	15.5%		16.1%	16.0%	15.9%	16.1%	16.4%
<i>Note: All five trial batches must meet the minimum VMA requirement.</i>								
VFA	Voids Filled with Asphalt, %	65%	75%	57.3%	65.3%	73.8%	80.8%	86.8%
P _a	Percent Air Voids, %	3.0%	5.0%	6.9%	5.6%	4.2%	3.1%	2.2%
---	Marshall Stability (Corrected), lb	1500		2610	2780	2980	3010	2550
---	Marshall Flow, 0.01"	8	12	10.0	9.8	10.7	11.2	11.5
---	Marshall Quotient, lb/0.01"	150		261	285	280	269	223

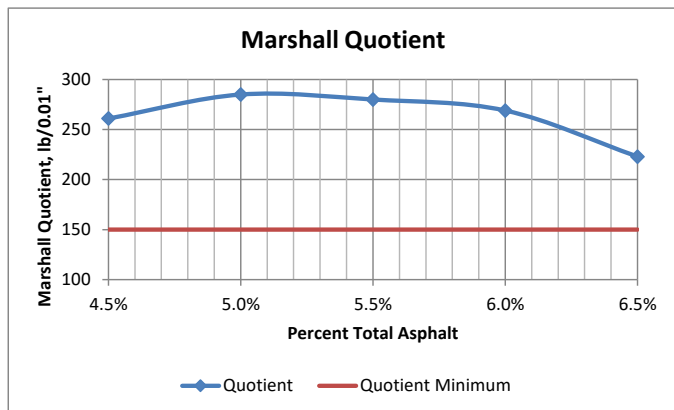
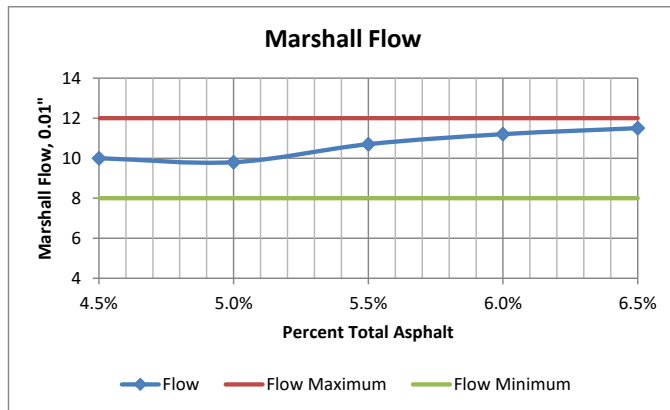
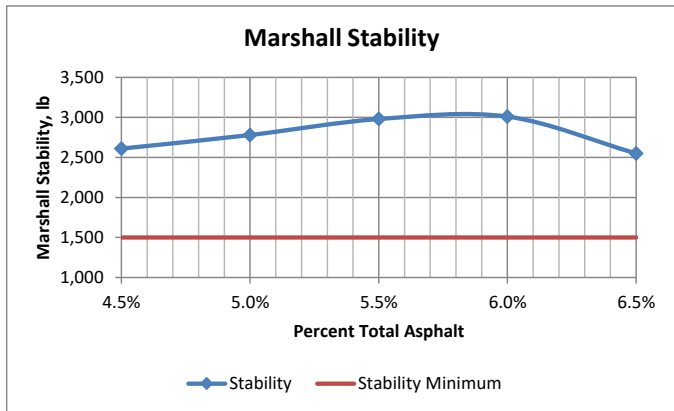
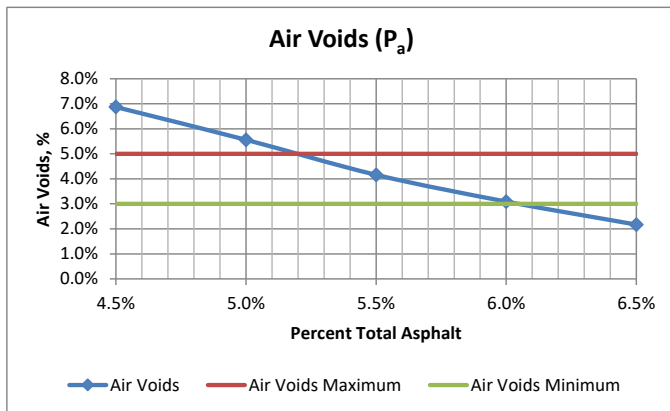
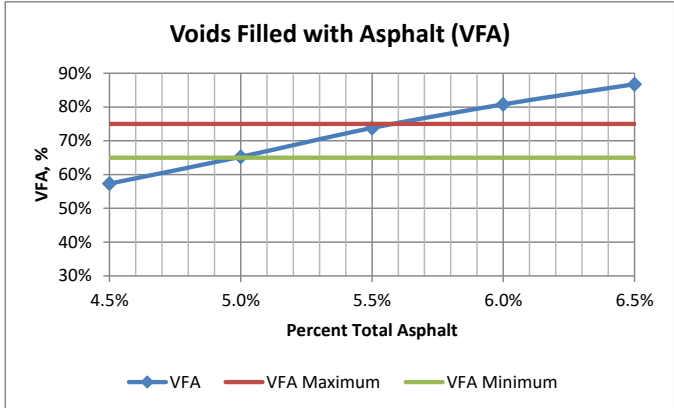
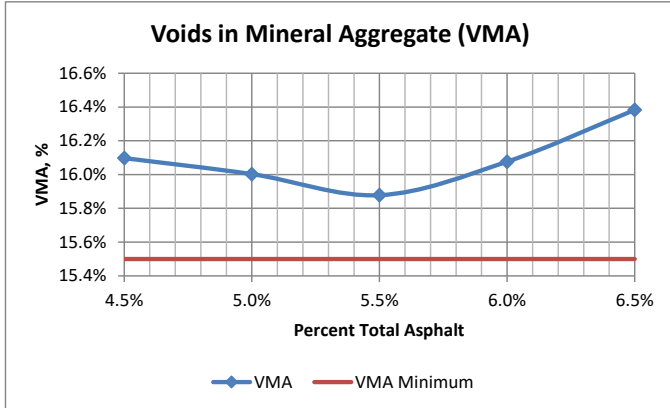
QA & CONSTRUCTION SAFETY BUREAU

PROPERTY CURVES & DESIRED ASPHALT CONTENT WORKSHEET - 6F RA TOP MIX

PLANT NAME: WILLETS POINT ASPHALT CORP

NYSDOT FACILITY #: H0354

MIX DESIGN DATE: 12/27/2021



Property	Low	High
Voids in Mineral Aggregate (VMA), %	4.5%	6.5%
Voids Filled with Asphalt (VFA), %	4.9%	5.6%
Percent Air Voids, (P _a) %	5.2%	6.0%
Marshall Stability (Corrected), lb	4.5%	6.5%
Marshall Flow, 0.01"	4.5%	6.5%
Marshall Quotient, lb/0.01"	4.5%	6.5%
Overlap	5.2%	5.6%

Properties at Desired AC%
15.9%
73.8%
4.2%
2980
10.7
280

Midpoint	5.4%
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Desired Total Asphalt Content P₀	5.5%
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Desired Asphalt Content is the midpoint, unless the midpoint is on the VMA curve's positive slope. If this is the case, the Desired Asphalt Content is as close as possible to the bottom of the VMA curve, within the Overlap Range.