Department of Design and Construction

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Safety & Site Support Division
Office of Quality Assurance

Concrete and Asphalt Generic Mix Design Approval 2024 - 001

Date: **2/7/2024**

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

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

Date Submitted: 2/6/2024

Plant: Willets Point Asphalt Corp.

NYSDOT Facility Numbers: H0354

Laboratory: N/A

Mix Design Type: 3RA Binder

Generic Mix Design Serial Number: WilletsPointAsphalt/3RA/Binder/Generic/NYCDDC/2/24/001

Generic Mix Design Date: 1/3/2024

Generic Mix Design Expiration Date: 2/28/2026

Comments:
1) This mix design is approved only for the NYSDOT Facility Numbers listed above.
2) Approval is valid only if facilities listed above remain on the DDC OQA Approved list of Concrete and/or Asphalt Plants.
3) Approval is limited to the material sources and aggregate sizes shown on the mix design.
4) 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: Scott Cruz, QA Inspector

Recommended for Acceptance by: Juan Martinez, PE, Director

WILLETS POINT ASPHALT QUALITY CONTROL

ASPHALT JOB MIX FORMULA SHEET - 3 RA BINDER

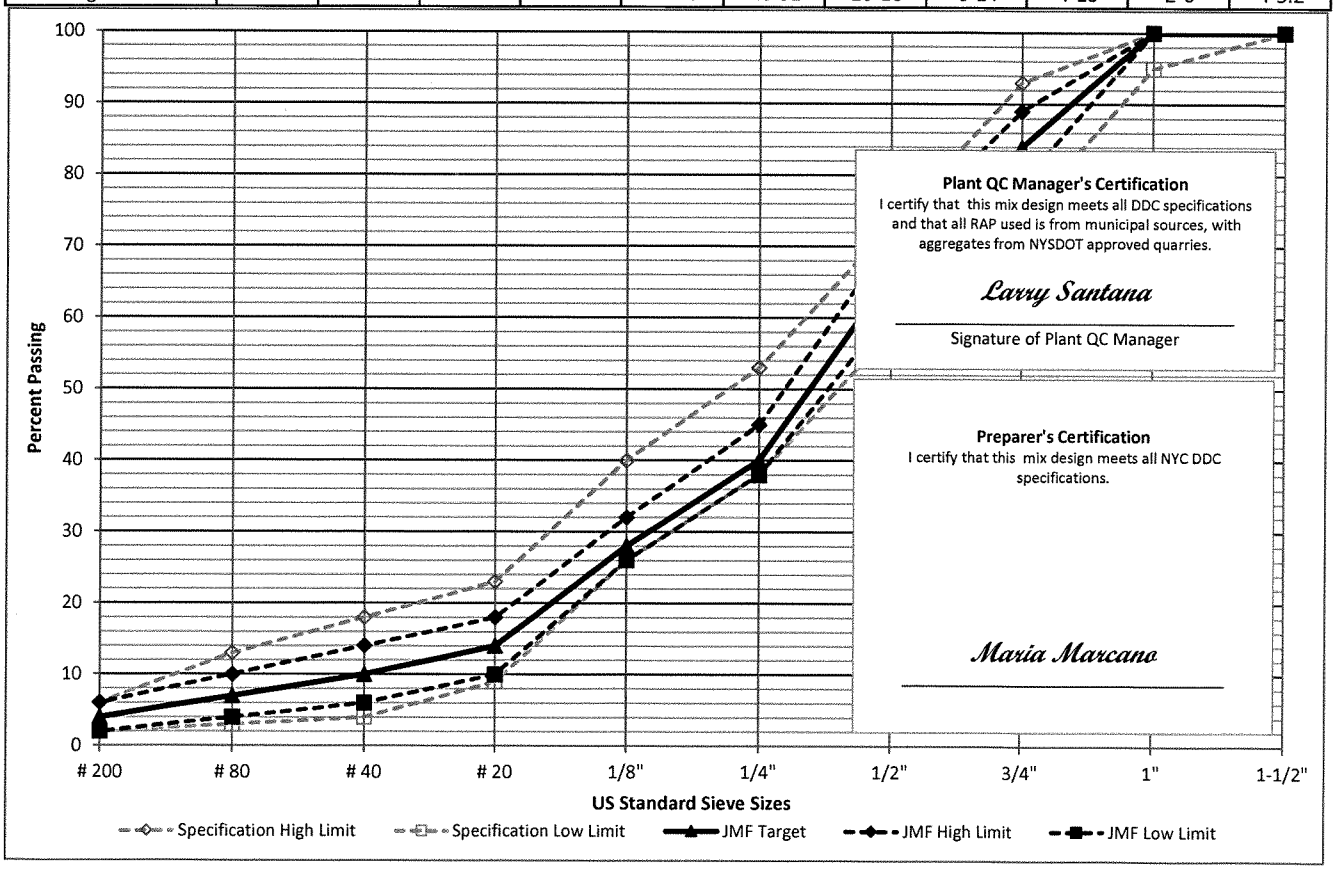
PLANT NAME:	WILLETS POINT ASPHALT	MIX DESIGN DATE:	1/3/2024
NYSDOT FACILITY #:	H0354	PREPARED BY:	MARIA MARCANO
PLANT ADDRESS:	FLUSHING	COMPANY:	WILLETS POINT ASPHALT
	New York, NY	PLANT QC MGR:	LARRY SANTANA

Item	Supplier / Quarry	NYSDOT Source	High Friction	Agg. Blend %	Mix %	Lbs / Ton
					0.0%	0
#57 Stone	Tilcon, Mt Hope,NJ	8-32R	Yes	43.0%	41.8%	837
#8 Stone	Tilcon, Mt Hope,NJ	8-32R	Yes	13.0%	12.6%	253
					0.0%	0
Natural Sand	Tilcon, Mt Hope,NJ	8-32R	*N/A*	0.0%	0.0%	0
Manuf. Sand	Tilcon, Mt Hope,NJ	8-32R	*N/A*	14.0%	13.6%	272
RAP 1	Flushing Asphalt Co.	*N/A*	Yes	30.0%	29.2%	584
	RAP % Asphalt: 6.2%		*RAP AC*		*1.8%*	*36*
All RAP to be from Municipal Sources - Aggregates from State Quarries			*RAP Aggregate*		*27.4%*	*548*
		N/A			0.0%	0
	RAP % Asphalt: 30.0%		*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		2.7%	54
Total Asphalt Content (P_b):					4.5%	90
				100.0%	*100.0%*	*2,000*

Project No: Generic
"APPROVED"
NYC DDC - Office of Quality Assurance
Date: 2/7/24 Reviewed By: SQ
LOG No: 2024-001

WilletsPointAsphalt/3RA/Binder/Generic/NYCDDC/2/24/001 Expires: 2/28/2026

Sieve Size	1-1/2"	1"	3/4"	1/2"	1/4"	1/8"	# 20	# 40	# 80	# 200	P_b
Specification Limits	100-100	95-100	74-93	58-73	38-53	26-40	9-23	4-18	3-13	2-6	4-6
JMF Target	100	100	84	66	40	28	14	10	7	4	4.5
JMF Range	100-100	100-100	79-89	61-71	38-45	26-32	10-18	6-14	4-10	2-6	4-5.2



Plant QC Manager's Certification
I certify that this mix design meets all DDC specifications and that all RAP used is from municipal sources, with aggregates from NYSDOT approved quarries.

Larry Santana

Signature of Plant QC Manager

Preparer's Certification
I certify that this mix design meets all NYC DDC specifications.

Maria Marcano

WILLETS POINT ASPHALT QUALITY CONTROL

AGGREGATE SPECIFIC GRAVITY & COMBINED GRADATION WORKSHEET - 3 RA BINDER

PLANT NAME:	WILLETS POINT ASPHALT	NYSDOT FACILITY #:	H0354	MIX DESIGN DATE:	1/3/2024

Average Bin Gradations

	Not Used		#57 Stone		#8 Stone		Not Used		Natural Sand		Manuf. Sand		RAP 1		Not Used	
Sieve	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass
1.5"		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"		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	37.0	63.0	0.8	99.2		100.0	0.0	100.0	0.0	100.0	0.0	100.0		100.0
1/2"		100.0	41.2	21.8	2.8	96.4		100.0	0.0	100.0	0.0	100.0	0.0	100.0		100.0
1/4"		100.0	20.3	1.5	65.2	31.2		100.0	0.0	100.0	0.0	100.0	27.9	72.1		100.0
1/8"		100.0	1.5	0.0	27.0	4.2		100.0	0.0	100.0	11.9	88.1	21.5	50.6		100.0
#20		100.0	0.0	0.0	4.2	0.0		100.0	0.0	100.0	44.6	43.5	24.8	25.8		100.0
#40		100.0	0.0	0.0	0.0	0.0		100.0	0.0	100.0	14.5	29.0	5.0	20.8		100.0
#80		100.0	0.0	0.0	0.0	0.0		100.0	0.0	100.0	13.2	15.8	3.8	17.0		100.0
#200		100.0	0.0	0.0	0.0	0.0		100.0	0.0	100.0	11.7	4.1	4.5	12.5		100.0
Pan			0.0		0.0				0.0		4.1		12.5			
Totals	0.0		100.0		100.0		0.0		0.0		100.0		100.0		0.0	

Stockpiles Sampled By:	MARIA MARCANO	Date Sampled:	1/3/2024
Gradation Technician:	MARIA MARCANO	Date Tested:	1/3/2024

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	#57 Stone	#8 Stone	Not Used	Natural Sand	Manuf. Sand	RAP 1	Not Used
% Coarse Agg.	---	98.5%	68.8%	---	0.0%	0.0%	27.9%	---
Test Required?	NO	YES	YES	NO	NO	NO	YES	NO
A) Wt. in Air		2645.0	2638.5				1022.6	
B) Wt. SSD		2658.9	2660.2				1028.5	
C) Wt. in Water		1682.5	1676.8				643.2	
G_{sb} (A/(B-C)	---	2.709	2.683	---	---	---	2.654	---
G_{sa} (A/(A-C)	---	2.748	2.744	---	---	---	2.695	---

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	#57 Stone	#8 Stone	Not Used	Natural Sand	Manuf. Sand	RAP 1	Not Used
% Fine Agg.	---	1.5%	31.2%	---	100.0%	100.0%	72.1%	---
Test Required?	NO	NO	YES	NO	YES	YES	YES	NO
A) Wt. in Air		0.0	2636.8		498.2	498.2	1018.2	
B) Wt. Flask + Water		0.0	0.0		682.5	682.5	0.0	
C) Wt. Flask + Water + Sample		0.0	1676.5		991.4	991.4	639.5	
S) Wt. SSD		0.0	2659.1		502.3	502.3	1025.3	
G_{sb} (A/(B+S-C)	---	---	2.683	---	2.576	2.576	2.639	---
G_{sa} (A/(B+A-C)	---	---	2.746	---	2.632	2.632	2.689	---

Combined Aggregate Specific Gravity

	Not Used	#57 Stone	#8 Stone	Not Used	Natural Sand	Manuf. Sand	RAP 1	Not Used
Combined G_{sb}	---	2.709	2.683	---	2.576	2.576	2.643	---
Combined G_{sa}	---	2.748	2.744	---	2.632	2.632	2.691	---

S. G. Technician:	MARIA MARCANO	Date Tested:	1/3/2024

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
#57 Stone	43.0%	43.0	43.0	27.1	9.4	0.6	0.0	0.0	0.0	0.0	0.0
#8 Stone	13.0%	13.0	13.0	12.9	12.5	4.1	0.5	0.0	0.0	0.0	0.0
Not Used	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Sand	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manuf. Sand	14.0%	14.0	14.0	14.0	14.0	14.0	12.3	6.1	4.1	2.2	0.6
RAP 1	30.0%	30.0	30.0	30.0	30.0	21.6	15.2	7.7	6.2	5.1	3.8
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	84.0	65.9	40.3	28.1	13.8	10.3	7.3	4.3
Specification Limits		100-100	95-100	74-93	58-73	38-53	26-40	9-23	4-18	3-13	2-6

WILLETS POINT ASPHALT QUALITY CONTROL

ASPHALT TRIAL GRADATION WORKSHEET - 3 RA BINDER

PLANT NAME:	WILLETS POINT ASPHALT	NYSDOT FACILITY #:	H0354	MIX DESIGN DATE:	1/3/2024

BATCH 1

Batch P_b: 3.5%

Batch Grams: 1275.0

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	*0.0*
#57 Stone	43.0%	41.5%	529.1		0.0	0.0	195.8	218.0	107.4	7.9	0.0	0.0	0.0	0.0	0.0	*529.1*
#8 Stone	13.0%	12.5%	159.9		0.0	0.0	1.3	4.5	104.3	43.2	6.7	0.0	0.0	0.0	0.0	*159.9*
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*
Natural Sand	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*
Manuf. Sand	14.0%	13.5%	172.3		0.0	0.0	0.0	0.0	0.0	20.5	76.8	25.0	22.7	20.2	7.1	*172.3*
RAP 1	30.0%	30.9%	393.5	24.4	0.0	0.0	0.0	0.0	109.8	84.6	97.6	19.7	15.0	17.7	24.8	*393.5*
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	*0.0*
Virgin Asphalt		1.6%	20.2	20.2												*20.2*
Total Mix	100.0%	100.0%	1275.0	44.6	0.0	0.0	197.0	222.5	321.5	156.2	181.1	44.7	37.7	37.9	31.9	*1275.0*
				3.50%												

BATCH 2

Batch P_b: 4.0%

Batch Grams: 1275.0

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	*0.0*
#57 Stone	43.0%	41.3%	526.3		0.0	0.0	194.7	216.8	106.8	7.9	0.0	0.0	0.0	0.0	0.0	*526.3*
#8 Stone	13.0%	12.5%	159.1		0.0	0.0	1.3	4.5	103.7	43.0	6.7	0.0	0.0	0.0	0.0	*159.1*
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*
Natural Sand	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*
Manuf. Sand	14.0%	13.4%	171.4		0.0	0.0	0.0	0.0	0.0	20.4	76.4	24.8	22.6	20.0	7.0	*171.4*
RAP 1	30.0%	30.7%	391.5	24.3	0.0	0.0	0.0	0.0	109.2	84.2	97.1	19.6	14.9	17.6	24.7	*391.5*
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	*0.0*
Virgin Asphalt		2.1%	26.7	26.7												*26.7*
Total Mix	100.0%	100.0%	1275.0	51.0	0.0	0.0	196.0	221.3	319.8	155.4	180.2	44.4	37.5	37.7	31.7	*1275.0*
				4.00%												

BATCH 3

Batch P_b: 4.5%

Batch Grams: 1275.0

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	*0.0*
#57 Stone	43.0%	41.1%	523.6		0.0	0.0	193.7	215.7	106.3	7.9	0.0	0.0	0.0	0.0	0.0	*523.6*
#8 Stone	13.0%	12.4%	158.3		0.0	0.0	1.3	4.4	103.2	42.7	6.6	0.0	0.0	0.0	0.0	*158.3*
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*
Natural Sand	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*
Manuf. Sand	14.0%	13.4%	170.5		0.0	0.0	0.0	0.0	0.0	20.3	76.0	24.7	22.5	19.9	7.0	*170.5*
RAP 1	30.0%	30.5%	389.4	24.1	0.0	0.0	0.0	0.0	108.7	83.7	96.6	19.5	14.8	17.5	24.5	*389.4*
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	*0.0*
Virgin Asphalt		2.6%	33.2	33.2												*33.2*
Total Mix	100.0%	100.0%	1275.0	57.4	0.0	0.0	195.0	220.1	318.1	154.6	179.3	44.2	37.3	37.5	31.5	*1275.0*
				4.50%												

BATCH 4

Batch P_b: 5.0%

Batch Grams: 1275.0

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	*0.0*
#57 Stone	43.0%	40.9%	520.8		0.0	0.0	192.7	214.6	105.7	7.8	0.0	0.0	0.0	0.0	0.0	*520.8*
#8 Stone	13.0%	12.4%	157.5		0.0	0.0	1.3	4.4	102.7	42.5	6.6	0.0	0.0	0.0	0.0	*157.5*
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*
Natural Sand	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*
Manuf. Sand	14.0%	13.3%	169.6		0.0	0.0	0.0	0.0	0.0	20.2	75.6	24.6	22.4	19.8	7.0	*169.6*
RAP 1	30.0%	30.4%	387.4	24.0	0.0	0.0	0.0	0.0	108.1	83.3	96.1	19.4	14.7	17.4	24.4	*387.4*
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	*0.0*
Virgin Asphalt		3.1%	39.7	39.7												*39.7*
Total Mix	100.0%	100.0%	1275.0	63.8	0.0	0.0	194.0	219.0	316.5	153.8	178.3	44.0	37.1	37.3	31.4	*1275.0*
				5.00%												

BATCH 5

Batch P_b: 5.5%

Batch Grams: 1275.0

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	*0.0*
#57 Stone	43.0%	40.6%	518.1		0.0	0.0	191.7	213.5	105.2	7.8	0.0	0.0	0.0	0.0	0.0	*518.1*
#8 Stone	13.0%	12.3%	156.6		0.0	0.0	1.3	4.4	102.1	42.3	6.6	0.0	0.0	0.0	0.0	*156.6*
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	*0.0*
Natural Sand	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*
Manuf. Sand	14.0%	13.2%	168.7		0.0	0.0	0.0	0.0	0.0	20.1	75.2	24.5	22.3	19.7	6.9	*168.7*
RAP 1	30.0%	30.2%	385.4	23.9	0.0	0.0	0.0	0.0	107.5	82.9	95.6	19.3	14.6	17.3	24.3	*385.4*
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	*0.0*
Virgin Asphalt		3.6%	46.2	46.2												*46.2*
Total Mix	100.0%	100.0%	1275.0	70.1	0.0	0.0	192.9	217.8	314.8	153.0	177.4	43.7	36.9	37.1	31.2	*1275.0*
				5.50%												

WILLETS POINT ASPHALT QUALITY CONTROL

ASPHALT MAXIMUM DENSITY & MARSHALL PROPERTIES WORKSHEET - 3 RA BINDER

PLANT NAME:	WILLETS POINT ASPHALT	NYSDOT FACILITY #:	HO354	MIX DESIGN DATE:	1/3/2024

Theoretical Maximum Specific Gravity G_{mm} per ASTM D2041

Trial Batch	**1**		**2**		**3**		**4**		**5**	
P_b	**3.5%**		**4.0%**		**4.5%**		**5.0%**		**5.5%**	
A) Sample in Air (grams)	2045.3	2055.2	2032.2	2048.2	2161.2	2146.5	2070.2	2030.4	2104.3	2132.5
B) Pycnometer in Water (Grams)	1373.3	1378.8	1373.3	1378.8	1373.3	1378.8	1373.3	1378.8	1373.3	1378.8
C) Sample & Pycnometer in Water (Grams)	2621.2	2634.3	2607.9	2624.4	2680.3	2677.2	2620.4	2602.5	2638.6	2662.4
G_{mm} *(A/(A+B-C))*	2.565	2.570	2.548	2.552	2.530	2.531	2.515	2.517	2.508	2.512
Average G_{mm}	2.567		2.550		2.531		2.516		2.510	

Density Technician:	MARIA MARCANO	Date Tested:	1/3/2024

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 = 3.5%**										
Specimen A	1235.8	1238.5	726.5	512.0	2.414	2.567	6.0%		2400	1	2250	8.5	265
Specimen B	1238.5	1242.6	723.4	519.2	2.385	2.567	7.1%		2500	1	2200	9.0	244
Specimen C	1237.6	1245.8	724.1	521.7	2.372	2.567	7.6%		2350	1	2250	8.5	265
Average					2.390	2.567	6.9%	149.1			2230	8.7	258
TRIAL BATCH 2			**P_b = 4.0%**										
Specimen A	1238.5	1241.3	726.5	514.8	2.406	2.550	5.7%		2700	1	2700	10.5	257
Specimen B	1240.6	1243.5	725.5	518.0	2.395	2.550	6.1%		2650	1	2650	9.5	279
Specimen C	1237.8	1241.6	725.6	516.0	2.399	2.550	5.9%		2750	1	2750	9.5	289
Average					2.400	2.550	5.9%	149.8			2700	9.8	275
TRIAL BATCH 3			**P_b = 4.5%**										
Specimen A	1239.6	1241.5	729.1	512.4	2.419	2.531	4.4%		2850	1	2850	10.5	271
Specimen B	1241.5	1242.5	727.0	515.5	2.408	2.531	4.8%		2900	1	2900	11.0	264
Specimen C	1240.5	1243.5	730.2	513.3	2.417	2.531	4.5%		2900	1	2900	10.5	276
Average					2.415	2.531	4.6%	150.7			2880	10.7	270
TRIAL BATCH 4			**P_b = 5.0%**										
Specimen A	1244.6	1246.5	730.5	516.0	2.412	2.516	4.1%		2650	1	2650	11.0	241
Specimen B	1245.8	1247.9	735.6	512.3	2.432	2.516	3.3%		2700	1	2700	11.5	235
Specimen C	1246.7	1248.6	734.8	513.8	2.426	2.516	3.6%		2600	1	2600	11.5	226
Average					2.423	2.516	3.7%	151.2			2650	11.3	234
TRIAL BATCH 5			**P_b = 5.5%**										
Specimen A	1246.5	1248.5	736.8	511.7	2.436	2.510	2.9%		2300	1	2300	11.5	200
Specimen B	1243.5	1245.6	733.8	511.8	2.430	2.510	3.2%		2250	1	2250	12.5	180
Specimen C	1245.9	1248.7	737.9	510.8	2.439	2.510	2.8%		2250	1	2250	12.0	188
Average					2.435	2.510	3.0%	151.9			2270	12.0	189

Marshall Technician:	MARIA MARCANO	Date Tested:	1/3/2024

WILLETS POINT ASPHALT QUALITY CONTROL

ASPHALT JOB MIX FORMULA SHEET-3RA BINDER

PLANT:	WILLETS POINT ASPHALT	NYSDOT FACILITY #:	H0354	MIX DESIGN DATE:	1/3/2024

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%
43.0%	#57 Stone	8-32R	2.748	2.709	41.5%	41.3%	41.1%	40.9%	40.6%
13.0%	#8 Stone	8-32R	2.744	2.683	12.5%	12.5%	12.4%	12.4%	12.3%
0.0%	Not Used	---	---	---	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	Natural Sand	8-32R	2.632	2.576	0.0%	0.0%	0.0%	0.0%	0.0%
14.0%	Manuf. Sand	8-32R	2.632	2.576	13.5%	13.4%	13.4%	13.3%	13.2%
30.0%	RAP 1		2.691	2.643	30.9%	30.7%	30.5%	30.4%	30.2%
0.0%	Not Used		---	---	0.0%	0.0%	0.0%	0.0%	0.0%
	Virgin Asphalt				1.6%	2.1%	2.6%	3.1%	3.6%
100.0%					100.0%	100.0%	100.0%	100.0%	100.0%

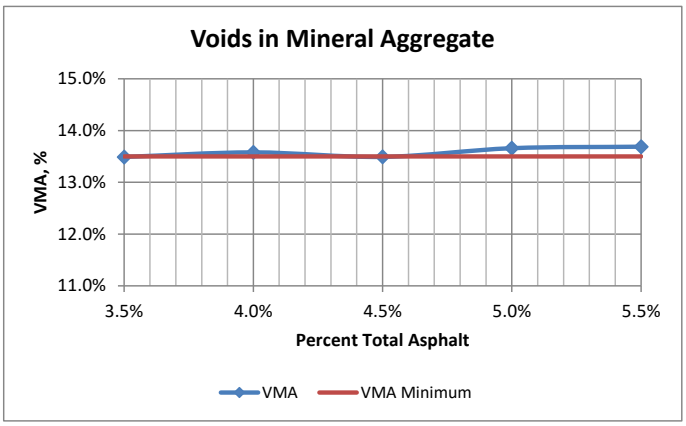
Mix General Properties				Trial Batch				
				1	2	3	4	5
P_b	Percent Total Asphalt Binder, %			3.5%	4.0%	4.5%	5.0%	5.5%
P_{ba}	Percent Absorbed Asphalt Binder, %			0.67%	0.71%	0.71%	0.78%	1.01%
P_{be}	Percent Effective Asphalt Binder, %			2.85%	3.31%	3.82%	4.26%	4.55%
DP	Dust Proportion			0.7	0.8	0.9	1.0	1.1
G_{mm}	Mix Maximum Specific Gravity			2.567	2.550	2.531	2.516	2.510
G_{mb}	Mix Bulk Specific Gravity			2.390	2.400	2.415	2.423	2.435
G_{sb}	Aggregate Bulk Gravity			2.666	2.666	2.666	2.666	2.666
G_{se}	Aggregate Effective Gravity			2.713	2.716	2.716	2.721	2.737
G_{sa}	Aggregate Apparent Specific Gravity			2.713	2.713	2.713	2.713	2.713

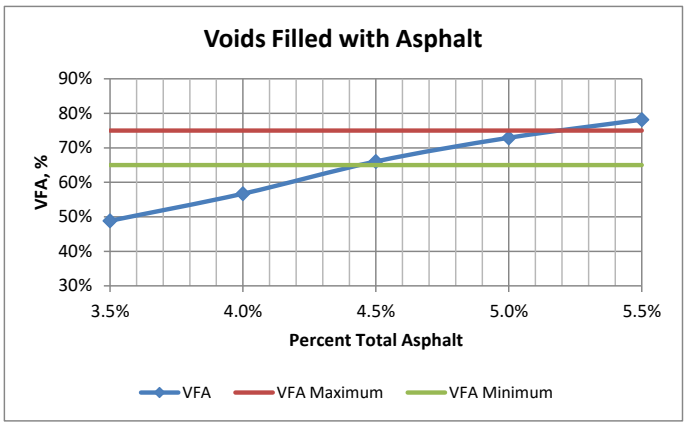
Mix Acceptance Properties		Low Limit	High Limit	Trial Batch				
				1	2	3	4	5
VMA	Voids in Mineral Aggregate, %	13.5%		13.5%	13.6%	13.5%	13.7%	13.7%
	Note: All five trial batches must meet the minimum VMA requirement.							
VFA	Voids Filled with Asphalt, %	65%	75%	48.9%	56.7%	66.1%	72.9%	78.2%
P_a	Percent Air Voids, %	3.0%	5.0%	6.9%	5.9%	4.6%	3.7%	3.0%
---	Marshall Stability (Corrected), lb	1500		2230	2700	2880	2650	2270
---	Marshall Flow, 0.01"	8	12	8.7	9.8	10.7	11.3	12.0
---	Marshall Quotient, lb/0.01"	150		258	275	270	234	189

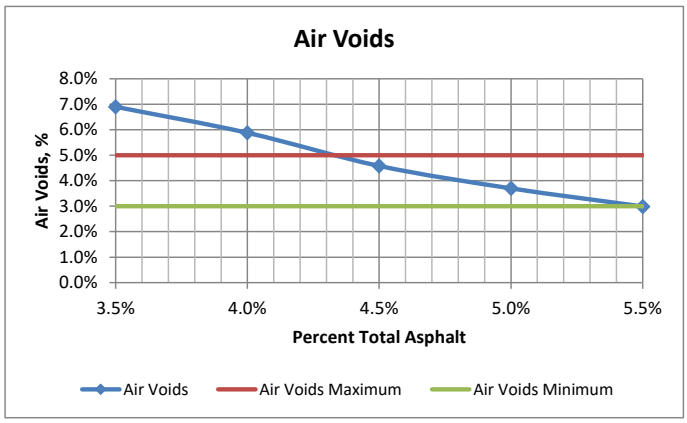
WILLETS POINT ASPHALT QUALITY CONTROL

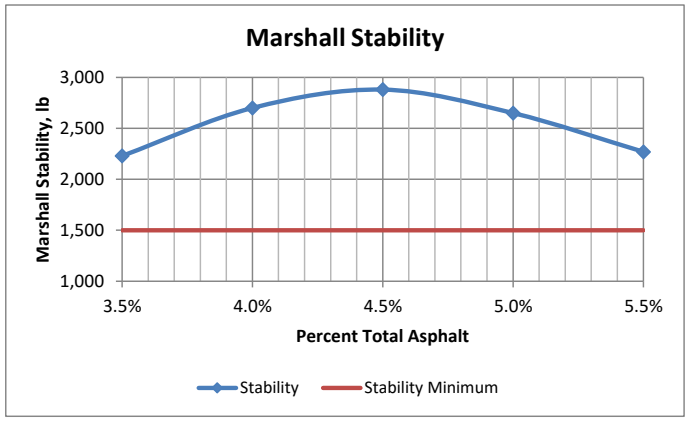
PROPERTY CURVES & DESIRED ASPHALT CONTENT WORKSHEET - 3 RA BINDER

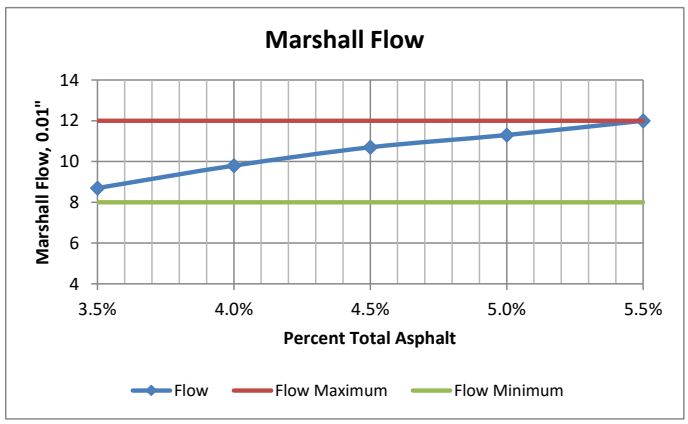
PLANT NAME:	WILLETS POINT ASPHALT	NYSDOT FACILITY #:	H0354	MIX DESIGN DATE:	1/3/2024

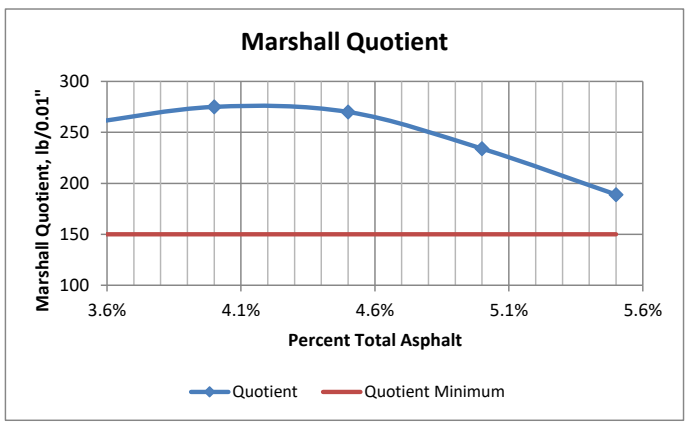












Property	Low	High
Voids in Mineral Aggregate (VMA), %	3.5%	5.5%
Voids Filled with Asphalt (VFA), %	4.3%	4.7%
Percent Air Voids, %	4.2%	5.0%
Marshall Stability (Corrected), lb	3.5%	5.5%
Marshall Flow, 0.01"	3.5%	5.5%
Marshall Quotient, lb/0.01"	3.6%	5.6%
Overlap	4.3%	4.7%

Properties at Desired AC%
13.6%
66.0%
4.6%
2550
10.7
241.6

Midpoint	4.5%

Desired Total Asphalt Content P_b	*4.6%*

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.