Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 7/13/20

Concrete Grade: S2M

Contractor: _____

Dates Test Represents: 7/14/2020 through 7/20/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	270	1.65	2.62	8.9
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
		Total Wt	**3050**	**18.57**		100.0

<----- Verify this number is 100%

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.0	100.0	100.0	99.5	0.5	0.5
3/4"	89.0	100.0	100.0	94.4	5.1	5.6
1/2"	54.0	97.0	100.0	76.4	18.1	23.6
3/8"	33.0	87.0	100.0	64.8	11.6	35.2
#4	6.0	28.0	96.0	44.2	20.6	55.8
#8	2.4	9.0	83.0	35.5	8.8	64.5
#16	2.0	4.7	66.0	28.0	7.4	72.0
#30	1.9	3.8	47.0	20.3	7.8	79.7
#50	1.9	3.5	22.0	10.1	10.1	89.9
#100	1.7	3.3	5.0	3.2	7.0	96.8
LBW	1.4	2.8	0.9	1.3	1.9	98.7

*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

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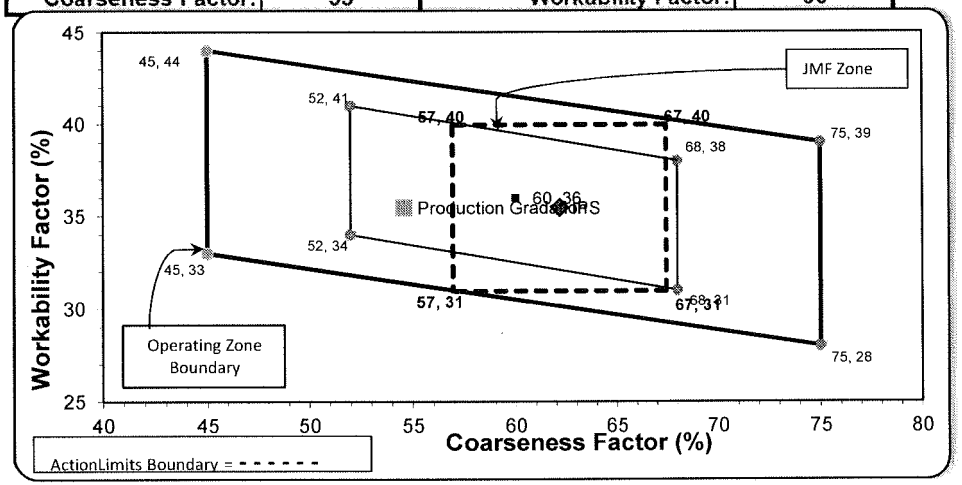
Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	55	Workability Factor:	35



Intial Production Sample (IPS)

Coarseness Factor:	62
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	100.0	0.0	0.0
3/4"	94.0	6.0	6.0
1/2"	70.2	23.7	29.8
3/8"	59.9	10.4	40.1
#4	42.7	17.2	57.3
#8	35.5	7.2	64.5
#16	28.4	7.0	71.6
#30	19.2	9.2	80.8
#50	8.9	10.3	91.1
#100	3.1	5.9	96.9
LBW	1.4	1.7	98.6

PREPARED BY:
SM, LLC Technical Service

Approved By:

Edw. C. Levy Co.

Basic Quality Statistical Summary Report

Plant 958-JMT
Product 1054-6AA LS PI
Specification 6AA LS PI Spec
Period 07/12/2020 - 07/18/2020

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			100-100
1" (25mm)	1	98.7			95-100
3/4" (19mm)	1	89.1			
1/2" (12.5mm)	1	54.3			30-60
3/8" (9.5mm)	1	32.6			
#4 (4.75mm)	1	5.5			0-8
#8 (2.36mm)	1	2.4			
#16 (1.18mm)	1	2.0			
#30 (.6mm)	1	1.9			
#50 (.3mm)	1	1.8			
#100 (.15mm)	1	1.7			
#200 (75µm)	1	1.5			
Pan	1	0.0			
Wash Loss (#200/75um)	1	1.4			0-2
Total Moisture	1	3.1			

Edw. C. Levy Co.

Basic Quality Statistical Summary Report

Plant 958-JMT
Product 1067-26A Mod LS
Specification 26A Mod LS Spec
Period 07/12/2020 - 07/18/2020

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	1	100.0			
1 1/2" (37.5mm)	1	100.0			
1" (25mm)	1	100.0			
3/4" (19mm)	1	100.0			100-100
1/2" (12.5mm)	1	97.0			95-100
3/8" (9.5mm)	1	87.3			60-95
#4 (4.75mm)	1	27.5			5-30
#8 (2.36mm)	1	9.4			0-12
#16 (1.18mm)	1	4.7			
#30 (.6mm)	1	3.8			
#50 (.3mm)	1	3.5			
#100 (.15mm)	1	3.3			
#200 (75µm)	1	3.0			
Pan	1	0.0			
Wash Loss (#200/75um)	1	2.8			0-3
Total Moisture	1	3.3			

Edw. C. Levy Co.

Basic Quality Statistical Summary Report

Plant 958-JMT
Product 1022-2NS GR - Smelter Bay
Specification 2NS GR Spec
Period 07/12/2020 - 07/18/2020

Sieve/Test	Tests	Average	St Dev	Target	Specification
3/8" (9.5mm)	1	100.0			100-100
#4 (4.75mm)	1	95.5			95-100
#8 (2.36mm)	1	82.7			65-95
#16 (1.18mm)	1	65.9			35-75
#30 (.6mm)	1	46.8			20-55
#50 (.3mm)	1	22.0		18-28	10-30
#100 (.15mm)	1	5.2			0-10
#200 (75µm)	1	1.1			
Pan	1	0.0			
FM	1	2.82		2.7-2.9	2.6-3
Wash Loss (#200/75um)	1	0.9			0-3
Total Moisture	1	5.2			

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

Contractor: _____

Sample Date: 7/13/20

Concrete Grade: **S2M**

Dates Test Represents: 7/14/2020 through 7/20/2020

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	50.8
26A	71-47	Presque Isle	300	1.83	2.62	9.8
2NS	63-92	Grange Hall	1200	7.26	2.65	39.3
		Total Wt	**3050**	**18.57**		100.0

<----- Verify this number is 100%

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.0	100.0	100.0	99.5	0.5	0.5
3/4"	81.0	100.0	100.0	90.3	9.1	9.7
1/2"	50.0	98.0	100.0	74.4	16.0	25.6
3/8"	33.0	88.0	100.0	64.8	9.6	35.2
#4	7.0	28.0	97.0	44.5	20.3	55.5
#8	4.0	8.0	83.0	35.5	9.0	64.5
#16	2.8	3.7	68.0	28.5	6.9	71.5
#30	2.6	2.9	48.0	20.5	8.0	79.5
#50	2.6	2.6	19.6	9.3	11.2	90.7
#100	2.3	2.3	3.5	2.8	6.5	97.2
LBW	2.0	2.0	0.8	1.5	1.2	98.5

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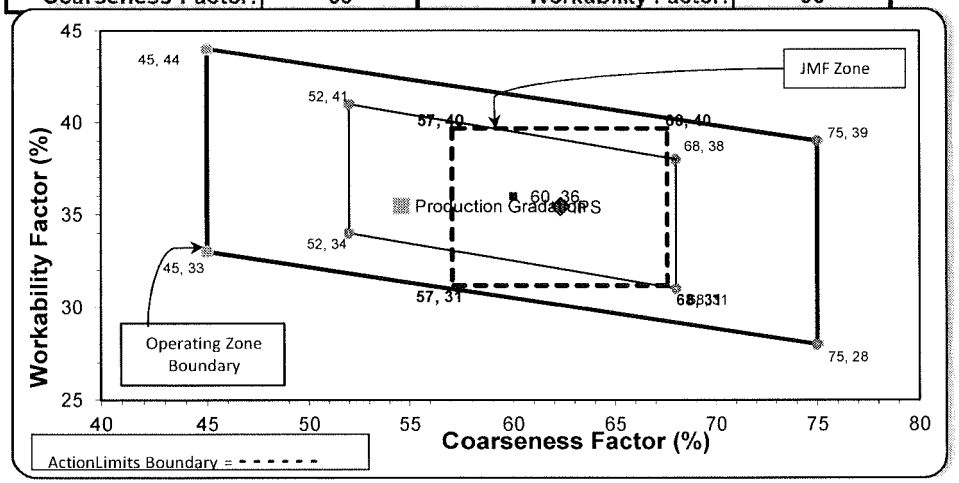
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	55	Workability Factor:	35



Intial Production Sample (IPS)

Coarseness Factor:	62
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.1	0.9	0.9
3/4"	90.5	8.6	9.5
1/2"	69.8	20.7	30.2
3/8"	59.8	10.0	40.2
#4	42.2	17.6	57.8
#8	35.4	6.7	64.6
#16	28.8	6.7	71.2
#30	21.4	7.4	78.6
#50	8.8	12.6	91.2
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

PREPARED BY:
SM, LLC Technical Service

Approved By:

Basic Quality Statistical Summary Report

Plant S36-Superior Auburn Hills
Product 1051-6AA LS
Specification 6AA LS
Period 07/12/2020 - 07/18/2020

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	2	100.0	0.00		
1 1/2" (37.5mm)	2	100.0	0.00		100-100
1" (25mm)	2	98.8	1.70		95-100
3/4" (19mm)	2	81.4	0.57		
1/2" (12.5mm)	2	50.2	8.77		30-60
3/8" (9.5mm)	2	32.7	7.21		
#4 (4.75mm)	2	6.7	2.40		0-8
#8 (2.36mm)	2	3.6	2.12		
#16 (1.18mm)	2	2.8	1.34		
#30 (.6mm)	2	2.6	1.34		
#50 (.3mm)	2	2.6	1.20		
#100 (.15mm)	2	2.3	1.13		
#200 (75µm)	2	2.0	1.06		
Pan	2	0.0	0.00		
Wash Loss (#200/75um)	2	2.0	1.06		0-2
Total Moisture	2	4.18	0.106		

Basic Quality Statistical Summary Report

Plant S36-Superior Auburn Hills
Product 1067-26A Mod LS
Specification 26A LS Spec
Period 07/12/2020 - 07/18/2020

Sieve/Test	Tests	Average	St Dev	Target	Specification
2" (50mm)	2	100.0	0.00		
1 1/2" (37.5mm)	2	100.0	0.00		
1" (25mm)	2	100.0	0.00		
3/4" (19mm)	2	100.0	0.00		100-100
1/2" (12.5mm)	2	98.2	0.00		95-100
3/8" (9.5mm)	2	87.7	0.00		60-95
#4 (4.75mm)	2	28.2	0.00		5-30
#8 (2.36mm)	2	8.1	0.00		0-12
#16 (1.18mm)	2	3.7	0.00		
#30 (.6mm)	2	2.9	0.00		
#50 (.3mm)	2	2.6	0.00		
#100 (.15mm)	2	2.3	0.00		
#200 (75µm)	2	2.0	0.00		
Pan	2	0.0	0.00		
Wash Loss (#200/75um)	2	2.0	0.00		0-3
Total Moisture	2	1.36	0.000		

Basic Quality Statistical Summary Report

Plant S36-Superior Auburn Hills
Product 1022-2NS GR
Specification 2NS GR Spec
Period 07/12/2020 - 07/18/2020

Sieve/Test	Tests	Average	St Dev	Target	Specification
3/8" (9.5mm)	2	100.0	0.00		100-100
#4 (4.75mm)	2	97.2	0.00		95-100
#8 (2.36mm)	2	83.4	0.00		65-95
#16 (1.18mm)	2	67.7	0.00		35-75
#30 (.6mm)	2	48.4	0.00	40-50	20-55
#50 (.3mm)	2	19.6	0.00		10-30
#100 (.15mm)	2	3.5	0.00		0-10
#200 (75µm)	2	0.9	0.00		
Pan	2	0.0	0.00		
FM	2	2.80	0.000	2.7-2.9	2.6-3
Wash Loss (#200/75um)	2	0.8	0.00		0-3
Total Moisture	2	3.49	0.000		