

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-36**

Sample Date: **8/29/22**

Dates Test Represents: **8/30/2022** through **9/5/2022**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
CA	71-47	Presque Isle	900	5.50	2.62	29.3
IA	71-47	Presque Isle	970	5.93	2.62	31.6
NNS	63-92	Grange Hall	1200	7.26	2.65	39.1
Total Wt						3070
						18.70
						100.0

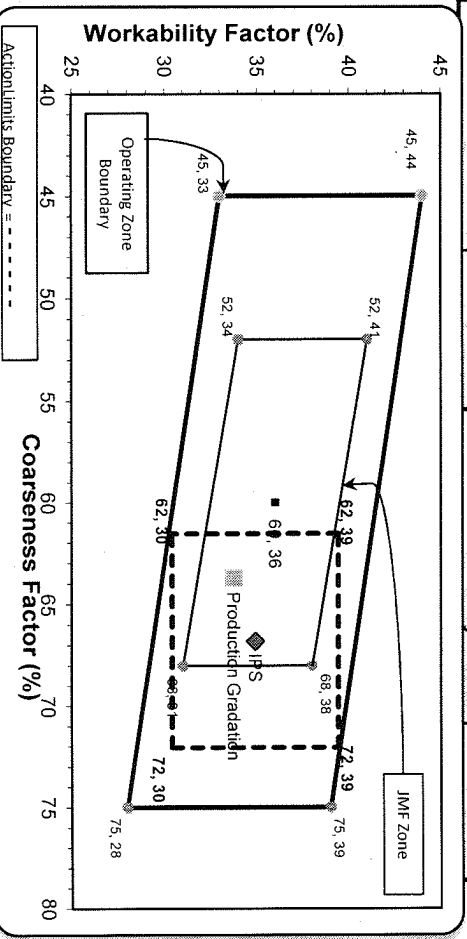
Verify this number is 100%

Sieve	CA	IA	NNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.7	100.0	100.0	99.6	0.4	0.4
1"	42.4	100.0	100.0	83.1	16.9	16.9
3/4"	13.0	100.0	100.0	74.5	25.5	42.0
1/2"	2.9	81.1	100.0	65.6	34.4	76.4
3/8"	2.2	57.2	100.0	57.8	42.2	81.6
#4	2.0	13.2	97.6	42.9	57.1	88.7
#8	2.0	4.2	81.5	33.8	66.2	94.9
#16	1.9	3.1	65.7	27.2	72.8	97.1
#30	1.9	2.8	46.3	19.5	80.5	97.9
#50	1.8	2.7	17.0	8.0	92.0	98.8
#100	1.7	2.5	3.7	2.7	97.3	99.5
LBW	1.5	2.2	0.5	1.3	98.7	99.8

*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.

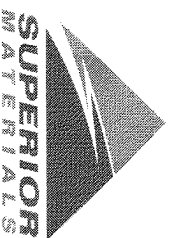
Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **64** Workability Factor: **34**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Retained	Cumulative % Retained
2"	67	35	0.0	0.0
1.5"	67	35	0.0	0.0
1"	67	35	15.0	15.0
3/4"	67	35	12.9	27.9
1/2"	67	35	7.6	35.5
3/8"	67	35	8.0	43.5
#4	67	35	13.8	57.3
#8	67	35	7.8	65.1
#16	67	35	5.9	71.0
#30	67	35	8.0	79.0
#50	67	35	12.8	91.8
#100	67	35	6.5	98.4
LBW	67	35	0.9	99.3



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PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Superior Auburn Hills
2470 Auburn Road
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 08/28/2022 - 09/03/2022

Report Date 09/02/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	97.6	%	95-100
	#8 (2.36mm)	81.5	%	65-95
	#16 (1.18mm)	65.7	%	35-75
	#30 (.6mm)	46.3	%	20-55
	#50 (.3mm)	17.0	%	10-30
	#100 (.15mm)	3.7	%	0-10
	#200 (75µm)	0.8	%	
	FM	2.88		2.6-3
	Wash Loss (#200/75um)	0.5	%	0-3
	Total Moisture	3.42	%	



Superior Auburn Hills
 2470 Auburn Road
 Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 08/28/2022 - 09/03/2022

Report Date 09/02/2022

Procedure	Sieve/Test	Result	Unit	Intermed Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	
	1/2" (12.5mm)	81.1	%	
	3/8" (9.5mm)	57.2	%	
	#4 (4.75mm)	13.2	%	
	#8 (2.36mm)	4.2	%	
	#16 (1.18mm)	3.1	%	
	#30 (.6mm)	2.8	%	
	#50 (.3mm)	2.7	%	
	#100 (.15mm)	2.5	%	
	#200 (75µm)	2.3	%	
	Wash Loss (#200/75µm)	2.2	%	0-3
	Total Moisture	3.89	%	



Superior Auburn Hills
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Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 7919-COARSE AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 08/28/2022 - 09/03/2022

Report Date 09/02/2022

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	98.7	%	
	1" (25mm)	42.4	%	
	3/4" (19mm)	13.0	%	
	1/2" (12.5mm)	2.9	%	
	3/8" (9.5mm)	2.2	%	
	#4 (4.75mm)	2.0	%	
	#8 (2.36mm)	2.0	%	
	#16 (1.18mm)	1.9	%	
	#30 (.6mm)	1.9	%	
	#50 (.3mm)	1.8	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.6	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	1.78	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-101**

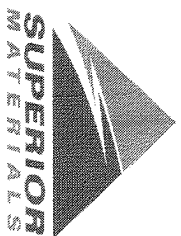
Sample Date: **8/29/22**

Dates Test Represents: **8/30/2022** through **9/5/2022**

Concrete Grade: **P1M, 3500HP**

Contractor: _____

MDOT No.: _____



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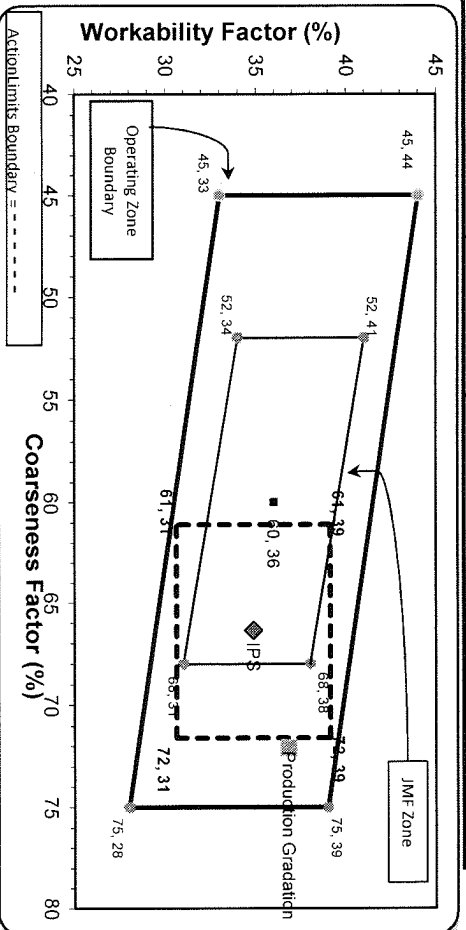
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Cumulative % Contribution	
CA	71-47	Presque Isle	1070	6.54	2.62	34.9	
IA	71-47	Presque Isle	800	4.89	2.62	26.1	
NNS	75-051	Mid Michigan	1200	7.23	2.66	39.1	
Total Wt						3070	100.0

Sieve	CA	IA	NNS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	93.2	100.0	100.0	97.6	2.4	2.4
1"	42.1	100.0	100.0	79.8	17.8	20.2
3/4"	10.7	100.0	100.0	68.9	10.9	31.1
1/2"	5.1	75.5	100.0	60.5	8.3	39.5
3/8"	4.7	52.6	100.0	54.4	6.1	45.6
#4	4.0	10.6	99.3	43.0	11.5	57.0
#8	3.5	4.7	87.9	36.8	6.2	63.2
#16	3.1	3.7	73.9	30.9	5.9	69.1
#30	2.9	3.5	54.4	23.2	7.7	76.8
#50	2.5	3.2	21.7	10.2	13.0	89.8
#100	2.1	2.8	4.7	3.3	6.9	96.7
LBW	1.8	2.4	0.7	1.5	1.8	98.5

Verify this number is 100%

*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: **72** Workability Factor: **37**



Initial Production Sample (IPS)

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	84.3	15.3	15.7
3/4"	74.8	9.6	25.2
1/2"	64.3	10.4	35.7
3/8"	56.8	7.5	43.2
#4	43.0	13.8	57.0
#8	34.9	8.1	65.1
#16	26.4	8.5	73.6
#30	19.9	6.5	80.1
#50	10.4	9.5	89.6
#100	3.4	7.0	96.6
LBW	1.2	2.2	98.8

Coarseness Factor: **66** Workability Factor: **35**

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Plant S101-Superior Mount Clemens

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 08/28/2022 - 09/03/2022

Report Date 09/02/2022

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	99.3	%	95-100
	#8 (2.36mm)	87.9	%	65-95
	#16 (1.18mm)	73.9	%	35-75
	#30 (.6mm)	54.4	%	20-55
	#50 (.3mm)	21.7	%	10-30
	#100 (.15mm)	4.7	%	0-10
	#200 (75µm)	1.0	%	
	FM	2.58		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	4.25	%	



Plant S101-Superior Mount Clemens

Product 7920-INTERMED AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 08/28/2022 - 09/03/2022

Report Date 09/02/2022

Procedure	Sieve/Test	Result	Unit	Intermed Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	
	1/2" (12.5mm)	75.5	%	
	3/8" (9.5mm)	52.6	%	
	#4 (4.75mm)	10.6	%	
	#8 (2.36mm)	4.7	%	
	#16 (1.18mm)	3.7	%	
	#30 (.6mm)	3.5	%	
	#50 (.3mm)	3.2	%	
	#100 (.15mm)	2.8	%	
	#200 (75µm)	2.5	%	
	Wash Loss (#200/75um)	2.4	%	0-3
	Total Moisture	2.60	%	



Plant S101-Superior Mount Clemens

Product 7919-COARSE AGG P1M LS

Name/Title Doug Storey / QC Technician

Period: 08/28/2022 - 09/03/2022

Report Date 09/02/2022

Procedure	Sieve/Test	Result	Unit	Coarse Agg P1M LS Target
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	93.2	%	
	1" (25mm)	42.1	%	
	3/4" (19mm)	10.7	%	
	1/2" (12.5mm)	5.1	%	
	3/8" (9.5mm)	4.7	%	
	#4 (4.75mm)	4.0	%	
	#8 (2.36mm)	3.5	%	
	#16 (1.18mm)	3.1	%	
	#30 (.6mm)	2.9	%	
	#50 (.3mm)	2.5	%	
	#100 (.15mm)	2.1	%	
	#200 (75µm)	1.8	%	
	Wash Loss (#200/75um)	1.8	%	0-2
	Total Moisture	1.63	%	