

# Aggregate Optimization Chart

**PLANT #:** **P-32**

Sample Date: 1/27/20

Concrete Grade: **DM**

Contractor: \_\_\_\_\_

Dates Test Represents: 1/28/2020 through 2/3/2020

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1650	10.09	2.62	56.8
26A	71-47	Presque Isle	105	0.64	2.62	3.6
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

<----- 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"	98.8	100.0	100.0	99.3	0.7	0.7
3/4"	87.4	100.0	100.0	92.8	6.5	7.2
1/2"	49.8	95.2	100.0	71.3	21.5	28.7
3/8"	28.5	79.2	100.0	58.6	12.7	41.4
#4	5.1	20.6	95.8	41.6	17.1	58.4
#8	3.0	6.5	78.0	32.8	8.7	67.2
#16	2.8	3.4	61.4	26.0	6.8	74.0
#30	2.6	2.9	46.9	20.1	5.9	79.9
#50	2.5	2.6	25.3	11.5	8.6	88.5
#100	2.4	2.4	5.6	3.7	7.9	96.3
LBW	1.9	2.0	0.8	1.5	2.2	98.5



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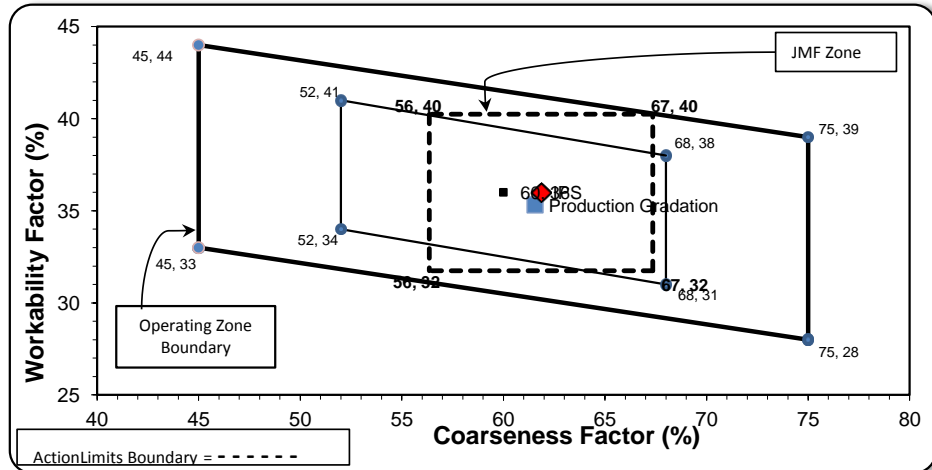
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when a 2"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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations  Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>62</b>	<b>Workability Factor:</b>	<b>33</b>	<b>Adjusted WF</b>	<b>35.3</b>
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<b>Coarseness Factor:</b>	<b>62</b>
<b>Workability Factor:</b>	<b>36</b>

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:

# Aggregate Optimization Chart

**PLANT #:** **P-36**

Sample Date: 1/27/20

Concrete Grade: **DM**

Contractor: \_\_\_\_\_

Dates Test Represents: 1/28/2020 through 2/3/2020

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1455	8.90	2.62	50.1
26A	71-47	Presque Isle	350	2.14	2.62	12.0
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

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



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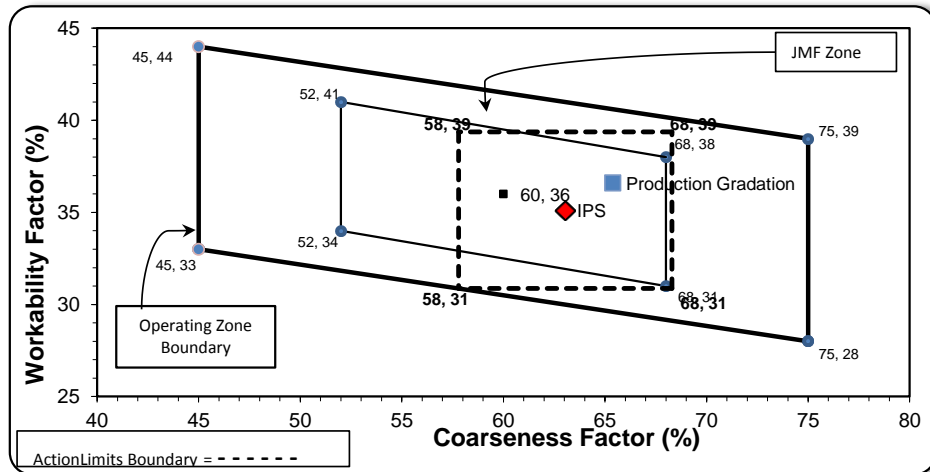
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	95.5	100.0	100.0	97.7	2.3	2.3
3/4"	74.3	100.0	100.0	87.1	10.6	12.9
1/2"	34.7	98.1	100.0	67.1	20.1	32.9
3/8"	15.9	92.0	100.0	56.9	10.2	43.1
#4	2.9	25.0	97.3	41.3	15.6	58.7
#8	2.3	7.6	84.6	34.1	7.2	65.9
#16	1.7	3.2	69.5	27.6	6.5	72.4
#30	1.6	2.1	51.2	20.4	7.1	79.6
#50	1.5	1.8	22.2	9.4	11.1	90.6
#100	1.4	1.6	3.7	2.3	7.1	97.7
LBW	1.2	1.5	0.3	0.9	1.4	99.1

\*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  Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>65</b>	<b>Workability Factor:</b>	<b>34</b>	<b>Adjusted WF</b>	<b>36.6</b>
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<b>Coarseness Factor:</b>	<b>63</b>
<b>Workability Factor:</b>	<b>35</b>



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"	90.3	8.8	9.7
1/2"	69.2	21.1	30.8
3/8"	59.1	10.1	40.9
#4	41.8	17.3	58.2
#8	35.1	6.6	64.9
#16	28.5	6.6	71.5
#30	21.2	7.3	78.8
#50	8.7	12.5	91.3
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

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# Aggregate Optimization Chart

**PLANT #:** **P-39**

Sample Date: 1/27/20

Concrete Grade: **DM**

Contractor: \_\_\_\_\_

Dates Test Represents: 1/28/2020 through 2/3/2020

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1805	11.04	2.62	62.1
26A	71-47	Presque Isle	0	0.00	2.62	0.0
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

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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"	99.2	100.0	100.0	99.5	0.5	0.5
3/4"	89.5	100.0	100.0	93.5	6.0	6.5
1/2"	54.9	98.1	100.0	72.0	21.5	28.0
3/8"	35.6	92.0	100.0	60.0	12.0	40.0
#4	4.9	25.0	97.3	39.9	20.1	60.1
#8	2.3	7.6	84.6	33.5	6.4	66.5
#16	2.0	3.2	69.5	27.6	5.9	72.4
#30	1.9	2.1	51.2	20.6	7.0	79.4
#50	1.9	1.8	22.2	9.6	11.0	90.4
#100	1.8	1.6	3.7	2.5	7.1	97.5
LBW	1.6	1.5	0.3	1.1	1.4	98.9

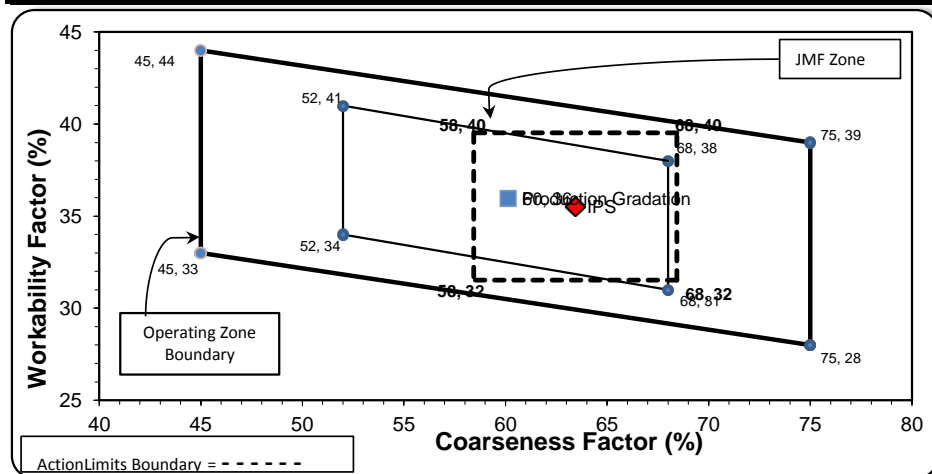
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when a 2"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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>60</b>	<b>Workability Factor:</b>	<b>33</b>	<b>Adjusted WF</b>	<b>36.0</b>
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<b>Coarseness Factor:</b>	<b>63</b>
<b>Workability Factor:</b>	<b>36</b>



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"	89.7	10.3	10.3
1/2"	70.3	19.4	29.7
3/8"	59.1	11.2	40.9
#4	42.8	16.3	57.2
#8	35.5	7.3	64.5
#16	29.0	6.5	71.0
#30	21.2	7.7	78.8
#50	9.8	11.5	90.2
#100	3.7	6.1	96.3
LBW	1.2	2.5	98.8

PREPARED BY:  
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Approved By:

# Aggregate Optimization Chart

**PLANT #:** **P-02**

Sample Date: 1/27/20

Concrete Grade: **DM**

Contractor: \_\_\_\_\_

Dates Test Represents: 1/28/2020 through 2/3/2020

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1500	9.17	2.62	51.6
26A	71-47	Presque Isle	275	1.68	2.62	9.5
2NS	63-115	Ray Rd	1130	6.83	2.65	38.9
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

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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"	95.5	100.0	100.0	97.7	2.3	2.3
3/4"	74.3	100.0	100.0	86.7	10.9	13.3
1/2"	34.7	95.2	100.0	65.8	20.9	34.2
3/8"	15.9	79.2	100.0	54.6	11.2	45.4
#4	2.9	20.6	95.8	40.7	13.9	59.3
#8	2.3	6.5	78.0	32.1	8.6	67.9
#16	1.7	3.4	61.4	25.1	7.1	74.9
#30	1.6	2.9	46.9	19.3	5.7	80.7
#50	1.5	2.6	25.3	10.9	8.5	89.1
#100	1.4	2.4	5.6	3.1	7.7	96.9
LBW	1.2	2.0	0.8	1.1	2.0	98.9

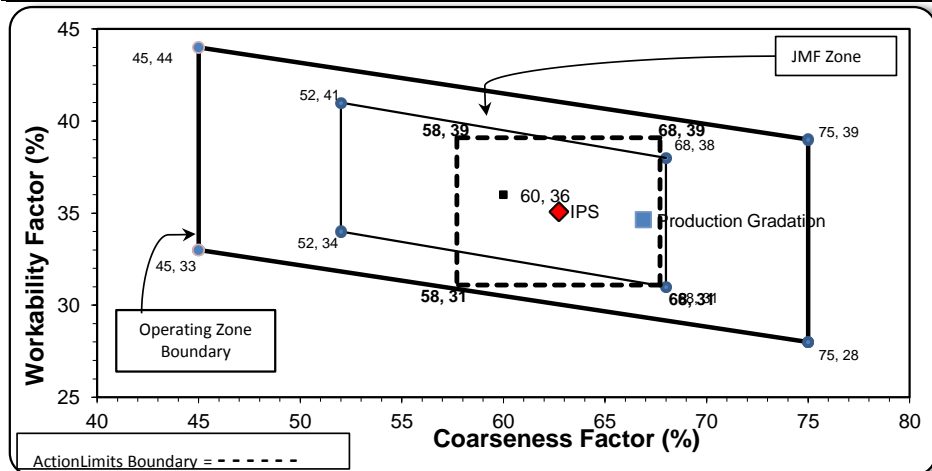
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when a 2"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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>67</b>	<b>Workability Factor:</b>	<b>32</b>	<b>34.6</b>
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<b>Coarseness Factor:</b>	<b>63</b>
<b>Workability Factor:</b>	<b>35</b>



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"	95.1	4.9	4.9
1/2"	74.6	20.5	25.4
3/8"	59.3	15.3	40.7
#4	42.1	17.2	57.9
#8	35.1	7.1	64.9
#16	29.2	5.9	70.8
#30	21.9	7.3	78.1
#50	9.6	12.4	90.4
#100	2.4	7.2	97.6
LBW	0.9	1.5	99.1

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