



# Department of Design and Construction

Thomas Foley  
Commissioner

Safety & Site Support Division  
Office of Quality Assurance

Alla Ayzenshtat  
Associate Commissioner  
Safety & Site Support

## Concrete and Asphalt Generic Mix Design Approval 2022 - 122

30-30 Thomson Avenue  
Long Island City, NY 11101

**Date:** 4/19/2022

Tel. 718 / 391-1395  
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www.nyc.gov/buildnyc

**To:** Maxon Thomas  
City Asphalt

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

**Date Submitted:** 4/5/2022

**Plant:** City Asphalt

**NYSDOT Facility Numbers:** H0395

**Laboratory:** N/A

**Mix Design Type:** 3RA Binder

**Generic Mix Design Serial Number:** CityAsphalt/3RA/Binder/Generic/NYCDDC/038/22

**Generic Mix Design Date:** 4/4/2022

**Generic Mix Design Expiration Date:** 4/30/2024

- 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 Kevin Law

# QA & CONSTRUCTION SAFETY BUREAU

## ASPHALT JOB MIX FORMULA SHEET - 3 RA BINDER MIX

PLANT NAME: **City Asphalt**  
 NYSDOT FACILITY #: **H0395**  
 PLANT ADDRESS: **1900 South Ave.**  
**Staten Island, NY 10314**

MIX DESIGN DATE: **4/4/2022**  
 PREPARED BY: **Maxon Thomas**  
 COMPANY: **City Asphalt**  
 PLANT QC MGR: **Maxon Thomas**

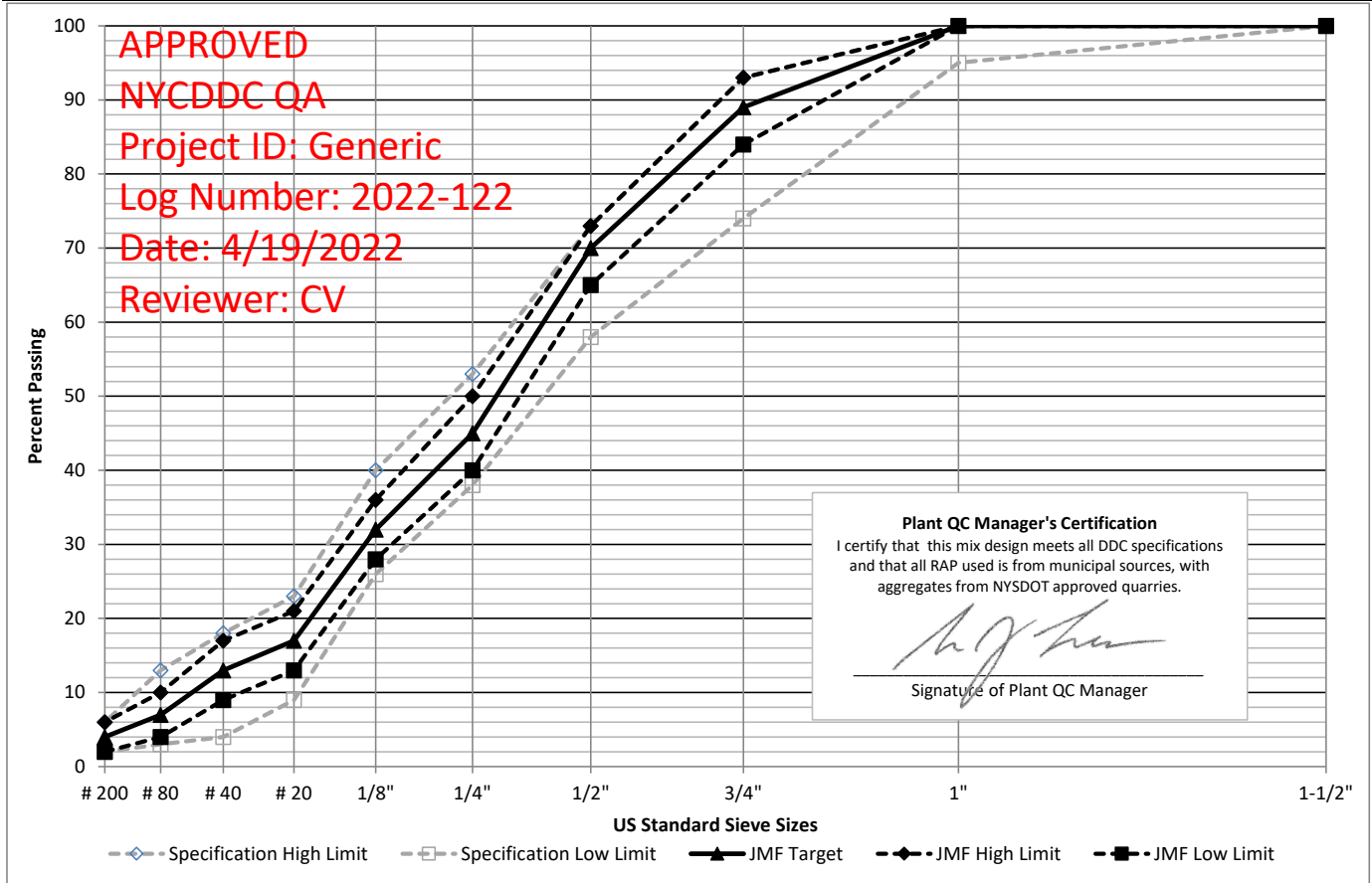
Item	Supplier / Quarry	NYSDOT Source	High Friction	Agg. Blend %	Mix %	Lbs / Ton	
NY #2 Stone	Stavola - Bound Brook, NJ	10-3R	Yes	40.0%	39.0%	781	
NY #1 stone	Tilcon - West Nyack, NY	8-8R	Yes	7.8%	7.6%	152	
					0.0%	0	
					0.0%	0	
Manufactured sand	Tilcon - Mount Hope, NJ	8-32RFM	N/A	12.5%	12.2%	244	
			N/A		0.0%	0	
Fine RAP	City Asphalt	N/A	Yes	29.2%	28.5%	570	
	RAP % Asphalt: 5.6%				RAP AC 1.6%	32	
All RAP to be from Municipal Sources - Aggregates from State Quarries						RAP Aggregate 26.9%	538
Coarse RAP	City Asphalt	N/A	Yes	10.5%	10.2%	205	
	RAP % Asphalt: 3.0%				RAP AC 0.3%	6	
All RAP to be from Municipal Sources - Aggregates from State Quarries						RAP Aggregate 9.9%	199
Virgin Asphalt	Grade: PG64-22	SG (G <sub>b</sub> ):	1.042		2.4%	48	
Total Asphalt Content (P <sub>b</sub> ):					4.3%	86	
					100.0%	2,000	

QA&CS APPROVAL STAMP

**CityAsphalt/3RA/Binder/Generic/NYCDDC/038/22 Expires: 4/30/2024**

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 <sub>b</sub>
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	89	70	45	32	17	13	7	4	4.3
JMF Range	100-100	100-100	84-93	65-73	40-50	28-36	13-21	9-17	4-10	2-6	4-5



QA & CONSTRUCTION SAFETY BUREAU  
AGGREGATE SPECIFIC GRAVITY & COMBINED GRADATION WORKSHEET - 3 RA BINDER MIX

PLANT NAME: City Asphalt      NYSDOT FACILITY #: H0395      MIX DESIGN DATE: 4/4/2022

Average Bin Gradations

Sieve	NY #2 Stone		NY #1 stone		Not Used		Not Used		Manufactured sand		Not Used		Fine RAP		Coarse RAP	
	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass	% Ret.	% Pass
1.5"	0.0	100.0	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0
1"	1.0	99.0	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0
3/4"	26.7	72.3	0.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0
1/2"	44.4	27.9	5.0	95.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0	100.0	4.6	95.4
1/4"	24.2	3.7	71.0	24.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	8.8	91.2	72.8	22.6
1/8"	2.0	1.7	19.0	5.0	100.0	100.0	100.0	100.0	7.8	92.2	100.0	100.0	29.5	61.7	6.9	15.7
#20	0.3	1.4	4.3	0.7	100.0	100.0	100.0	100.0	53.2	39.0	100.0	100.0	25.2	36.5	4.0	11.7
#40	0.2	1.2	0.4	0.3	100.0	100.0	100.0	100.0	15.0	24.0	100.0	100.0	8.9	27.6	2.1	9.6
#80	0.2	1.0	0.1	0.2	100.0	100.0	100.0	100.0	12.5	11.5	100.0	100.0	11.5	16.1	3.4	6.2
#200	0.4	0.6	0.1	0.1	100.0	100.0	100.0	100.0	7.8	3.7	100.0	100.0	5.8	10.3	2.2	4.0
Pan	0.6		0.1						3.7				10.3		4.0	
Totals	100.0		100.0		0.0	0.0			100.0		0.0		100.0		100.0	

Stockpiles Sampled By: Jonathan Santiago      Date Sampled: 2/17/2022

Gradation Technician: Jonathan Santiago      Date Tested: 2/17/2022

Coarse Aggregate Specific Gravity per ASTM C127

Discard portion of sample that passes the 1/8 sieve.  
Only Perform this test if aggregate is 10% or more coarse (less than 90% passing the 1/8" sieve)

	NY #2 Stone	NY #1 stone	Not Used	Not Used	Manufactured sand	Not Used	Fine RAP	Coarse RAP
% Coarse Agg.	98.3%	95.0%	---	---	7.8%	---	38.3%	84.3%
Test Required?	YES	YES	NO	NO	NO	NO	YES	YES
A) Wt. in Air	913.9	850.3					937.6	937.6
B) Wt. SSD	917.7	859.8					949.2	949.2
C) Wt. in Water	601.2	565.1					608.8	608.8
G <sub>sb</sub> (A/(B-C))	2.888	2.885	---	---	---	---	2.754	2.754
G <sub>sa</sub> (A/(A-C))	2.923	2.981	---	---	---	---	2.852	2.852

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 1/8" Sieve.

	NY #2 Stone	NY #1 stone	Not Used	Not Used	Manufactured sand	Not Used	Fine RAP	Coarse RAP
% Fine Agg.	1.7%	5.0%	---	---	92.2%	---	61.7%	15.7%
Test Required?	NO	NO	NO	NO	YES	NO	YES	YES
A) Wt. in Air					498.6		491.6	491.6
B) Wt. Flask + Water					649.1		649.1	649.1
C) Wt. Flask + Water + Sample					963.2		967.3	967.3
S) Wt. SSD					500.6		494.0	494.0
G <sub>sb</sub> (A/(B+S-C))	---	---	---	---	2.673	---	2.796	2.796
G <sub>sa</sub> (A/(B+A-C))	---	---	---	---	2.702	---	2.835	2.835

Combined Aggregate Specific Gravity

	NY #2 Stone	NY #1 stone	Not Used	Not Used	Manufactured sand	Not Used	Fine RAP	Coarse RAP
Combined G <sub>sb</sub>	2.888	2.885	---	---	2.673	---	2.780	2.761
Combined G <sub>sa</sub>	2.923	2.981	---	---	2.702	---	2.841	2.849

S. G. Technician: Jonathan Santiago      Date Tested: 2/17/2022

Combined Average Gradations, % Passing

Bin	Agg Blend	1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200
NY #2 Stone	40.0%	40.0	39.6	28.9	11.2	1.5	0.7	0.6	0.5	0.4	0.2
NY #1 stone	7.8%	7.8	7.8	7.8	7.4	1.9	0.4	0.1	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
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	12.5%	12.5	12.5	12.5	12.5	12.5	11.5	4.9	3.0	1.4	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
Fine RAP	29.2%	29.2	29.2	29.2	29.2	26.6	18.0	10.7	8.1	4.7	3.0
Coarse RAP	10.5%	10.5	10.5	10.5	10.0	2.4	1.6	1.2	1.0	0.7	0.4
Total	100.0%	100.0	99.6	88.9	70.3	44.9	32.3	17.4	12.6	7.2	4.1
Specification Limits		100-100	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: City Asphalt

NYSDOT FACILITY #: H0395

MIX DESIGN DATE: 4/4/2022

**BATCH 1**  
 Batch P<sub>b</sub>: 3.3%  
 Batch Grams: 4000.0

Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	Batch Weights, Retained on Sieve - Grams											
					1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan	
NY #2 Stone	40.0%	38.7%	1547.2		0.0	15.5	413.1	687.0	374.4	30.9	4.6	3.1	3.1	6.2	9.3	1547.2
NY #1 stone	7.8%	7.5%	301.7		0.0	0.0	0.0	15.1	214.2	57.3	13.0	1.2	0.3	0.3	0.3	301.7
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
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
Manufactured sand	12.5%	12.1%	483.5		0.0	0.0	0.0	0.0	0.0	37.7	257.2	72.5	60.4	37.7	17.9	483.5
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
Fine RAP	29.2%	29.9%	1196.5	67.0	0.0	0.0	0.0	0.0	105.3	353.0	301.5	106.5	137.6	69.4	56.2	1196.5
Coarse RAP	10.5%	10.5%	418.7	12.6	0.0	0.0	0.0	19.3	304.8	28.9	16.7	8.8	14.2	9.2	4.2	418.7
Virgin Asphalt		1.3%	52.4	52.4												52.4
Total Mix	100.0%	100.0%	4000.0	132.0	0.0	15.5	413.1	721.3	998.7	507.8	593.1	192.1	215.7	122.8	87.9	4000.0

3.30%

**BATCH 2**  
 Batch P<sub>b</sub>: 3.8%  
 Batch Grams: 4000.0

Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	Batch Weights, Retained on Sieve - Grams											
					1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan	
NY #2 Stone	40.0%	38.5%	1539.2		0.0	15.4	411.0	683.4	372.5	30.8	4.6	3.1	3.1	6.2	9.2	1539.2
NY #1 stone	7.8%	7.5%	300.1		0.0	0.0	0.0	15.0	213.1	57.0	12.9	1.2	0.3	0.3	0.3	300.1
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
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
Manufactured sand	12.5%	12.0%	481.0		0.0	0.0	0.0	0.0	0.0	37.5	255.9	72.2	60.1	37.5	17.8	481.0
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
Fine RAP	29.2%	29.8%	1190.3	66.7	0.0	0.0	0.0	0.0	104.7	351.1	299.9	105.9	136.9	69.0	55.9	1190.3
Coarse RAP	10.5%	10.4%	416.5	12.5	0.0	0.0	0.0	19.2	303.2	28.7	16.7	8.7	14.2	9.2	4.2	416.5
Virgin Asphalt		1.8%	72.8	72.8												72.8
Total Mix	100.0%	100.0%	4000.0	152.0	0.0	15.4	411.0	717.6	993.6	505.2	590.0	191.1	214.5	122.2	87.4	4000.0

3.80%

**BATCH 3**  
 Batch P<sub>b</sub>: 4.3%  
 Batch Grams: 4000.0

Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	Batch Weights, Retained on Sieve - Grams											
					1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan	
NY #2 Stone	40.0%	38.3%	1531.2		0.0	15.3	408.8	679.9	370.6	30.6	4.6	3.1	3.1	6.1	9.2	1531.2
NY #1 stone	7.8%	7.5%	298.6		0.0	0.0	0.0	14.9	212.0	56.7	12.8	1.2	0.3	0.3	0.3	298.6
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
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
Manufactured sand	12.5%	12.0%	478.5		0.0	0.0	0.0	0.0	0.0	37.3	254.6	71.8	59.8	37.3	17.7	478.5
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
Fine RAP	29.2%	29.6%	1184.1	66.3	0.0	0.0	0.0	0.0	104.2	349.3	298.4	105.4	136.2	68.7	55.7	1184.1
Coarse RAP	10.5%	10.4%	414.4	12.4	0.0	0.0	0.0	19.1	301.7	28.6	16.6	8.7	14.1	9.1	4.1	414.4
Virgin Asphalt		2.3%	93.3	93.3												93.3
Total Mix	100.0%	100.0%	4000.0	172.0	0.0	15.3	408.8	713.8	988.4	502.6	587.0	190.1	213.4	121.5	87.0	4000.0

4.30%

**BATCH 4**  
 Batch P<sub>b</sub>: 4.8%  
 Batch Grams: 4000.0

Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	Batch Weights, Retained on Sieve - Grams											
					1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan	
NY #2 Stone	40.0%	38.1%	1523.2		0.0	15.2	406.7	676.3	368.6	30.5	4.6	3.0	3.0	6.1	9.1	1523.2
NY #1 stone	7.8%	7.4%	297.0		0.0	0.0	0.0	14.9	210.9	56.4	12.8	1.2	0.3	0.3	0.3	297.0
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
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
Manufactured sand	12.5%	11.9%	476.0		0.0	0.0	0.0	0.0	0.0	37.1	253.2	71.4	59.5	37.1	17.6	476.0
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
Fine RAP	29.2%	29.4%	1177.9	66.0	0.0	0.0	0.0	0.0	103.7	347.5	296.8	104.8	135.5	68.3	55.4	1177.9
Coarse RAP	10.5%	10.3%	412.2	12.4	0.0	0.0	0.0	19.0	300.1	28.4	16.5	8.7	14.0	9.1	4.1	412.2
Virgin Asphalt		2.8%	113.7	113.7												113.7
Total Mix	100.0%	100.0%	4000.0	192.0	0.0	15.2	406.7	710.1	983.2	499.9	583.9	189.1	212.3	120.9	86.5	4000.0

4.80%

**BATCH 5**  
 Batch P<sub>b</sub>: 5.3%  
 Batch Grams: 4000.0

Bin	Agg. Blend	Mix Blend	Batch Grams	Asph. Grams	Batch Weights, Retained on Sieve - Grams											
					1.5"	1"	3/4"	1/2"	1/4"	1/8"	#20	#40	#80	#200	Pan	
NY #2 Stone	40.0%	37.9%	1515.2		0.0	15.2	404.6	672.7	366.7	30.3	4.5	3.0	3.0	6.1	9.1	1515.2
NY #1 stone	7.8%	7.4%	295.5		0.0	0.0	0.0	14.8	209.8	56.1	12.7	1.2	0.3	0.3	0.3	295.5
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
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
Manufactured sand	12.5%	11.8%	473.5		0.0	0.0	0.0	0.0	0.0	36.9	251.9	71.0	59.2	36.9	17.5	473.5
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
Fine RAP	29.2%	29.3%	1171.7	65.6	0.0	0.0	0.0	0.0	103.1	345.7	295.3	104.3	134.7	68.0	55.1	1171.7
Coarse RAP	10.5%	10.3%	410.0	12.3	0.0	0.0	0.0	18.9	298.5	28.3	16.4	8.6	13.9	9.0	4.1	410.0
Virgin Asphalt		3.4%	134.1	134.1												134.1
Total Mix	100.0%	100.0%	4000.0	212.0	0.0	15.2	404.6	706.4	978.1	497.3	580.8	188.1	211.2	120.3	86.1	4000.0

5.30%

# QA & CONSTRUCTION SAFETY BUREAU

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

PLANT NAME: City Asphalt

NYSDOT FACILITY #: H0395

MIX DESIGN DATE: 4/4/2022

### Theoretical Maximum Specific Gravity $G_{mm}$ per ASTM D2041

Trial Batch	1		2		3		4		5	
$P_b$	3.3%		3.8%		4.3%		4.8%		5.3%	
A) Sample in Air (grams)	2000.6	1992.1	1995.8	1997.6	2005.7	1991.5	1994.6	2002.5	1993.4	1995.2
B) Pycnometer in Water (Grams)	1435.1	1441.8	1435.1	1441.8	1435.1	1441.8	1435.1	1441.8	1435.1	1441.8
C) Sample & Pycnometer in Water (Grams)	2687.7	2689.4	2680.9	2686.4	2681.7	2677.5	2668.9	2679.2	2661.6	2669.9
$G_{mm} (A/(A+B-C))$	2.675	2.676	2.661	2.653	2.642	2.635	2.622	2.617	2.599	2.601
Average $G_{mm}$	2.675		2.657		2.639		2.620		2.600	

Density Technician:

Jonathan Santiago

Date Tested:

2/17/2022

### 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

$P_b = 3.3\%$

Specimen A	1325.5	1327.1	796.8	530.3	2.500	2.675	6.6%		3120	0.96	3000	8.1	370
Specimen B	1326.1	1327.4	797.9	529.5	2.504	2.675	6.4%		3158	0.96	3030	8.9	340
Specimen C	1329.8	1331.4	801.3	530.1	2.509	2.675	6.2%		3262	0.96	3130	8.2	382
Average					2.504	2.675	6.4%	156.2			3050	8.4	364

#### TRIAL BATCH 2

$P_b = 3.8\%$

Specimen A	1324.4	1325.6	799.4	526.2	2.517	2.657	5.3%		3385	0.96	3250	9.6	339
Specimen B	1323.7	1325.0	799.0	526.0	2.517	2.657	5.3%		3410	0.96	3270	9.9	330
Specimen C	1326.1	1327.4	801.6	525.8	2.522	2.657	5.1%		3426	0.96	3290	10.2	323
Average					2.519	2.657	5.2%	157.2			3270	9.9	330

#### TRIAL BATCH 3

$P_b = 4.3\%$

Specimen A	1322.7	1323.9	802.6	521.3	2.537	2.639	3.9%		3512	1	3510	11.1	316
Specimen B	1330.5	1331.5	805.8	525.7	2.531	2.639	4.1%		3487	0.96	3350	10.5	319
Specimen C	1326.3	1327.4	803.9	523.5	2.534	2.639	4.0%		3493	0.96	3350	10.8	310
Average					2.534	2.639	4.0%	158.1			3400	10.8	315

#### TRIAL BATCH 4

$P_b = 4.8\%$

Specimen A	1327.9	1328.8	805.5	523.3	2.538	2.620	3.1%		3461	0.96	3320	11.8	281
Specimen B	1331.4	1332.3	807.4	524.9	2.536	2.620	3.2%		3473	0.96	3330	11.5	290
Specimen C	1319.5	1320.3	802.1	518.2	2.546	2.620	2.8%		3415	1	3420	11.6	295
Average					2.540	2.620	3.1%	158.5			3360	11.6	289

#### TRIAL BATCH 5

$P_b = 5.3\%$

Specimen A	1325.4	1326.1	806.3	519.8	2.550	2.600	1.9%		3317	1	3320	13.2	252
Specimen B	1328.6	1329.3	807.0	522.3	2.544	2.600	2.2%		3275	1	3280	12.3	267
Specimen C	1323.2	1323.9	804.9	519.0	2.550	2.600	1.9%		3228	1	3230	12.7	254
Average					2.548	2.600	2.0%	159.0			3280	12.7	258

Marshall Technician:

Jonathan Santiago

Date Tested:

2/17/2022

# QA & CONSTRUCTION SAFETY BUREAU

## MIX VOLUMETRIC PROPERTIES WORKSHEET - 3 RA BINDER MIX

PLANT:	City Asphalt	NYSDOT FACILITY #:	H0395	MIX DESIGN DATE:	4/4/2022
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Agg. Blend %	Constituent Material	NYSDOT Source	G <sub>sa</sub>	G <sub>sb</sub>	Total Mix Composition by Weight				
					Trial Batch				
					1	2	3	4	5
40.0%	NY #2 Stone	10-3R	2.923	2.888	38.7%	38.5%	38.3%	38.1%	37.9%
7.8%	NY #1 stone	8-8R	2.981	2.885	7.5%	7.5%	7.5%	7.4%	7.4%
0.0%	Not Used	---	---	---	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	Not Used	---	---	---	0.0%	0.0%	0.0%	0.0%	0.0%
12.5%	Manufactured sand	8-32RFM	2.702	2.673	12.1%	12.0%	12.0%	11.9%	11.8%
0.0%	Not Used	---	---	---	0.0%	0.0%	0.0%	0.0%	0.0%
29.2%	Fine RAP		2.841	2.780	29.9%	29.8%	29.6%	29.4%	29.3%
10.5%	Coarse RAP		2.849	2.761	10.5%	10.4%	10.4%	10.3%	10.3%
	Virgin Asphalt				1.3%	1.8%	2.3%	2.8%	3.4%
100.0%					100.0%	100.0%	100.0%	100.0%	100.0%

Mix General Properties				Trial Batch				
				1	2	3	4	5
P <sub>b</sub>	Percent Total Asphalt Binder, %			3.3%	3.8%	4.3%	4.8%	5.3%
P <sub>ba</sub>	Percent Absorbed Asphalt Binder, %			0.16%	0.21%	0.26%	0.30%	0.30%
P <sub>be</sub>	Percent Effective Asphalt Binder, %			3.15%	3.60%	4.05%	4.51%	5.02%
DP	Dust Proportion (0.6 to 1.2 desired)			0.8	0.9	1.0	1.1	1.2
G <sub>mm</sub>	Mix Maximum Specific Gravity			2.675	2.657	2.639	2.620	2.600
G <sub>mb</sub>	Mix Bulk Specific Gravity			2.504	2.519	2.534	2.540	2.548
G <sub>sb</sub>	Aggregate Bulk Gravity			2.814	2.814	2.814	2.814	2.814
G <sub>se</sub>	Aggregate Effective Gravity			2.826	2.830	2.834	2.837	2.837
G <sub>sa</sub>	Aggregate Apparent Specific Gravity			2.866	2.866	2.866	2.866	2.866

Mix Acceptance Properties		Low Limit	High Limit	Trial Batch				
				1	2	3	4	5
VMA	Voids in Mineral Aggregate, %	13.5%		✓ 14.0%	✓ 13.9%	✓ 13.8%	✓ 14.1%	✓ 14.3%
<i>Note: All five trial batches must meet the minimum VMA requirement.</i>								
VFA	Voids Filled with Asphalt, %	65%	75%	✗ 54.2%	✗ 62.6%	✓ 71.2%	✗ 78.3%	✗ 86.0%
P <sub>a</sub>	Percent Air Voids, %	3.0%	5.0%	✗ 6.4%	✗ 5.2%	✓ 4.0%	✓ 3.1%	✗ 2.0%
---	Marshall Stability (Corrected), lb	1500		✓ 3050	✓ 3270	✓ 3400	✓ 3360	✓ 3280
---	Marshall Flow, 0.01"	8	12	✓ 8.4	✓ 9.9	✓ 10.8	✓ 11.6	✗ 12.7
---	Marshall Quotient, lb/0.01"	150		✓ 364	✓ 330	✓ 315	✓ 289	✓ 258

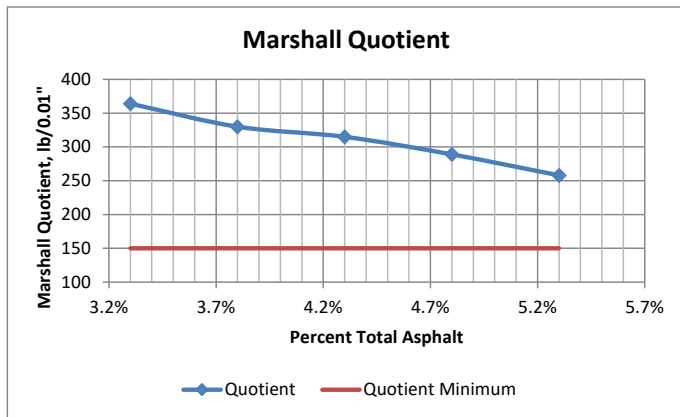
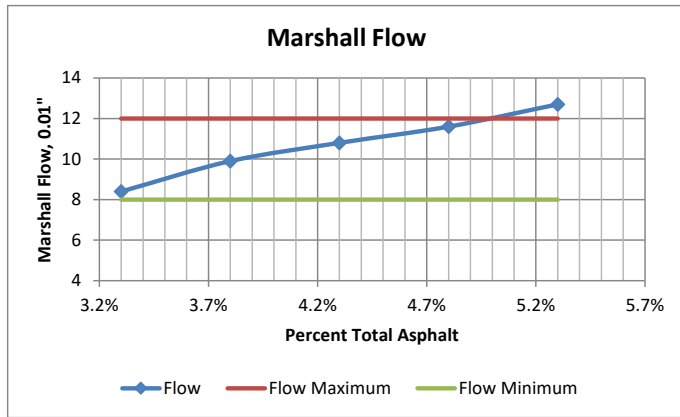
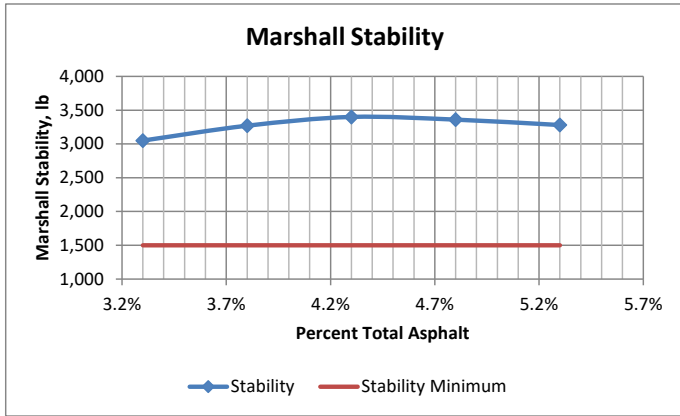
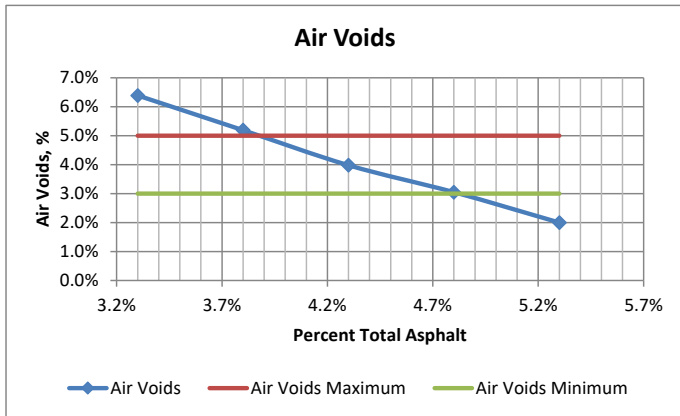
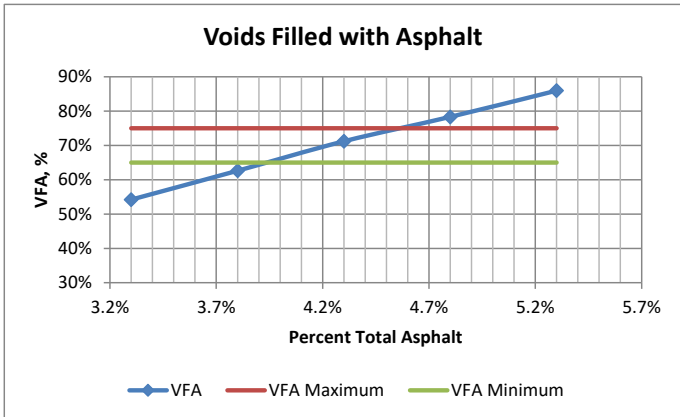
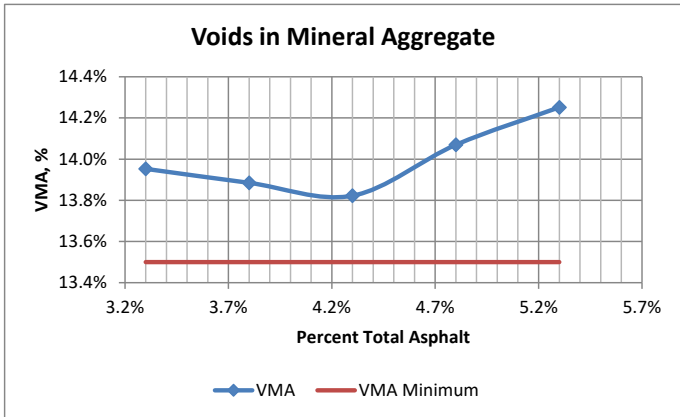
# QA & CONSTRUCTION SAFETY BUREAU

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

PLANT NAME: City Asphalt

NYSDOT FACILITY #: H0395

MIX DESIGN DATE: 4/4/2022



Property	High	Low
Voids in Mineral Aggregate (VMA), %	5.3%	3.3%
Voids Filled with Asphalt (VFA), %	4.5%	3.8%
Percent Air Voids, %	4.8%	3.9%
Marshall Stability (Corrected), lb	5.3%	3.3%
Marshall Flow, 0.01"	5.0%	3.3%
Marshall Quotient, lb/0.01"	5.3%	3.3%
Overlap	5.3%	3.3%

Properties at Desired AC%
13.8%
71.2%
4.0%
3400
10.8
311.2

Midpoint: 4.3%

Desired Total Asphalt Content P<sub>0</sub>: 4.3%

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.