



Department of Design and Construction

Thomas Foley
Commissioner

Safety & Site Support Division
Office of Quality Assurance

Alla Ayzenshtat
Deputy Commissioner
Safety & Site Support

Concrete and Asphalt Generic Mix Design Approval # 2023 - 132

30-30 Thomson Avenue
Long Island City, NY 11101

Tel. 718 / 391-1624
www.nyc.gov/ddc

Date: 12/15/2023

To: Matthew D. Harrison,
Green Asphalt

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

Date Submitted: 12/13/2023

Plant: Green Asphalt

NYSDOT Facility Numbers: H0385

Laboratory: MT Group - Intertek

Mix Design Type: 3RA Binder – 30% RAP

Generic Mix Design Serial Number: GreenAsphalt/3RA/Binder/Generic/NYCDDC/12/23/132

Generic Mix Design Date: 11/20/2023

Generic Mix Design Expiration Date: 12/31/2025

- 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: Nader Shehata, PE, Deputy Director

QA & CONSTRUCTION SAFETY BUREAU
ASPHALT JOB MIX FORMULA SHEET - 3 RA BINDER MIX

PLANT NAME: Green Asphalt
 NYSDOT FACILITY #: H0385
 PLANT ADDRESS: 37-98 Railroad Ave
 Long Island City, NY 11301

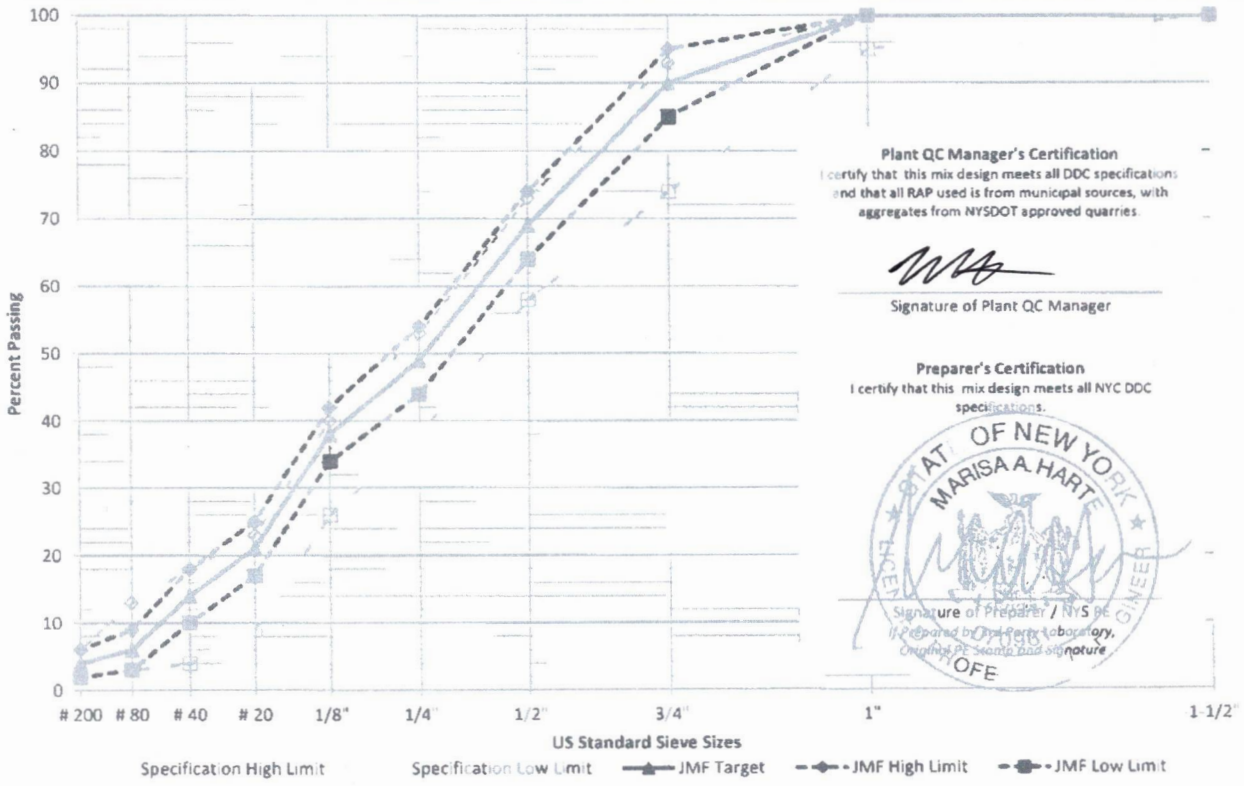
MIX DESIGN DATE: 11/20/2023
 PREPARED BY: Alex Cantos
 COMPANY: MT Group
 PLANT QC MGR: Matthew Harrison

Item	Supplier / Quarry	NYSDOT Source	High Friction	Agg Blend %	Mix %	Lbs / Ton
#67 Stone	A. Colarusso & Son, Inc	B-17R	Yes	40.0%	38.9%	778
#8 Stone	R. J. Valente	1-48R	Yes	11.0%	10.7%	214
					0.0%	0
Natural Sand	North American Aggregates	10-105F2	N/A	19.0%	18.5%	369
			N/A		0.0%	0
5/16" RAP	Green Asphalt	N/A	Yes	10.0%	9.7%	194
	RAP % Asphalt: 4.0%			RAP AC	0.4%	8
				RAP Aggregate	9.3%	186
Fine RAP	Green Asphalt	N/A	Yes	10.0%	19.4%	389
	RAP % Asphalt: 6.1%			RAP AC	1.2%	24
				RAP Aggregate	18.2%	365
Virgin Asphalt	Grade: PG64-22	SG (G _b):	1.031		2.8%	56
Total Asphalt Content (P _b):					4.4%	88
				100.0%	100.0%	2,000

Project No: Generic
"APPROVED"
 NYC DDC - Office of Quality Assurance
 Date: 12/12/23 Reviewed By: S.C.
 LOG No: 2023-132

GreenAsphalt/3RA/Binder/Generic/NYCDDC/12/23/132 Expiration: 12/31/2025
QA/QCS 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	95-100	74-93	58-73	38-53	26-40	9-23	4-18	3-13	2-6	4.0-6.0
JMF Target	100	100	90	69	49	38	21	14	6	4	4.4
JMF Range	100	100	85-95	64-74	44-54	34-42	17-25	10-18	3-9	2-6	4.0-5.1



QA & CONSTRUCTION SAFETY BUREAU

AGGREGATE SPECIFIC GRAVITY & COMBINED GRADATION WORKSHEET - 3 RA BINDER MIX

PLANT NAME: Green Asphalt

NYSDOT FACIL TY #: H0385

MIX DESIGN DATE: 11/20/2023

Average Bin Gradations

Sieve	Not Used		#67 Stone		#8 Stone		Not Used		Natural Sand		Not Used		5/16" RAP		Fine RAP	
	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass
1.5"		100.0	0.0	100.0		100.0		100.0	0.0	100.0		100.0	0.0	100.0	0.0	100.0
1"		100.0	0.0	100.0		100.0		100.0	0.0	100.0		100.0	0.0	100.0	0.0	100.0
3/4"		100.0	25.6	74.4		100.0		100.0	0.0	100.0		100.0	0.0	100.0	0.0	100.0
1/2"		100.0	1.5	22.9		100.0		100.0	0.0	100.0		100.0	0.0	100.0	0.0	100.0
1/4"		100.0	16.7	6.2		42.9		100.0	0.0	100.0		100.0	63.4	36.6	5.6	94.4
1/8"		100.0	5.1	1.1		16.7		100.0	1.9	95.1		100.0	18.6	18.0	15.7	78.7
#20		100.0	0.0	1.1		0.8		100.0	35.1	60.0		100.0	9.7	8.3	7.4	41.3
#40		100.0	0.0	1.1		0.8		100.0	5.5	34.5		100.0	0.0	8.3	8.8	32.5
#80		100.0	0.0	1.1		0.8		100.0	9.4	5.1		100.0	0.0	8.3	13.4	19.1
#200		100.0	0.0	1.1		0.8		100.0	2.3	2.8		100.0	0.0	8.3	9.9	9.2
Pan			1.1						2.8				8.3		9.2	
Totals	0.0		100.0		100.0		0.0		100.0		0.0		100.0		100.0	

Stockpiles Sampled By: Alex Cantos Date Sampled: 11/6/2023

Gradation Technician: Izak Ara Date Tested: 11/6/2023

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	#67 Stone	#8 Stone	Not Used	Natural Sand	Not Used	5/16" RAP	Fine RAP
% Coarse Agg.	---	93.8%	57.1%	---	0.0%	---	63.4%	5.6%
Test Required?	NO	YES	YES	NO	NO	NO	YES	NO
A) Wt. in Air		3156.8	3233.7				323.4	
B) Wt. SSD		3174.1	3239.5				3247.6	
C) Wt. in Water		2005.8	3241.0				2063.7	
G _b (A)/(B-C)	---	2.702	2.690	---	---	---	2.734	---
G _s (A)/(A-C)	---	2.743	2.726	---	---	---	2.760	---

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	#67 Stone	#8 Stone	Not Used	Natural Sand	Not Used	5/16" RAP	Fine RAP
% Fine Agg.	---	6.2%	42.9%	---	100.0%	---	36.6%	94.4%
Test Required?	NO	NO	YES	NO	YES	NO	YES	YES
A) Wt. in Air			499.1		498.4		499.6	502.5
B) Wt. Flask + Water			1451.6		1451.6		1451.6	1451.6
C) Wt. Flask + Water + Sample			1767.1		1764.5		1769.4	1770.7
S) Wt. SSD			501.7		501.3		501.9	504.1
G _b (A)/(B+S-C)	---	---	2.680	---	2.645	---	2.714	2.714
G _s (A)/(B+A-C)	---	---	2.718	---	2.687	---	2.748	2.740

Combined Aggregate Specific Gravity

	Not Used	#67 Stone	#8 Stone	Not Used	Natural Sand	Not Used	5/16" RAP	Fine RAP
Combined G _b	---	2.702	2.686	---	2.645	---	2.726	2.714
Combined G _s	---	2.743	2.723	---	2.687	---	2.754	2.740

S. G. Technician: Alex Cantos Date Tested: 11/6/2023

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
#67 Stone	40.0%	40.0	40.0	29.8	9.2	2.5	0.4	0.4	0.4	0.4	0.4
#8 Stone	11.0%	11.0	11.0	11.0	11.0	4.7	1.8	0.1	0.1	0.1	0.1
Not Used	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Sand	19.0%	19.0	19.0	19.0	19.0	19.0	18.1	11.4	6.6	1.0	0.5
Not Used	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5/16" RAP	10.0%	10.0	10.0	10.0	10.0	3.7	1.8	0.8	0.8	0.8	0.8
Fine RAP	20.0%	20.0	20.0	20.0	20.0	18.9	15.7	8.3	6.5	3.8	1.8
Total	100.0%	100.0	100.0	89.8	69.2	48.7	37.9	21.0	14.4	6.1	3.7
Specification Limits		100	95-100	74-93	58-73	38-53	26-40	9-23	4-18	3-13	2-6



QA & CONSTRUCTION SAFETY BUREAU

ASPHALT TRIAL GRADATION WORKSHEET - 3 RA BINDER MIX

PLANT NAME: Green Asphalt

NYS DOT FACILITY #: H0385

MIX DESIGN DATE: 11/20/2023

BATCH 1		Batch P _b : 3		Batch Grams: 1280		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	0.0		
#67 Stone	40.0%	38.6%	494.1		0.0	0.0	126.5	254.5	82.5	25.2	0.0	0.0	0.0	0.0	0.0	5.4	494.1		
#8 Stone	11.0%	10.6%	135.9		0.0	0.0	0.0	0.0	77.6	35.6	21.6	0.0	0.0	0.0	0.0	1.1	135.9		
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	0.0		
Natural Sand	19.0%	18.3%	234.7		0.0	0.0	0.0	0.0	0.0	11.5	82.4	59.8	69.0	5.4	6.6	234.7	234.7		
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		
5/16" RAP	10.0%	10.1%	128.7	5.1	0.0	0.0	0.0	0.0	81.6	23.9	12.5	0.0	0.0	0.0	5.5	128.7	128.7		
Fine RAP	20.0%	20.6%	263.1	16.0	0.0	0.0	0.0	0.0	14.7	41.3	98.4	23.2	35.3	26.0	8.2	263.1	263.1		
Virgin Asphalt		1.8%	23.6	23.6												23.6	23.6		
Total Mix	100.0%	100.0%	1280.0	44.8	0.0	0.0	126.5	254.5	256.4	137.5	214.9	83.0	104.3	31.4	26.8	1280.0	1280.0		

3.50%

BATCH 2		Batch P _b : 4		Batch Grams: 1280		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	0.0		
#67 Stone	40.0%	38.4%	491.5		0.0	0.0	125.8	253.1	82.1	25.1	0.0	0.0	0.0	0.0	0.0	5.4	491.5		
#8 Stone	11.0%	10.6%	135.2		0.0	0.0	0.0	0.0	77.2	35.4	21.5	0.0	0.0	0.0	0.0	1.1	135.2		
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		
Natural Sand	19.0%	18.2%	233.5		0.0	0.0	0.0	0.0	0.0	11.4	81.9	59.5	68.6	5.4	6.5	233.5	233.5		
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		
5/16" RAP	10.0%	10.0%	128.0	5.1	0.0	0.0	0.0	0.0	81.2	23.8	12.4	0.0	0.0	0.0	5.5	128.0	128.0		
Fine RAP	20.0%	20.4%	261.7	16.0	0.0	0.0	0.0	0.0	14.7	41.1	97.9	23.0	35.1	25.9	8.1	261.7	261.7		
Virgin Asphalt		2.4%	30.1	30.1												30.1	30.1		
Total Mix	100.0%	100.0%	1280.0	51.2	0.0	0.0	125.8	253.1	255.1	136.8	213.7	82.6	103.7	31.3	26.6	1280.0	1280.0		

4.00%

BATCH 3		Batch P _b : 4.5		Batch Grams: 1280		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	0.0		
#67 Stone	40.0%	38.2%	489.0		0.0	0.0	125.2	251.8	81.7	24.9	0.0	0.0	0.0	0.0	0.0	5.4	489.0		
#8 Stone	11.0%	10.5%	134.5		0.0	0.0	0.0	0.0	76.8	35.2	21.4	0.0	0.0	0.0	0.0	1.1	134.5		
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		
Natural Sand	19.0%	18.1%	232.3		0.0	0.0	0.0	0.0	0.0	11.4	81.5	59.2	68.3	5.3	6.5	232.3	232.3		
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	0.0		
5/16" RAP	10.0%	9.9%	127.3	5.1	0.0	0.0	0.0	0.0	80.7	23.7	12.4	0.0	0.0	0.0	5.5	127.3	127.3		
Fine RAP	20.0%	20.3%	260.4	15.9	0.0	0.0	0.0	0.0	14.6	40.9	97.4	22.9	34.9	25.8	8.1	260.4	260.4		
Virgin Asphalt		2.9%	36.6	36.6												36.6	36.6		
Total Mix	100.0%	100.0%	1280.0	57.6	0.0	0.0	125.2	251.8	253.7	136.1	212.6	82.1	103.2	31.1	26.5	1280.0	1280.0		

4.50%

BATCH 4		Batch P _b : 5		Batch Grams: 1280		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	0.0		
#67 Stone	40.0%	38.0%	486.4		0.0	0.0	124.5	250.5	81.2	24.8	0.0	0.0	0.0	0.0	0.0	5.4	486.4		
#8 Stone	11.0%	10.5%	133.8		0.0	0.0	0.0	0.0	76.4	35.0	21.3	0.0	0.0	0.0	0.0	1.1	133.8		
Not Used	0.0%	0.0%	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Natural Sand	19.0%	18.1%	231.0		0.0	0.0	0.0	0.0	0.0	11.3	81.1	58.9	67.9	5.3	6.5	231.0	231.0		
Not Used	0.0%	0.0%	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5/16" RAP	10.0%	9.9%	126.7	5.1	0.0	0.0	0.0	0.0	80.3	23.6	12.3	0.0	0.0	0.0	5.4	126.7	126.7		
Fine RAP	20.0%	20.2%	259.0	15.8	0.0	0.0	0.0	0.0	14.5	40.7	96.9	22.8	34.7	25.6	8.0	259.0	259.0		
Virgin Asphalt		3.4%	43.1	43.1												43.1	43.1		
Total Mix	100.0%	100.0%	1280.0	64.0	0.0	0.0	124.5	250.5	252.4	135.4	211.5	81.7	102.6	31.0	26.4	1280.0	1280.0		

5.00%

BATCH 5		Batch P _b : 5		Batch Grams: 128		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	0.0		
#67 Stone	40.0%	37.8%	483.8		0.0	0.0	123.9	249.2	80.8	24.7	0.0	0.0	0.0	0.0	0.0	5.3	483.8		
#8 Stone	11.0%	10.4%	133.1		0.0	0.0	0.0	0.0	76.0	34.9	21.2	0.0	0.0	0.0	0.0	1.1	133.1		
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	0.0		
Natural Sand	19.0%	18.0%	229.8		0.0	0.0	0.0	0.0	0.0	11.3	80.7	58.6	67.6	5.3	6.4	229.8	229.8		
Not Used	0.0%	0.0%	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
5/16" RAP	10.0%	9.8%	126.0	5.0	0.0	0.0	0.0	0.0	79.9	23.4	12.2	0.0	0.0	0.0	5.4	126.0	126.0		
Fine RAP	20.0%	20.1%	257.6	15.7	0.0	0.0	0.0	0.0	14.4	40.4	96.4	22.7	34.5	25.5	8.0	257.6	257.6		
Virgin Asphalt		3.9%	49.6	49.6												49.6	49.6		
Total Mix	100.0%	100.0%	1280.0	70.4	0.0	0.0	123.9	249.2	251.1	134.7	210.4	81.3	102.1	30.8	26.2	1280.0	1280.0		

5.50%

QA & CONSTRUCTION SAFETY BUREAU

ASPHALT MAXIMUM DENSITY & MARSHALL PROPERTIES WORKSHEET - 3 RA BINDER MIX

PLANT NAME: Green Asphalt

NYS DOT FACILITY #: H0385

MIX DESIGN DATE: 11/20/2023

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)	2077.4	2046.9	2063.7	2055.9	2063.6	2075.1	2046.7	2071.2	2063.2	2077.5
B) Pycnometer in Water (Grams)	1318.8	1326.5	1318.8	1326.5	1318.8	1326.5	1318.8	1326.5	1318.8	1326.5
C) Sample & Pycnometer in Water (Grams)	2585.6	2573.6	2569.3	2570.6	2562.1	2578.3	2546.6	2570.3	2549.8	2568.2
$G_{mm} (A/(A+B-C))$	2.563	2.559	2.538	2.533	2.516	2.520	2.499	2.503	2.479	2.486
Average G_{mm}	2.561		2.535		2.518		2.501		2.482	

Density Technician:

Alex Cantos

Date Tested:

11/13/2023

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	1274.4	1276.4	741.1	535.3	2.381	2.561	7.04%	2560	0.96	2460	8.1	304	
Specimen B	1270.6	1272.8	739.6	533.2	2.383	2.561	6.95%		2520	0.96	2420	8.6	281
Specimen C	1272.3	1274.2	739.4	534.8	2.379	2.561	7.11%		2460	0.96	2360	8.6	274
Average					2.381	2.561	7.03%	148.6		2410	8.4	287	

TRIAL BATCH 2

$P_b = 4.0\%$

Specimen A	1269.6	1271.2	742.4	528.8	2.401	2.535	5.29%	2740	0.96	2630	9.2	286	
Specimen B	1271.7	1272.8	742.9	529.9	2.399	2.535	5.37%		2690	0.96	2580	8.8	293
Specimen C	1273.6	1274.4	744.2	531.2	2.398	2.535	5.42%		2650	0.96	2540	9.6	265
Average					2.399	2.535	5.36%	149.7		2580	9.2	281	

TRIAL BATCH 3

$P_b = 4.5\%$

Specimen A	1270.6	1271.8	744.6	527.2	2.410	2.518	4.29%	2860	0.96	2750	11.0	250	
Specimen B	1267.7	1268.6	745.1	523.5	2.422	2.518	3.83%		2890	0.96	2770	10.8	256
Specimen C	1268.4	1269.3	743.6	525.7	2.413	2.518	4.18%		2720	0.96	2610	10.4	251
Average					2.415	2.518	4.09%	150.7		2710	10.7	252	

TRIAL BATCH 4

$P_b = 5.0\%$

Specimen A	1267.5	1268.3	745.8	522.5	2.426	2.501	3.01%	2890	1	2890	11.4	254	
Specimen B	1271.6	1272.5	749.0	523.5	2.429	2.501	2.88%		2960	0.96	2840	11.4	249
Specimen C	1269.3	1270.3	746.2	524.1	2.422	2.501	3.16%		2920	0.96	2800	11.9	235
Average					2.426	2.501	3.00%	151.4		2840	11.6	246	

TRIAL BATCH 5

$P_b = 5.5\%$

Specimen A	1268.4	1269.0	750.2	518.8	2.445	2.482	1.50%	2840	1	2840	12.8	222	
Specimen B	1269.5	1270.3	749.0	521.3	2.435	2.482	1.88%		2760	1	2760	13.5	204
Specimen C	1266.8	1267.5	746.5	521.0	2.431	2.482	2.04%		2840	1	2840	13.1	217
Average					2.437	2.482	1.81%	152.1		2810	13.1	214	

Marshall Technician:

Alex Cantos

Date Tested:

11/13/2023

QA & CONSTRUCTION SAFETY BUREAU

MIX VOLUMETRIC PROPERTIES WORKSHEET - 3 RA BINDER MIX

PLANT: Green Asphalt	NYS DOT FACILITY #: H0385	MIX DESIGN DATE: 11/20/2023
----------------------	---------------------------	-----------------------------

Agg. Blend %	Constituent Material	NYS DOT 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%
40.0%	#67 Stone	8-17R	2.743	2.702	38.6%	38.4%	38.2%	38.0%	37.8%
11.0%	#8 Stone	1-48R	2.723	2.686	10.6%	10.6%	10.5%	10.5%	10.4%
0.0%	Not Used	---	---	---	0.0%	0.0%	0.0%	0.0%	0.0%
19.0%	Natural Sand	10-105F2	2.687	2.645	18.3%	18.2%	18.1%	18.1%	18.0%
0.0%	Not Used	---	---	---	0.0%	0.0%	0.0%	0.0%	0.0%
10.0%	5/16" RAP		2.755	2.726	10.1%	10.0%	9.9%	9.9%	9.8%
20.0%	Fine RAP		2.740	2.716	20.6%	20.4%	20.3%	20.2%	20.1%
	Virgin Asphalt				1.8%	2.4%	2.9%	3.4%	3.9%
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, %			0.17%	0.06%	0.10%	0.13%	0.11%
P _{be}	Percent Effective Asphalt Binder, %			3.34%	3.95%	4.41%	4.88%	5.39%
DP	Dust Proportion (0.6 to 1.2 desired)			0.9	1.1	1.2	1.3	1.5
G _{mm}	Mix Maximum Specific Gravity			2.561	2.535	2.518	2.501	2.482
G _{mb}	Mix Bulk Specific Gravity			2.381	2.399	2.415	2.426	2.437
G _{sb}	Aggregate Bulk Gravity			2.695	2.695	2.695	2.695	2.695
G _{se}	Aggregate Effective Gravity			2.707	2.699	2.702	2.704	2.703
G _{sa}	Aggregate Apparent Specific Gravity			2.730	2.730	2.730	2.730	2.730

Mix Acceptance Properties		Low Limit	High Limit	Trial Batch				
				1	2	3	4	5
VMA	Voids in Mineral Aggregate, %	13.5%		✓ 14.7%	✓ 14.5%	✓ 14.4%	✓ 14.5%	✓ 14.5%
	<i>Note: All five trial batches must meet the minimum VMA requirement.</i>							
VFA	Voids Filled with Asphalt, %	65%	75%	✗ 52.3%	✗ 63.1%	✓ 71.6%	✗ 79.3%	✗ 87.6%
P _a	Percent Air Voids, %	3.0%	5.0%	✗ 7.0%	✗ 5.4%	✓ 4.1%	✓ 3.0%	✗ 1.8%
---	Marshall Stability (Corrected), lb	1500		✓ 2410	✓ 2580	✓ 2710	✓ 2840	✓ 2810
---	Marshall Flow, 0.01"	8	12	✓ 8.4	✓ 9.2	✓ 10.7	✓ 11.6	✗ 13.1
---	Marshall Quotient, lb/0.01"	150		✓ 287	✓ 281	✓ 252	✓ 246	✓ 214

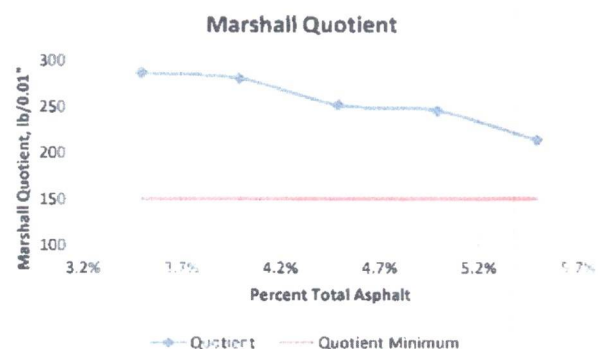
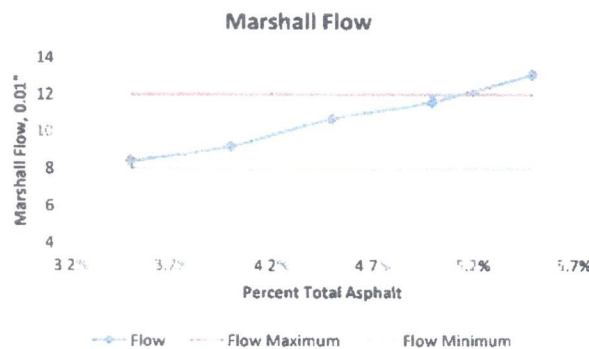
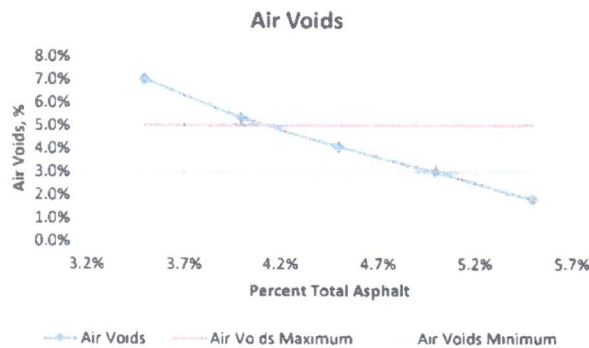
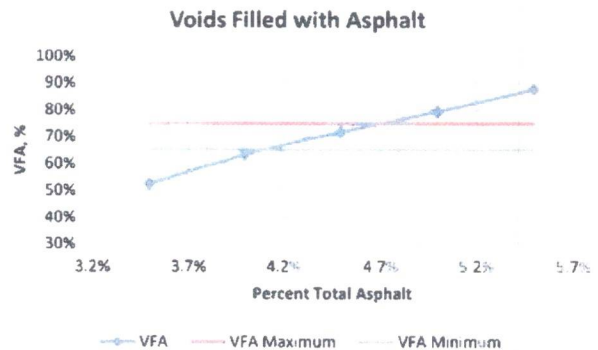
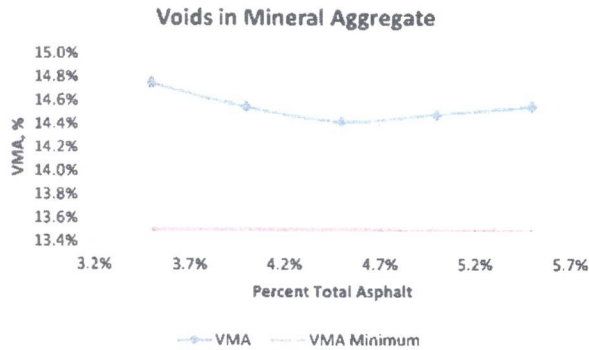
QA & CONSTRUCTION SAFETY BUREAU

PROPERTY CURVES & DESIRED ASPHALT CONTENT WORKSHEET - 3 RA BINDER MIX

PLANT NAME: Green Asphalt

NYSDOT FACILITY #: H0385

MIX DESIGN DATE: 11/20/2023



Property	High	Low
Voids in Mineral Aggregate (VMA), %	3.5%	5.5%
Voids Filled with Asphalt (VFA), %	4.0%	4.7%
Percent Air Voids, %	4.1%	5.0%
Marshall Stability (Corrected), lb	3.5%	5.5%
Marshall Flow, 0.01"	3.5%	5.1%
Marshall Quotient, lb/0.01"	3.5%	5.5%
Overlap	4.1%	4.7%

Properties at Desired AC%
14.6%
69.1%
4.5%
2650
10.4
259.6

Midpoint	4.4%
----------	------

Desired Total Asphalt Content P _b	4.4%
----------------------------------------------	------

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.