NEVILLE AGGREGATES CO. INC.

Construction Aggregates Supplier

3501 Neville Road, Pittsburgh PA 15225

P 412.771.4001
F 412.771.0207

January 1, 2023

PennDOT Ref. #: NLSOHA14
Material Type: 2A Limestone

To Whom It May Concern:

This letter is to verify that Neville Aggregates, Glenwood PA, is an agent for National Lime and Stone Company, Carey OH. National Lime and Stone Company produces the material provided for your use, in accordance with the requirements of PennDOT Publication 408, Section 703 for coarse aggregate.

Sincerely,

Caleb T. Bryan

David T. Giehll

Quality Test Report

BMG Research & Development Center

3507 Neville Road, Pittsburgh PA 15225

BRYAN MATERIALS GROUP

Source	National Lime & Stone Company - NLSOHA14
Product	2A Limestone
Specification	PaDOT 408 Section 703

Sample Information

Sample No	Average	**Weather**	-
Start Date	1/15/2022	**Temp**	-
Finish Date	12/27/2022	**Split Sample**	☐
Sampled By	David Giehll	**Resample**	☐
Tested By	David Giehll	**Lot/Sublot**	-
Type	Production Sample	**Quantity**	50 lbs
Method	Stockpile		

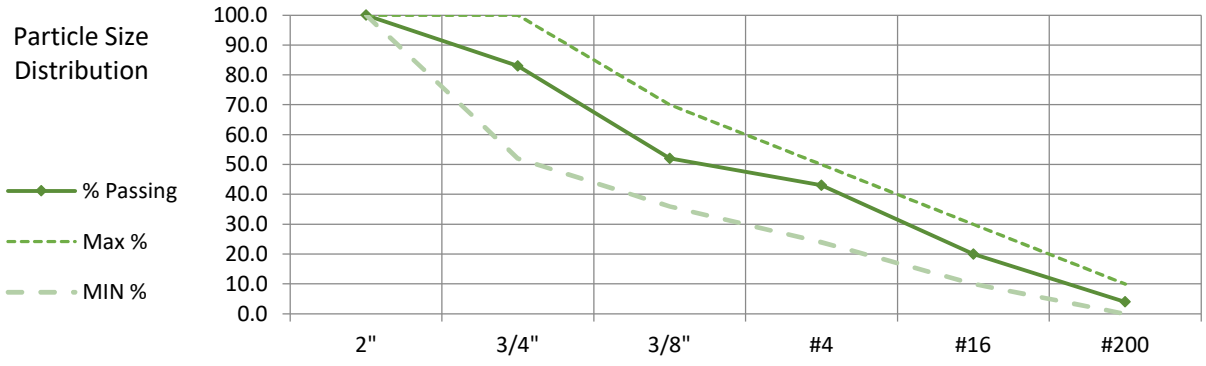
Gradation Results

Units	Moist Mass	Dry Mass	Moisture %	Wash ST	Wash End	Wash Loss %
lbs	37.11	35.87	3.45%	12.870	11.915	7.42%

Sieve	Retained	Retained	Retained	Retained	Passing	Target	Specification %	
2"	0.00	0.00	0.0	0.0	100.0	100	100	100
1 1/2"	0.00	0.00	0.0	0.0	100.0	-	-	-
3/4"	6.10	6.10	17.0	17.0	83.0	76	52	100
1/2"	6.10	12.20	17.0	34.0	66.0	-	-	-
3/8"	5.02	17.22	14.0	48.0	52.0	53	36	70
#4	3.23	20.45	9.0	57.0	43.0	37	24	50
#16	8.25	28.70	23.0	80.0	20.0	20	10	30
#200	5.74	34.44	16.0	96.0	4.0	5	0	10

Other Test Results

Test Name	Date	Result	Unit	Target	Specification %	
Wash Loss (#200)	--	7.42%	%	5	0	10



LABORATORY COMPACTION CHARACTERISTICS OF SOIL

CORRECTION OF UNIT WEIGHT AND WATER CONTENT FOR SOILS CONTAINING OVERSIZE PARTICLES - ASTM D4718

Client	Neville Aggregates	Boring	N/A
Client Project	National	Depth	N/A
Project No.	45467	Sample	National
		Lab Sample No.	45467001

Visual Description: Gray Gravelly Sand with Silt

WET DENSITY

Mold ID	I	I	I	I	
Compaction Point #	1	2	3	4	
Wt. Mold & WS, gm.	10968	11166	11420	11387	
Wt. Mold, gm.	6448	6448	6448	6448	
Wt. WS, gm.	4520	4718	4972	4939	
Mold Volume, cc	2122	2122	2122	2122	
Wet Density, gm./cc	2.13	2.22	2.34	2.33	
Wet Density, pcf	132.9	138.7	146.2	145.2	

TEST PARAMETERS

Test Method	ASTM D698
Compaction Energy	Standard
Test Procedure	C (Rock Corr.)
Mold Diameter, in	6
Compacted Layers	3
Blows Per Layer	56
Rammer Weight / Fall	5.5 lbs / 12 in.
Size of Material Used	-3/4" Sieve
Use: 5%> 3/4" <30%	

WATER CONTENT

Tare Number	829	811	520	807	
Wt. Tare & WS, gm.	1150	1278	1300.3	1482.8	
Wt. Tare & DS, gm.	1123.9	1226.9	1215.6	1364.6	
Wt. Tare, gm.	101.5	102	101.4	101.7	
Water Content, %	2.6	4.5	7.6	9.4	

OVERSIZE PARTICLE CORRECTION

Oversize Material, % (+3/4" Sieve) = 29.5
W.C. of Oversize Rock % (Measured) = 2.7
Gs of Oversize Rock (Measured) = 2.53

Percent Fines, % (-3/4" Sieve) = 70.5
W.C. of Finer Material, % (-3/4" Sieve) = 4.8

DRY DENSITY vs. WATER CONTENT

SAMPLE SUMMARY

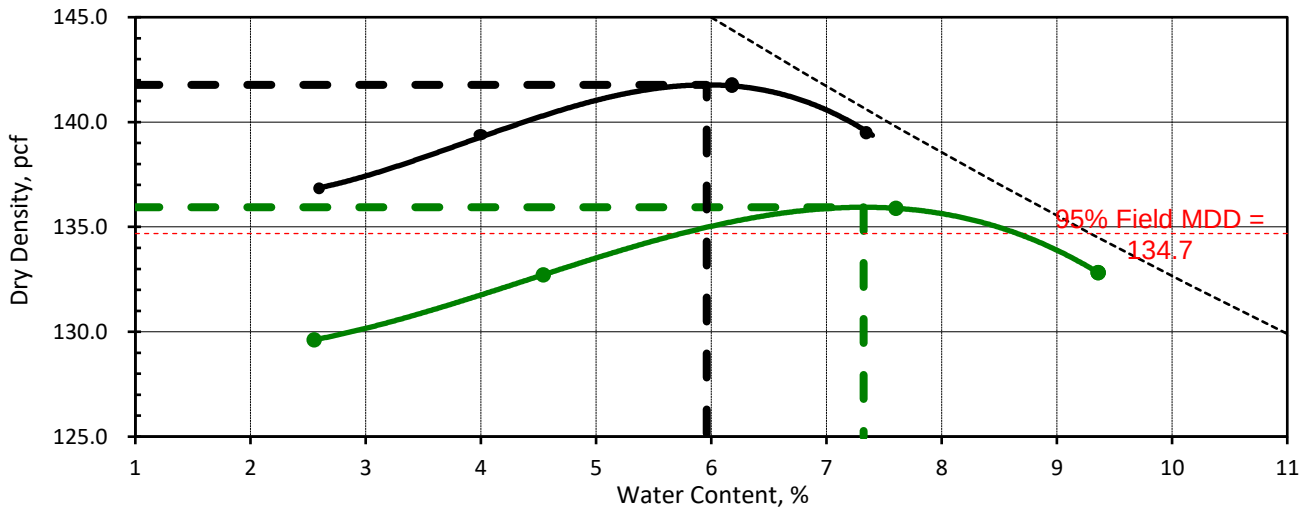
LABORATORY TEST VALUES

Water Content, %	2.6	4.5	7.6	9.4		***Lab Optimum Water Content, %***	***7.3***
Dry Density, pcf	129.6	132.7	135.9	132.8		***Lab Maximum Dry Density, pcf***	***135.9***

FIELD CORRECTED TEST VALUES

Water Content, %	2.6	4.0	6.2	7.4		***Field Optimum Water Content, %***	***6.0***
Dry Density, pcf	136.9	139.3	141.7	139.4		***Field Maximum Dry Density, pcf***	***141.8***

Note: Maximum Density and Optimum Water Content reported from estimated best fit smooth curve!



Note: Compacted with automatic compaction machine

Input Validation: JJ Reviewed By: BLS Date Tested: 3/16/2023

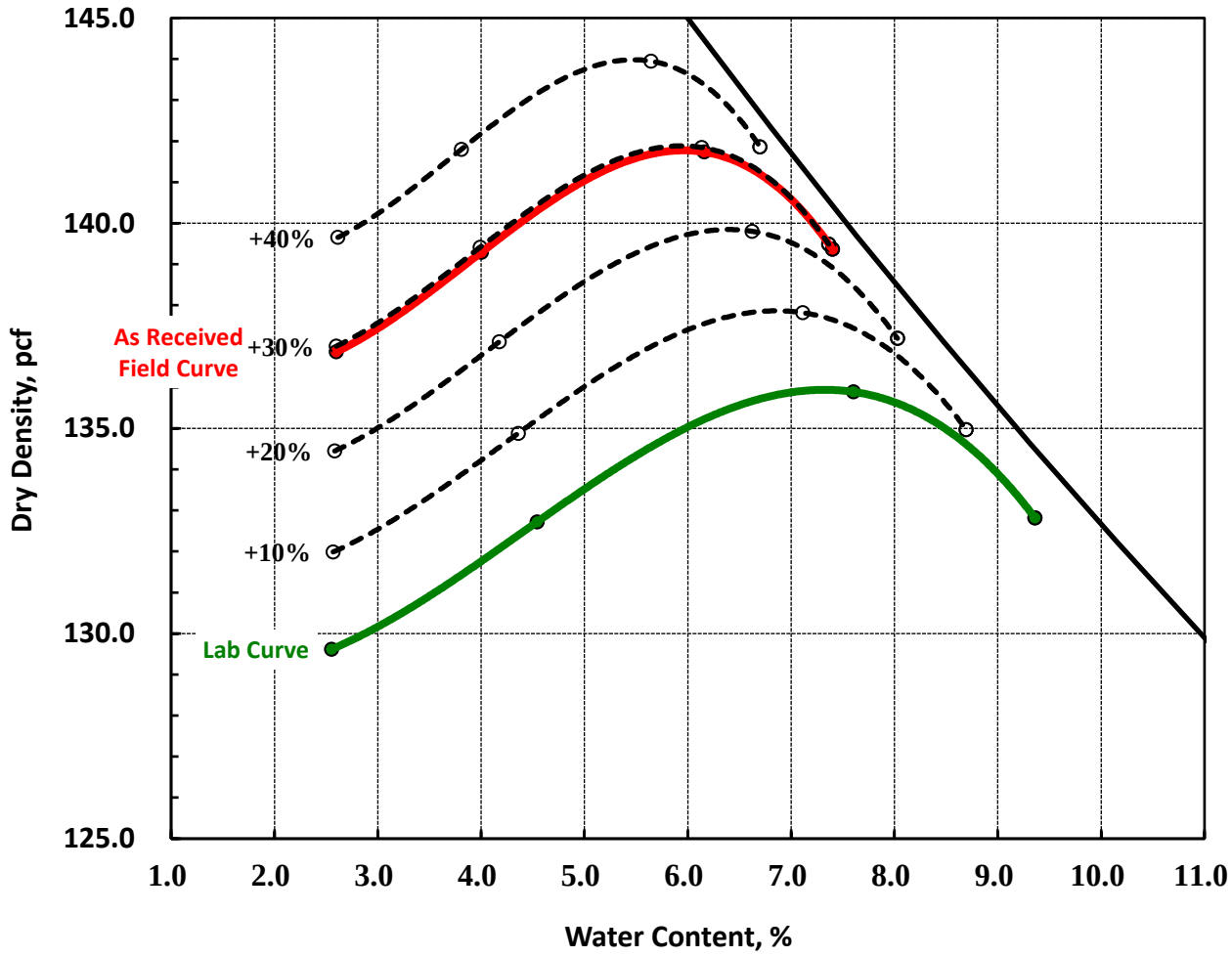
LABORATORY COMPACTION CHARACTERISTICS OF SOIL

CORRECTION OF UNIT WEIGHT AND WATER CONTENT FOR SOILS CONTAINING OVERSIZE PARTICLES - ASTM D4718

Client	Neville Aggregates	Boring	N/A
Client Project	National	Depth	N/A
Project No.	45467	Sample	National
		Lab Sample No.	45467001
Description:	Gray Gravelly Sand with Silt		

As-Received WC, %	*4.8*	Lab Optimum WC, %	*7.3*	Field Optimum WC, %	*6.0*
As-Received Coarse Material, %	*29.5*	Lab Max. Dry Density,	*135.9*	Field Max. Dry Density, pcf	*141.8*

Rock Correction Family of Curves for Different Percentages of +3/4" Material in 10 Percent Increments



SPECIFIC GRAVITY AND ABSORPTION OF OVERSIZE FRACTION

TEST VALUES		SYMBOL
Weight of Oven-Dry Test Sample In Air + Tare Weight, gm	19391	*A + t*
Tare Weight, gm	1722.7	*t*
Weight of Oven-Dry Test Sample In Air, gm	17668.3	*A*
Weight of Saturated-Surface-Dry Sample In Air, gm	18180.3	*B*
Weight of Saturated Test Sample In Water, gm	11202.7	*C*

SAMPLE SUMMARY

Bulk Specific Gravity	**2.53**	*A / (B - C)*
Bulk Specific Gravity (Saturated-Surface-Dry)	2.61	*B / (B - C)*
Apparent Specific Gravity	2.73	*A / (A - C)*
Absorption, %	2.9%	*(B - A) / A*

LABORATORY COMPACTION CHARACTERISTICS OF SOIL

CORRECTION OF UNIT WEIGHT AND WATER CONTENT FOR SOILS CONTAINING OVERSIZE PARTICLES - ASTM D4718

Client	Neville Aggregates	Boring	N/A
Client Project	National	Depth	N/A
Project No.	45467	Sample	National
		Lab Sample No.	45467002

Visual Description: Gray Gravelly Sand with Silt

WET DENSITY					
Mold ID	I	I	I	I	
Compaction Point #	1	2	3	4	
Wt. Mold & WS, gm.	11303	11526	11558	11492	
Wt. Mold, gm.	6448	6448	6448	6448	
Wt. WS, gm.	4855	5078	5110	5044	
Mold Volume, cc	2122	2122	2122	2122	
Wet Density, gm./cc	2.29	2.39	2.41	2.38	
Wet Density, pcf	142.8	149.3	150.3	148.3	

TEST PARAMETERS	
Test Method	ASTM D1557
Compaction Energy	Modified
Test Procedure	C (Rock Corr.)
Mold Diameter, in	6
Compacted Layers	5
Blows Per Layer	56
Rammer Weight / Fall	10 lbs / 18 in.
Size of Material Used	-3/4" Sieve
Use: 5%> 3/4" <30%	

WATER CONTENT					
Tare Number	232	827	713	506	
Wt. Tare & WS, gm.	1370.3	1224.7	1408.8	1510.7	
Wt. Tare & DS, gm.	1311.1	1157	1289.9	1355.3	
Wt. Tare, gm.	178.1	182	98.5	102.1	
Water Content, %	5.2	6.9	10.0	12.4	

OVERSIZE PARTICLE CORRECTION
Oversize Material, % (+3/4" Sieve) = 29.5
W.C. of Oversize Rock % (Measured) = 2.7
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DRY DENSITY vs. WATER CONTENT

SAMPLE SUMMARY

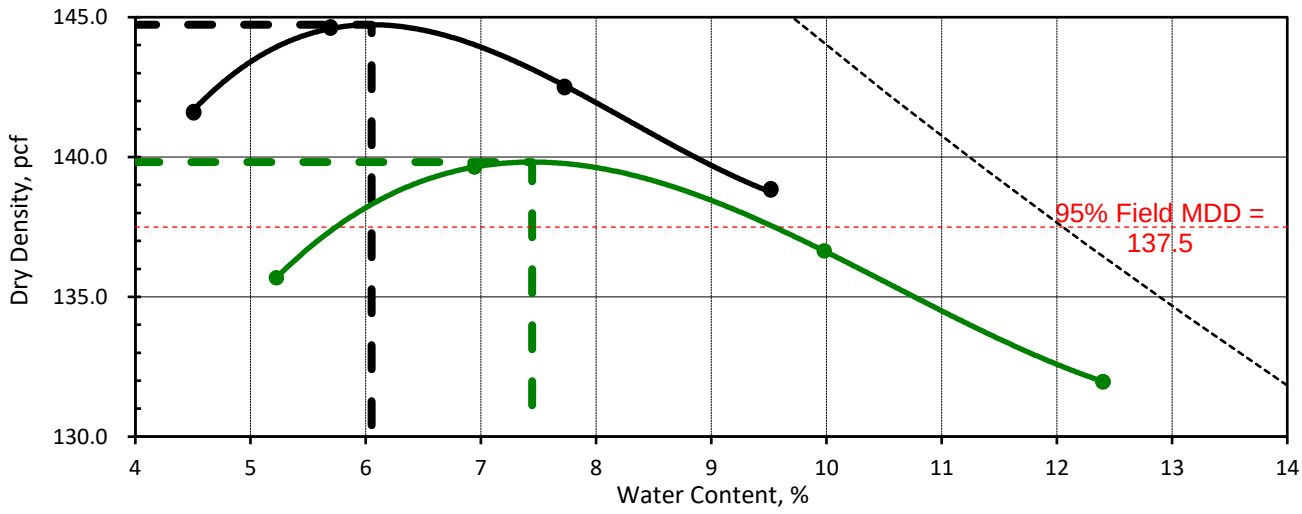
LABORATORY TEST VALUES

Water Content, %	5.2	6.9	10.0	12.4		***Lab Optimum Water Content, %***	***7.4***
Dry Density, pcf	135.7	139.6	136.6	132.0		***Lab Maximum Dry Density, pcf***	***139.8***

FIELD CORRECTED TEST VALUES

Water Content, %	4.5	5.7	7.8	9.5		***Field Optimum Water Content, %***	***6.1***
Dry Density, pcf	141.6	144.6	142.3	138.7		***Field Maximum Dry Density, pcf***	***144.7***

Note: Maximum Density and Optimum Water Content reported from estimated best fit smooth curve!



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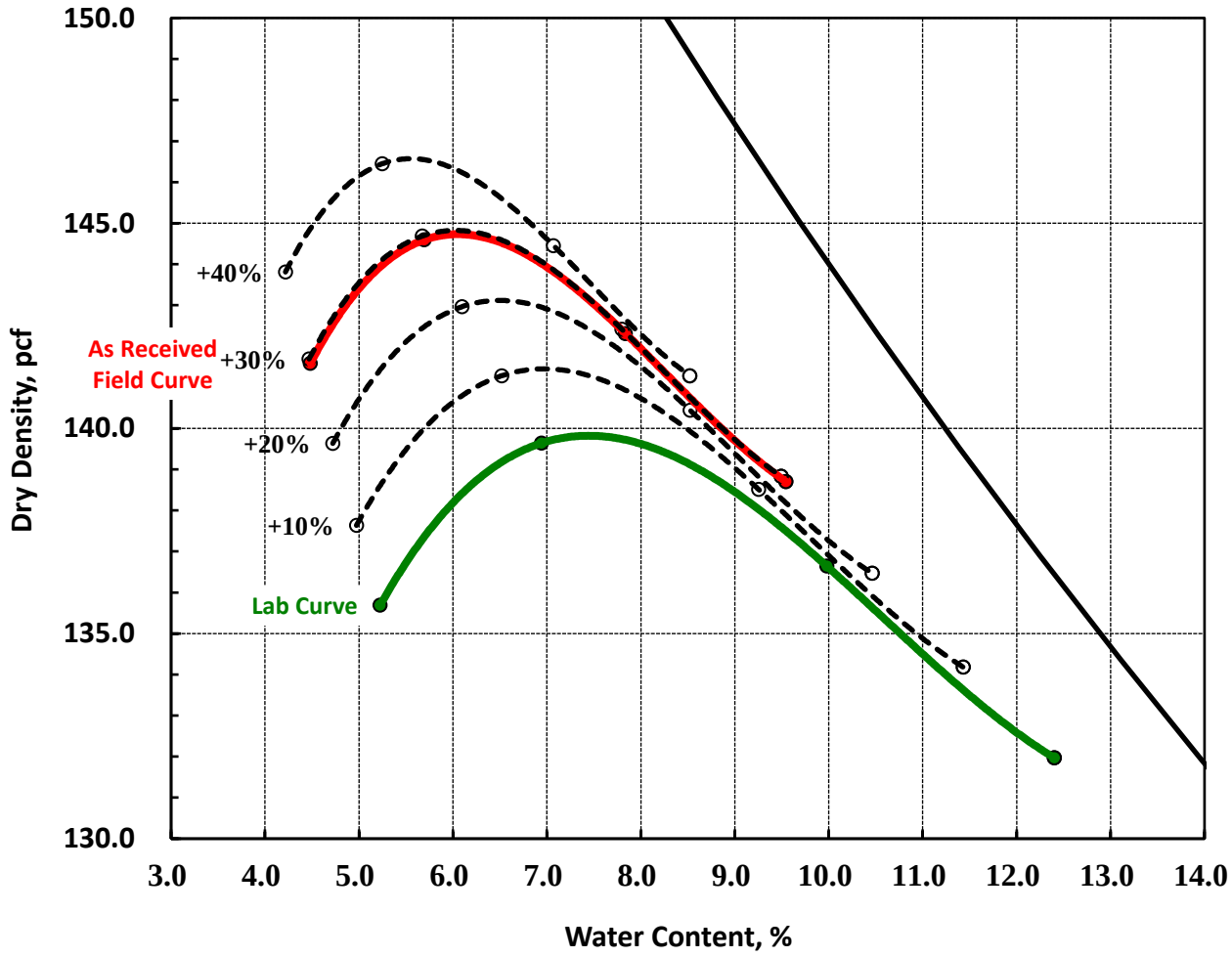

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