Aggregate Optimization Chart

Production Gradation Report

PLANT #: p11

Contractor: _____

Sample Date: 4/22/24

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 4/23/2024 through 4/29/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1505	9.21	2.62	51.8
26A	71-47	Presque Isle	250	1.53	2.62	8.6
2NS	95-013	Smelter Bay	1150	6.95	2.65	39.6
		Total Wt	**2905**	**17.69**		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"	97.6	100.0	100.0	98.8	1.2	1.2
3/4"	80.8	100.0	100.0	90.1	8.7	9.9
1/2"	43.1	95.2	100.0	70.1	19.9	29.9
3/8"	28.1	84.6	100.0	61.4	8.7	38.6
#4	6.5	20.4	96.5	43.3	18.1	56.7
#8	3.3	5.4	83.9	35.4	7.9	64.6
#16	2.8	3.2	69.3	29.2	6.2	70.8
#30	2.7	2.7	49.6	21.3	7.9	78.7
#50	2.6	2.4	23.1	10.7	10.6	89.3
#100	2.4	2.3	6.8	4.1	6.6	95.9
LBW	2.0	2.1	1.4	1.8	2.4	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 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

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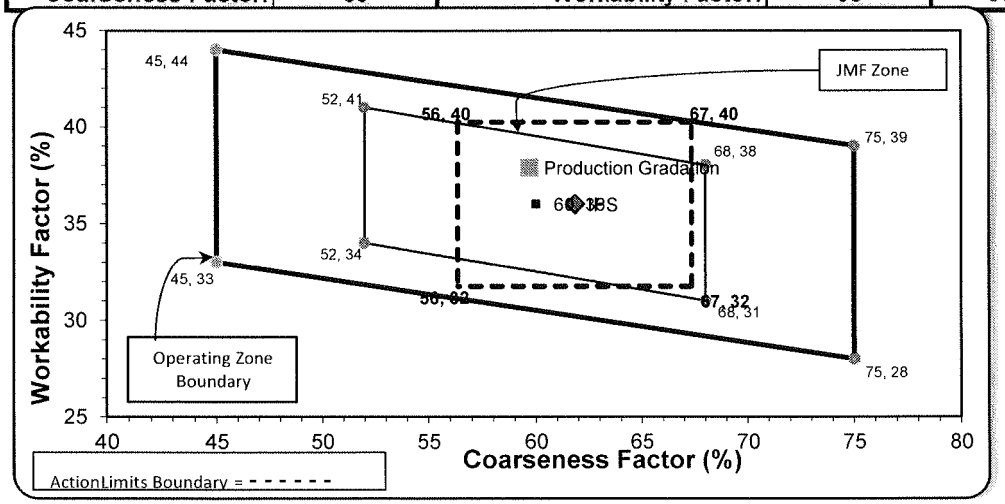
Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	60	Workability Factor:	35	Adjusted WF	37.9



Intial Production Sample (IPS)

Coarseness Factor:	62
Workability Factor:	36

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"	95.0	5.0	5.0
1/2"	72.3	22.8	27.7
3/8"	60.4	11.8	39.6
#4	42.6	17.8	57.4
#8	36.0	6.6	64.0
#16	29.5	6.5	70.5
#30	20.3	9.2	79.7
#50	9.5	10.8	90.5
#100	3.4	6.1	96.6
LBW	1.3	2.1	98.7

PREPARED BY:
SM, LLC Technical Service

Approved By:

Product Quality Summary Report

Period 04/21/2024 - 04/27/2024

Plant	S11 On. Jefferson	S11 On. Jefferson	S11 On. Jefferson	S11 On. Jefferson	S11 On. Jefferson
Product	1022 2NS GR	1054 6AA LS PI	1067 26A Mod LS	7919 COARSE AGG P1M LS	7920 INTERMED AGG P1M LS
Specification	2NS GR Spec	6AA LS	26A Mod LS Spec	Coarse Agg P1M LS Target	Intermed Agg P1M LS Target
2" (50mm)		100.0	100.0	100.0	100.0
1 1/2" (37.5mm)		100.0	100.0	98.5	100.0
1" (25mm)		97.6	100.0	37.4	100.0
3/4" (19mm)		80.8	100.0	11.4	96.9
1/2" (12.5mm)		43.1	95.2	3.7	71.0
3/8" (9.5mm)	100.0	28.1	84.6	3.0	46.3
#4 (4.75mm)	96.5	6.5	20.4	2.8	11.1
#8 (2.36mm)	83.9	3.3	5.4	2.7	4.9
#16 (1.18mm)	69.3	2.8	3.2	2.6	3.7
#30 (.6mm)	49.6	2.7	2.7	2.5	3.4
#50 (.3mm)	23.1	2.6	2.4	2.4	3.2
#100 (.15mm)	6.8	2.4	2.3	2.2	3.0
#200 (75µm)	1.7	2.21	2.1	2.0	2.7
Pan	0.0	0.00	0.0	0.0	0.0
FM	2.71				
Wash Loss (#200/75um)	1.4	2.0	2.1	1.8	2.6
Total Moisture	4.40	2.37	2.35	1.21	2.81

Aggregate Optimization Chart

Production Gradation Report

PLANT #: 12

Contractor: _____

Sample Date: 4/22/24

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 4/23/2024 through 4/29/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft^3	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1550	9.48	2.62	53.4
26A	71-47	Presque Isle	205	1.25	2.62	7.1
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
		Total Wt	**2905**	**17.69**		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"	97.0	100.0	100.0	98.4	1.6	1.6
3/4"	81.0	100.0	100.0	89.9	8.5	10.1
1/2"	38.9	93.6	100.0	66.9	22.9	33.1
3/8"	22.4	81.8	100.0	57.3	9.6	42.7
#4	4.4	17.3	95.8	41.5	15.8	58.5
#8	2.6	4.4	80.2	33.4	8.0	66.6
#16	2.3	2.9	64.8	27.1	6.4	72.9
#30	2.2	2.4	48.3	20.5	6.6	79.5
#50	2.1	2.2	24.3	10.9	9.6	89.1
#100	2.0	1.9	5.3	3.3	7.6	96.7
LBW	1.7	1.8	1.0	1.4	1.9	98.6

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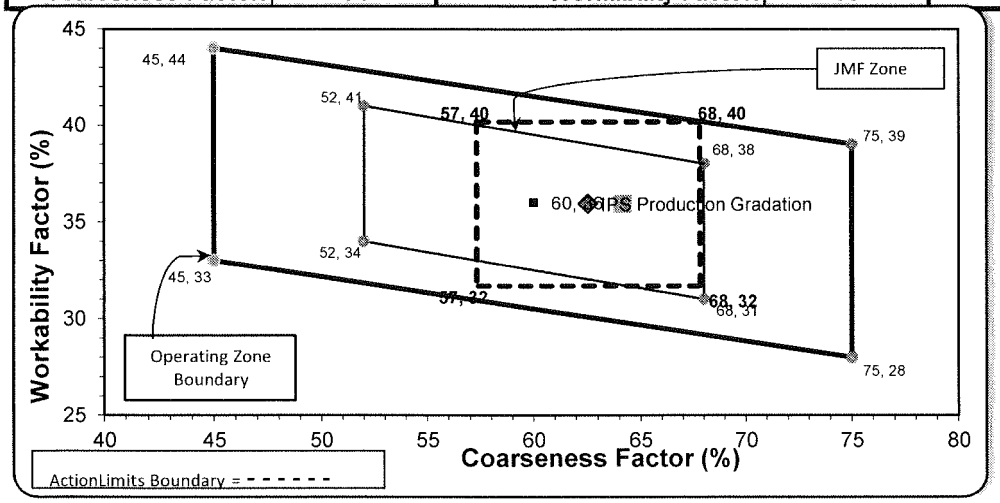
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	64	Workability Factor:	33	Adjusted WF	35.9



Intial Production Sample (IPS)

Coarseness Factor:	63
Workability Factor:	36

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.0	10.3	11.0
1/2"	70.3	18.7	29.7
3/8"	59.9	10.4	40.1
#4	41.9	18.0	58.1
#8	35.9	6.0	64.1
#16	27.8	8.2	72.2
#30	18.9	8.8	81.1
#50	6.3	12.6	93.7
#100	1.7	4.6	98.3
LBW	1.0	0.7	99.0

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Product Quality Summary Report

Period 04/21/2024 - 04/27/2024

Plant	S12 Onsite Southifeld	S12 Onsite Southifeld	S12 Onsite Southifeld	S12 Onsite Southifeld	S12 Onsite Southifeld
Product	1022 2NS GR	1051 6AA LS	1067 26A Mod LS	7919 COARSE AGG P1M LS	7920 INTERMED AGG P1M LS
Specification	2NS GR Spec	6AA LS	26A Mod LS Spec	Coarse Agg P1M LS Target	Intermed Agg P1M LS Target
2" (50mm)		100.0	100.0	100.0	100.0
1 1/2" (37.5mm)		100.0	100.0	96.9	100.0
1" (25mm)		97.0	100.0	33.0	100.0
3/4" (19mm)		81.0	100.0	9.5	97.3
1/2" (12.5mm)		38.9	93.6	3.1	75.5
3/8" (9.5mm)	100.0	22.4	81.8	2.5	50.8
#4 (4.75mm)	95.8	4.4	17.3	2.4	9.3
#8 (2.36mm)	80.2	2.6	4.4	2.3	3.0
#16 (1.18mm)	64.8	2.3	2.9	2.3	2.3
#30 (.6mm)	48.3	2.2	2.4	2.2	2.1
#50 (.3mm)	24.3	2.1	2.2	2.1	2.0
#100 (.15mm)	5.3	2.0	1.9	1.9	2.0
#200 (75µm)	1.0	1.82	1.8	1.6	1.8
Pan	0.0	0.00	0.0	0.0	0.0
FM	2.81				
Wash Loss (#200/75um)	1.0	1.7	1.8	1.4	1.7
Total Moisture	3.49	2.58	2.52	0.79	1.78

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-102

Contractor: _____

Sample Date: 4/22/24

Concrete Grade: **DM, 4500HP**

Dates Test Represents: 4/23/2024 through 4/29/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.8
26A	58-003	Stoneco	450	2.68	2.69	15.3
2NS	63-114	Highland	1150	6.95	2.65	39.0
		Total Wt	**2950**	**17.68**		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"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	82.4	100.0	100.0	91.9	8.1	8.1
1/2"	35.6	97.0	100.0	70.1	21.9	29.9
3/8"	12.7	82.9	100.0	57.4	12.6	42.6
#4	2.5	20.2	99.2	42.9	14.5	57.1
#8	1.4	7.2	84.8	34.8	8.1	65.2
#16	1.2	4.4	66.1	27.0	7.8	73.0
#30	1.1	3.6	46.5	19.2	7.8	80.8
#50	1.0	3.3	19.3	8.5	10.7	91.5
#100	1.0	3.1	4.5	2.7	5.8	97.3
LBW	0.9	2.9	1.5	1.4	1.2	98.6

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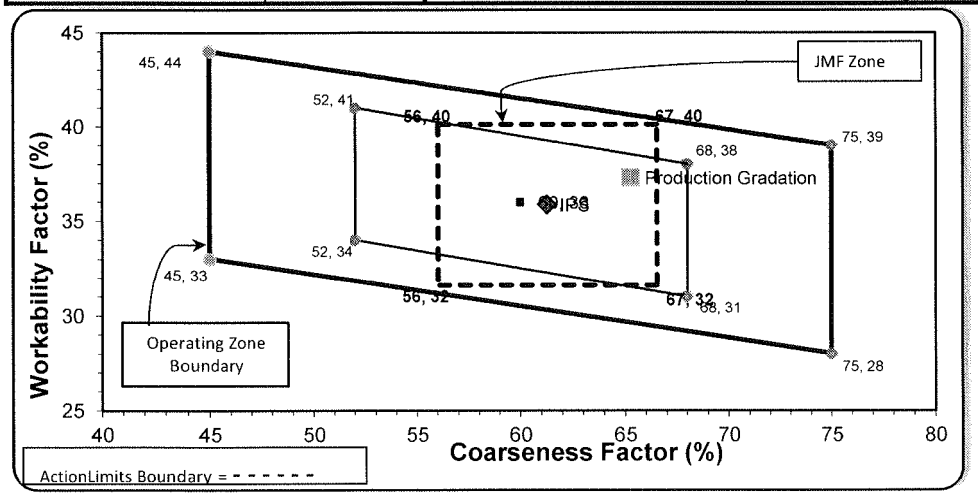
*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	65	Workability Factor:	35	Adjusted WF 37.3



Intial Production Sample (IPS)

Coarseness Factor:	61
Workability Factor:	36

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.2	10.1	10.8
1/2"	70.7	18.5	29.3
3/8"	60.7	10.0	39.3
#4	44.4	16.3	55.6
#8	35.9	8.5	64.1
#16	27.3	8.6	72.7
#30	19.1	8.2	80.9
#50	7.4	11.7	92.6
#100	1.9	5.6	98.1
LBW	0.7	1.2	99.3

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Approved By:

Product Quality Summary Report

Period 04/21/2024 - 04/27/2024

Plant	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi
Product	1022 2NS GR	1051 6AA LS	1067 26A Mod LS	7919 COARSE AGG P1M LS	7920 INTERMED AGG P1M LS
Specification	2NS GR Spec	6AA LS	26A Mod LS Spec	Coarse Agg P1M LS Target	Intermed Agg P1M LS Target
2" (50mm)		100.0	100.0	100.0	100.0
1 1/2" (37.5mm)		100.0	100.0	100.0	100.0
1" (25mm)		100.0	100.0	60.5	100.0
3/4" (19mm)		82.4	100.0	32.0	100.0
1/2" (12.5mm)		35.6	97.0	19.1	94.8
3/8" (9.5mm)	100.0	12.7	82.9	13.5	80.0
#4 (4.75mm)	99.2	2.5	20.2	3.6	18.8
#8 (2.36mm)	84.8	1.4	7.2	2.6	4.7
#16 (1.18mm)	66.1	1.2	4.4	2.4	2.7
#30 (.6mm)	46.5	1.1	3.6	2.2	2.2
#50 (.3mm)	19.3	1.0	3.3	2.1	2.0
#100 (.15mm)	4.5	1.0	3.1	1.9	1.9
#200 (75µm)	1.7	0.92	3.0	1.6	1.8
Pan	0.0	0.00	0.0	0.0	0.0
FM	2.80				
Wash Loss (#200/75um)	1.5	0.9	2.9	1.5	1.8
Total Moisture	3.61	2.96	4.84	1.41	3.32