

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-32

Sample Date: 7/6/20

Dates Test Represents: 7/7/2020 through 7/13/2020

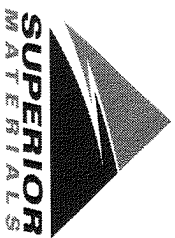
Concrete Grade: S2M

Contractor:

MDOT No.:

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1650	10.09	2.62	54.1
26A	71-47	Presque Isle	170	1.04	2.62	5.6
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
Total Wt			3050	18.57		100.0

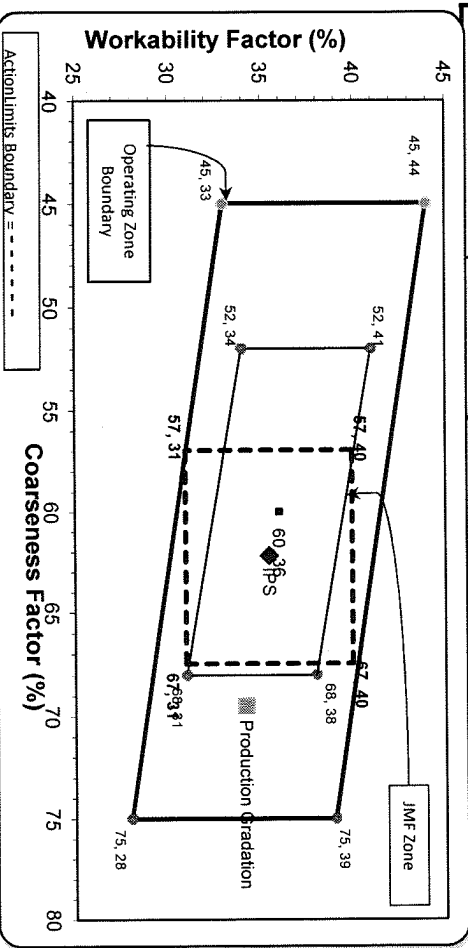
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	84.7	100.0	100.0	91.7	8.3	8.3
1/2"	44.7	95.4	100.0	69.8	21.9	30.2
3/8"	17.5	79.9	100.0	54.2	15.6	45.8
#4	2.1	16.4	95.8	40.7	13.6	59.3
#8	1.6	5.1	81.9	34.2	6.5	65.8
#16	1.5	3.4	66.1	27.7	6.5	72.3
#30	1.5	3.1	46.6	19.8	7.9	80.2
#50	1.5	2.9	21.3	9.6	10.2	90.4
#100	1.4	2.7	5.8	3.2	6.3	96.8
LBW	1.2	2.5	1.8	1.5	1.7	98.5



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30701 W. 10 Mile Rd.
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Farmington Hills, MI 48336

*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: 70 Workability Factor: 34



Initial Production Sample (PPS)

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:

Plant 958-JMT

Product 1054-6AA LS PI

Period: 07/05/2020 - 07/11/2020

Name/Title Doug Storey / QC Technician

Report Date 07/10/2020

Procedure	Sieve/Test	Result	Unit	6AA LS PI Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	84.7	%	
	1/2" (12.5mm)	44.7	%	30-60
	3/8" (9.5mm)	17.5	%	
	#4 (4.75mm)	2.1	%	0-8
	#8 (2.36mm)	1.6	%	
	#16 (1.18mm)	1.5	%	
	#30 (.6mm)	1.5	%	
	#50 (.3mm)	1.5	%	
	#100 (.15mm)	1.4	%	
	#200 (75µm)	1.2	%	
	Wash Loss (#200/75µm)	1.1	%	0-2
	Total Moisture	1.1	%	

Plant 958-JMT
 Product 1067-26A Mod LS
 Period: 07/05/2020 - 07/11/2020

Name/Title Doug Storey / QC Technician
 Report Date 07/10/2020

Procedure	Sieve/Test	Result	Unit	26A Mod LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	95.4	%	95-100
	3/8" (9.5mm)	79.9	%	60-95
	#4 (4.75mm)	16.4	%	5-30
	#8 (2.36mm)	5.1	%	0-12
	#16 (1.18mm)	3.4	%	
	#30 (.6mm)	3.1	%	
	#50 (.3mm)	2.9	%	
	#100 (.15mm)	2.7	%	
	#200 (75µm)	2.5	%	
	Wash Loss (#200/75um)	2.4	%	0-3
	Total Moisture	1.2	%	

Plant 958-JMT
Product 1022-2NS GR - Smelter Bay
Period: 07/05/2020 - 07/11/2020

Name/Title Doug Storey / QC Technician
Report Date 07/10/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	95.8	%	95-100
	#8 (2.36mm)	81.9	%	65-95
	#16 (1.18mm)	66.1	%	35-75
	#30 (.6mm)	46.6	%	20-55
	#50 (.3mm)	21.3	%	10-30
	#100 (.15mm)	5.8	%	0-10
	#200 (75µm)	1.8	%	
	FM	2.82		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	3.8	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-36

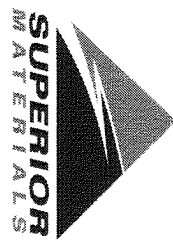
Sample Date: 7/6/20

Dates Test Represents: 7/7/2020 through 7/13/2020

Concrete Grade: S2M

Contractor: _____

MDOT No.: _____



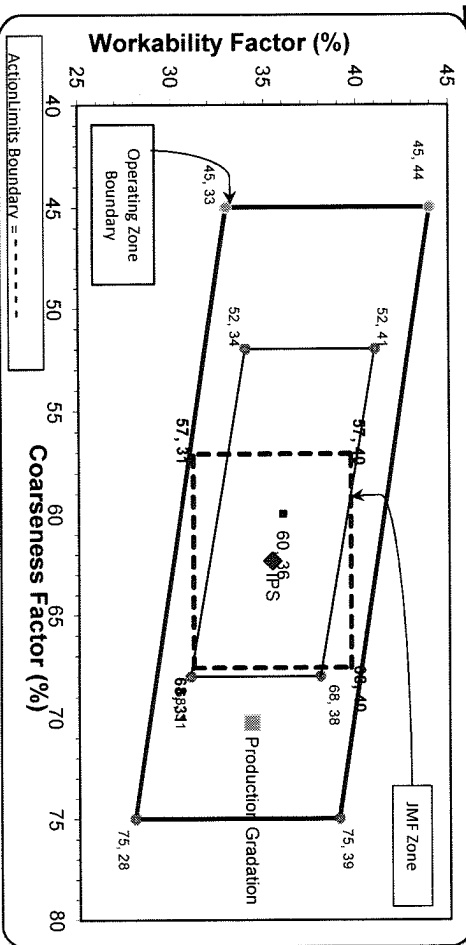
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30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (ssd)	ft ³	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	100.0

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"	98.2	100.0	100.0	99.1	0.9	0.9
3/4"	71.2	100.0	100.0	85.4	13.7	14.6
1/2"	31.6	95.4	100.0	64.8	20.6	35.2
3/8"	13.0	80.1	100.0	53.8	11.0	46.2
#4	3.2	19.9	96.7	41.6	12.2	58.4
#8	2.4	7.0	82.3	34.3	7.3	65.7
#16	2.2	4.0	66.8	27.8	6.5	72.2
#30	2.0	3.4	48.8	20.6	7.2	79.4
#50	1.9	3.1	22.4	10.1	10.5	89.9
#100	1.7	2.8	4.9	3.1	7.0	96.9
LBW	1.5	2.5	1.9	1.8	1.3	98.2

*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: 70 Workability Factor: 34



Sieve	Initial Production Sample (IPS)	Coarseness Factor:	Workability Factor:
2"	100.0	62	35
1.5"	100.0		
1"	99.1		
3/4"	90.5		
1/2"	69.8		
3/8"	59.8		
#4	42.2		
#8	35.4		
#16	28.8		
#30	21.4		
#50	8.8		
#100	1.8		
LBW	0.7		

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 07/05/2020 - 07/11/2020

Report Date 07/10/2020

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	98.2	%	95-100
	3/4" (19mm)	71.2	%	
	1/2" (12.5mm)	31.6	%	30-60
	3/8" (9.5mm)	13.0	%	
	#4 (4.75mm)	3.2	%	0-8
	#8 (2.36mm)	2.4	%	
	#16 (1.18mm)	2.2	%	
	#30 (.6mm)	2.0	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.5	%	
	Wash Loss (#200/75µm)	1.3	%	0-2
	Total Moisture	1.80	%	



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Plant S36-Superior Auburn Hills

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 07/05/2020 - 07/11/2020

Report Date 07/10/2020

Procedure	Sieve/Test	Result	Unit	26A LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	95.4	%	95-100
	3/8" (9.5mm)	80.1	%	60-95
	#4 (4.75mm)	19.9	%	5-30
	#8 (2.36mm)	7.0	%	0-12
	#16 (1.18mm)	4.0	%	
	#30 (.6mm)	3.4	%	
	#50 (.3mm)	3.1	%	
	#100 (.15mm)	2.8	%	
	#200 (75µm)	2.5	%	
	Wash Loss (#200/75µm)	2.3	%	0-3
	Total Moisture	1.70	%	



2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 07/05/2020 - 07/11/2020

Report Date 07/10/2020

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.7	%	95-100
	#8 (2.36mm)	82.3	%	65-95
	#16 (1.18mm)	66.8	%	35-75
	#30 (.6mm)	48.8	%	20-55
	#50 (.3mm)	22.4	%	10-30
	#100 (.15mm)	4.9	%	0-10
	#200 (75µm)	1.9	%	
	FM	2.78		2.6-3
	Wash Loss (#200/75um)	1.0	%	0-3
	Total Moisture	1.89	%	