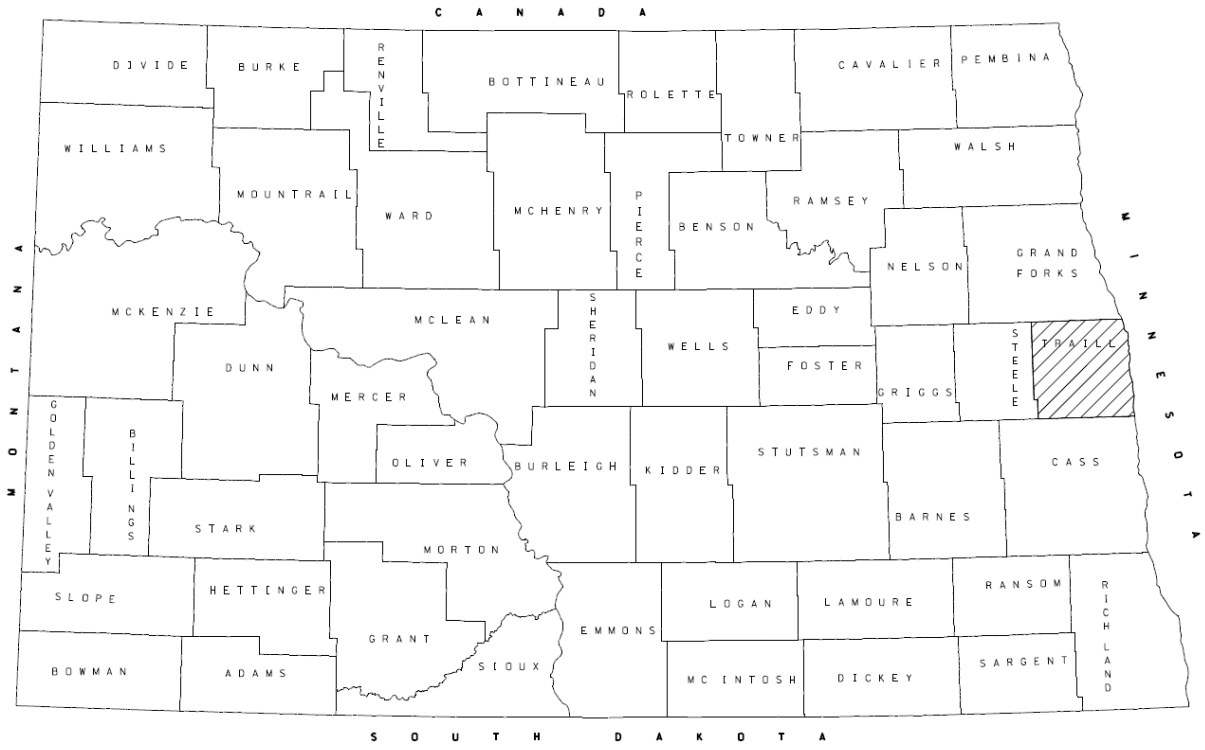
LINEAR SOILS SURVEY AND RECOMMENDATIONS

PROJECT NO. IM-8-029(204)101

PCN 23103

COUNTY Traill

I-29 SB, RP 101.328 to 110.933



PREPARED BY: Riley McAdoo-Roesler

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH DIVISION

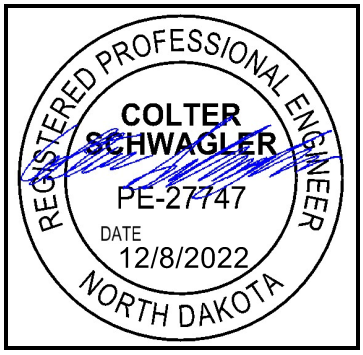
December 2022

IM-8-029(204)101

N of Kelso N to N of N Jct 200 - SB

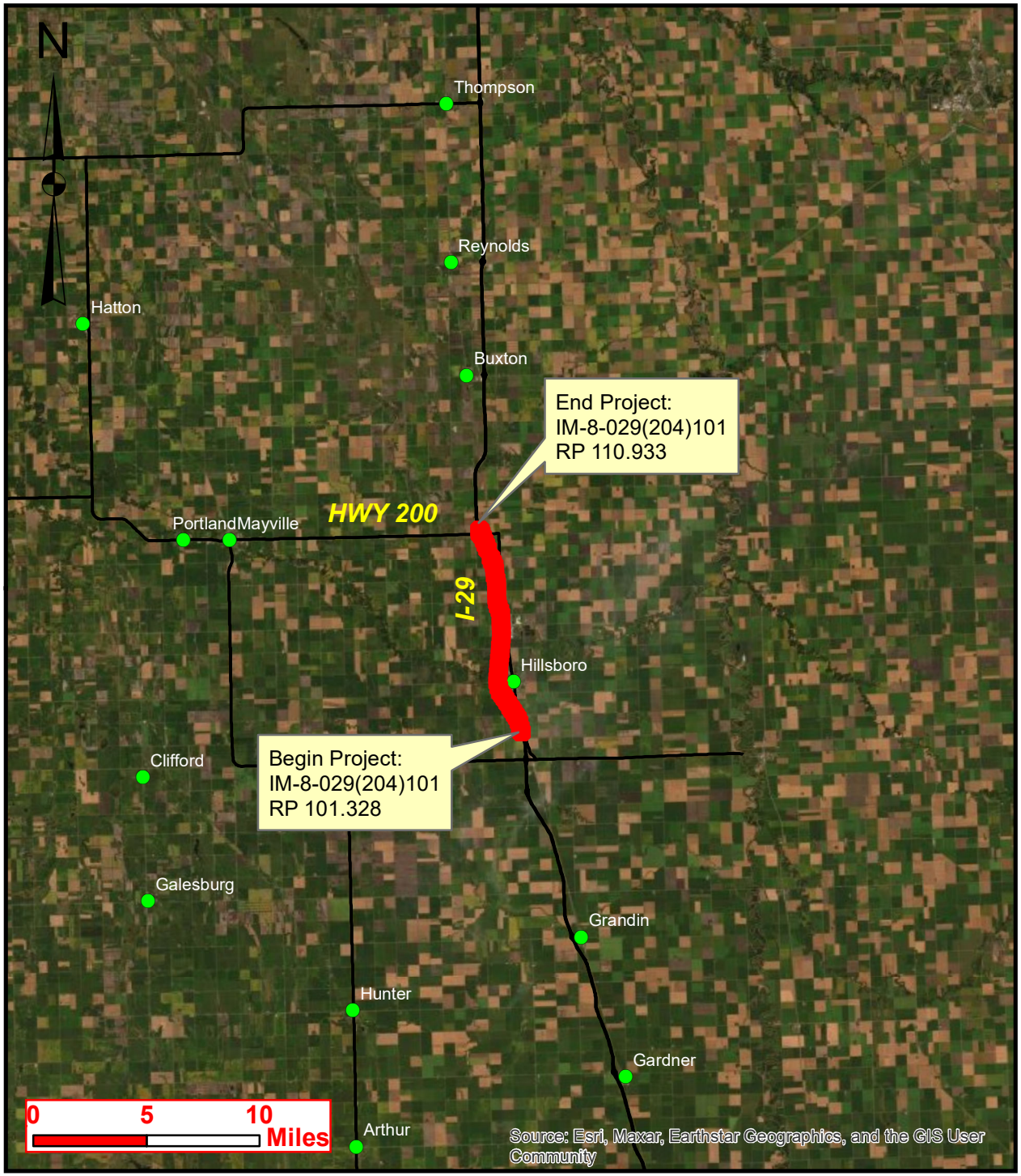
CERTIFICATION

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of North Dakota. This document was originally issued and sealed by Colter Schwagler, Registration number PE-27747 on 12/8/2022 and the original document is stored at the North Dakota Department of Transportation.



Project Location

Project: IM-8-029(204)101
PCN: 23103
Scope: Reconstruction
Location: RP 101.328 to RP 110.933



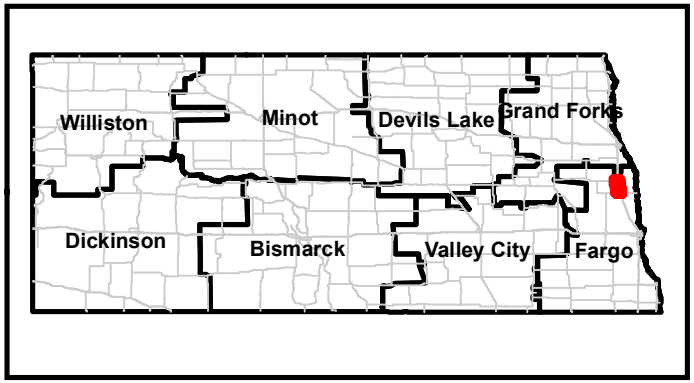


Table of Contents

Introduction 1
Maintenance Review 1
Summary of Soil Investigation 2
Summary of Soil Analysis 3
  Soil Sample Distribution 3
Design Recommendations 4
  Design Information 5
  Plan Notes 5

List of Figures

Figure 1 - Soil Sample Distribution 3

List of Tables

Table 1 – Identified Maintenance Areas 1
Table 2 – Boring Locations Summary 2

Appendices

Appendix A – Soil Classification
Appendix B – Maintenance Review and Subsurface Investigation Scope
Appendix C – Boring Locations
Appendix D – Summary of Soils Analysis
Appendix E – Lab Results

Introduction

Location: I-29, N of Kelso N to N of N Jct 200 - SB
Reference Points: 101.328 to 110.933
Project Length: 9.605
Proposed Project Scope: Reconstruction
Investigation Scope: 1000' Intervals and Identified Maintenance Areas

Maintenance Review

Date of Maintenance Review: 03/23/2021
Materials and Research Person Conducting the Review: Jamie Naumann
Maintenance Person Conducting Review: Brian Aune

Table 1 – Identified Maintenance Areas

Location RP + Feet	Distress Identified	Maintenance Comments	Drilling Required
101+2997 to 101+3058	Broken Slab	Fixed last three years consistently goes bad	No
104+2885 to 104+3300	Broken Slab	Fixed last year, still bad	No
110+3500	Broken Slab	Fixed two years ago been fine since	No
110+4300 to 110+5200 (Ramp)	Bituminous Patch	Asphalt patched yearly, high volume of heavy loaded semis	Yes

Summary of Soil Investigation

The soil investigation was completed on 6/29/2022. The investigation consisted of 51 borings.

Table 2 – Boring Locations Summary

Boring Location	Pavement Distress	Justification for Boring	Boring Depth	Boring Locations/Comments
101+1732 to 110+4914	-	Reconstruction	5 feet	Conduct borings at 1000' intervals along the project limits. A total number of approximately 47 borings.
110+4300 to 110+5200	Bituminous Patch	Identified Maintenance area	10 feet	Conduct 3 boring in distressed area and one boring on either side approximately 100 feet away. A total number of 4 borings.

Maps of the boring locations are shown in Appendix C. The lab results are included in Appendix E.

Summary of Soil Analysis

Soil Sample Distribution

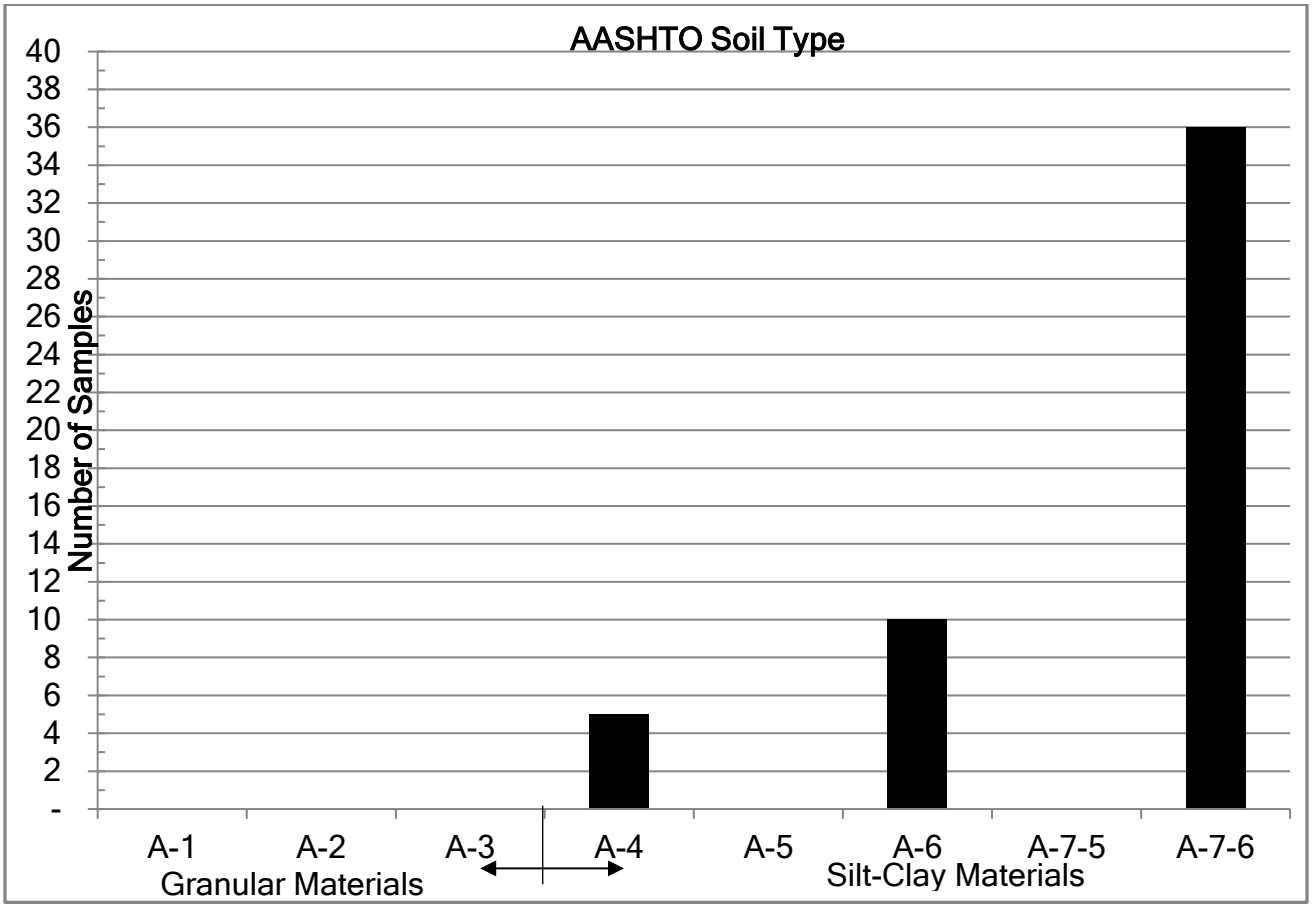


Figure 1 - Soil Sample Distribution

Design Recommendations

Project Limits – 101+1732 to 110+4914: The soils within the project limits fall within the boundaries of prehistoric Lake Agassiz. These lake-deposited-soils are part of the Sherack formation. Within the Sherack formation the soils on this project transition from lean clays to fat clays. The soils are typical of the surrounding area and do not require additional subgrade mitigation. However, to facilitate construction we recommend placing Geosynthetic Geogrid (Type G) on top of the existing subgrade.

Identified Maintenance Area – 110+4300 to 110+5200 (RAMP): The soils within the identified maintenance area transition from silt to lean clay. There is a change in soil type that would in indicate that the subgrade is contributing to the roadway distress at this location. Therefore, it is recommended to subcut this maintenance area from top of existing pavement to a depth of 36” at RP 110+4300 to RP 110+5200.

Design Information

Pipe Replacement: If any centerline pipes are replaced, contact the Geotechnical Section for pipe backfill detail.

Compaction Method: T-99

Subgrade Prep: None

Subcut Recommendations:

Location RP + Feet	Length	Depth
110+4300 to 110+5200	900’	36”

Table 3 – Subcut Recommendations

Calculate the subcut quantity based on the lengths and depths as shown in Table 3 above and adhere to the guidelines stated below.

> **Remarks:** Replace the removed material with Class 5 aggregate and line the excavation with Geosynthetic Geogrid (Type G) in accordance with NDDOT Specification 709.

Drainage: None

Plan Notes

None

The recommendations in this report are based on the scope specified in the Introduction. If the scope of work, vertical profile or horizontal alignment is changed, in either the conceptual phase or the design phase, the Geotechnical Engineer must be notified as soon as possible to ensure that there is adequate geotechnical information addressing these areas.

APPENDIX A

SOIL CLASSIFICATION

AASHTO Classification System

Table 5.1. AASHTO Classification System

General Classification	*Granular materials (35% or less passing No. 200 Sieve (0.075 mm)*							*Silt-clay Materials More than 35% passing No. 200 Sieve (0.075 mm)*			
Group Classification	*A—1*		*A—3*	*A—2*				*A—4*	*A—5*	*A—6*	*A—7*
	A—1—a	*A—1—b*		*A—2—4*	*A—2—5*	*A—2—6*	*A—2—7*				*A—7—5 A—7—6*
(*a*) Sieve Analysis: Percent Passing											
(*i*) 2.00 mm (No. 10)	50 max										
(*ii*) 0.425 mm (No. 40)	30 max	50 max	51 min								
(*iii*) 0.075 mm (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min
(*b*) Characteristics of fraction passing 0.425 mm (No. 40)											
(*i*) Liquid limit				40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min
(*ii*) Plasticity index	6 max		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min*
(*c*) Usual types of significant Constituent materials	Stone Fragments Gravel and sand		Fine Sand	Silty or Clayey Gravel Sand				Silty Soils		Clayey Soils	
(*d*) General rating as subgrade.	Excellent to Good							Fair to Poor			

* If plasticity index is equal to or less than (liquid Limit—30), the soil is A—7—5 (*i.e.* PL > 30%)
If plasticity index is greater than (Liquid Limit—30), the soil is A—7—6 (*i.e.* PL < 30%)

Unified Soil Classification System, USCS

Table 5.2 Unified Soil Classification System (Based on Material Passing 76.2-mm Sieve)

Criteria for assigning group symbols				Group symbol
Coarse-grained soils More than 50% of retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[a]	$C_u \geq 4$ and $1 \leq C_c \leq 3$[c]	GW
			$C_u < 4$ and/or $1 > C_c > 3$[c]	GP
		Gravels with Fines More than 12% fines[a,d]	$PI < 4$ or plots below "A" line (Figure 5.3)	GM
			$PI > 7$ and plots on or above "A" line (Figure 5.3)	GC
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[b]	$C_u \geq 6$ and $1 \leq C_c \leq 3$[c]	SW
			$C_u < 6$ and/or $1 > C_c > 3$[c]	SP
		Sands with Fines More than 12% fines[b,d]	$PI < 4$ or plots below "A" line (Figure 5.3)	SM
			$PI > 7$ and plots on or above "A" line (Figure 5.3)	SC
Fine-grained soils 50% or more passes No. 200 sieve	Silts and clays Liquid limit less than 50	Inorganic	$PI > 7$ and plots on or above "A" line (Figure 5.3)[e]	CL
			$PI < 4$ or plots below "A" line (Figure 5.3)[e]	ML
		Organic	$\frac{\text{Liquid limit — oven dried}}{\text{Liquid limit — not dried}} < 0.75$; see Figure 5.3; OL zone	OL
	Silts and clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line (Figure 5.3)	CH
			PI plots below "A" line (Figure 5.3)	MH
		Organic	$\frac{\text{Liquid limit — oven dried}}{\text{Liquid limit — not dried}} < 0.75$; see Figure 5.3; OH zone	OH
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor			Pt

[a] Gravels with 5 to 12% fine require dual symbols: GW-GM, GW-GC, GP-GM, GP-GC.

[b] Sands with 5 to 12% fines require dual symbols: SW-SM, SW-SC, SP-SM, SP-SC.

[c] $C_u = \frac{D_{60}}{D_{10}}$; $C_c = \frac{(D_{30})^2}{D_{60} \times D_{10}}$

[d] If $4 \leq PI \leq 7$ and plots in the hatched area in Figure 5.3, use dual symbol GC-GM or SC-SM.

[e] If $4 \leq PI \leq 7$ and plots in the hatched area in Figure 5.3, use dual symbol CL-ML.

Plasticity Chart :

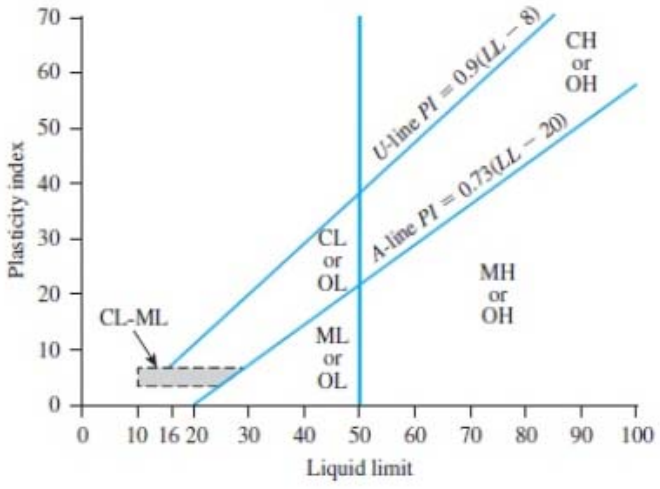


Table 7-12. Frost susceptibility classification of soils (NCHRP 1-37A).

Frost Group	Degree of Frost Susceptibility	Type of Soil	Percentage Finer than 0.075 mm (# 200) by wt.	Typical Soil Classification
F1	Negligible to low	Gravelly soils	3-10	GC, GP, GC-GM, GP-GM
F2	Low to medium	Gravelly soils	10-20	GM, GC-GM, GP-GM
		Sands	3-15	SW, SP, SM, SW-SM, SP-SM
F3	High	Gravelly Soils	Greater than 20	GM-GC
		Sands, except very fine silty sands	Greater than 15	SM, SC
		Clays PI>12	—	CL, CH
F4	Very high	All Silts	—	ML-MH
		Very Fine Silty Sands	Greater than 15	SM
		Clays PI<12	—	CL, CL-ML
		Varied clays and other fine grained, banded sediments	—	CL, ML, SM, CH

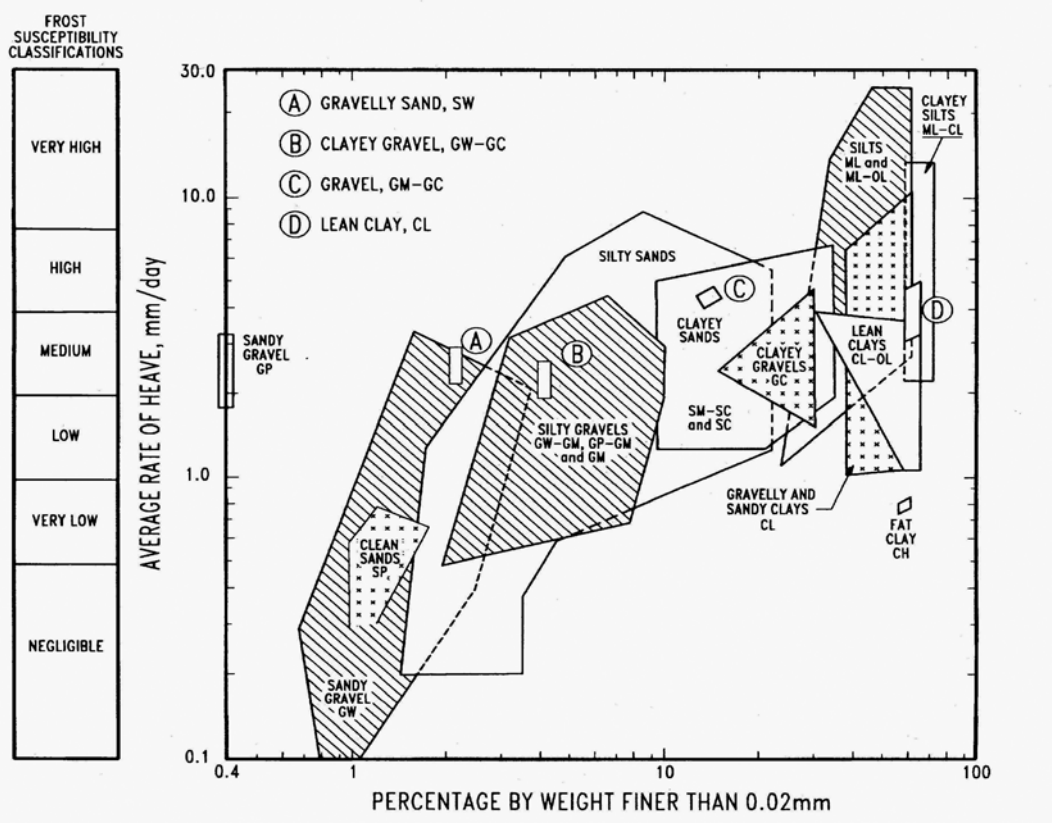


Figure 7-20. Average rate of heave versus % fines for natural soil gradations (Kaplar, 1974).

Frost Depth Map



APPENDIX B

MAINTENANCE REVIEW AND SUBSURFACE INVESTIGATION SCOPE

PAVEMENT EVALUATION LOG FOR LINEAR SOIL SURVEY

North Dakota Department of Transportation, Materials & Research

SFN 60472 (6-2017)

Sheet 1 of 1

Project Number	PCN	Date of Survey
IM-8-029(204)101	23103	03/23/2021

Section Maintenance Contact	Completed By
Brian Aune	Jamie Naumann

Highway Reference Points	Surface Types
101+0000 to 110+4198	Concrete

Location	Pavement Distress	Description	Maintenance Comment	Picture Number	Drilling Required
101+2997 to 101+3058	Broken Slab	Breaking and sinking slab with corner breaks.	Fixed last three years consistently goes bad	1-2	No
104+3300 to 104+2885	Broken Slab	Approach slabs sinking and breaking up.	Fixed last year still bad. Pictures 3-5 are on north side of bridge. Pictures 6-7 are on south side of bridge.	3-7	No
110+3500	Broken Slab	Breaking and sinking slab with corner breaks.	Fixed two years ago been fine since.	8	No
110+4300 to 110+5200 (RAMP)	Bituminous Patch	Breaking down annually.	Asphalt patched yearly. High volume of heavy loaded semis.	9-12	Yes

Comments



1
101+2997 to 101+3058



2
101+2997 to 101+3058



3
104+2885 to 104+3300



4
104+2885 to 104+3300



5
104+2885 to 104+3300



6
104+2885 to 104+3300



7
104+2885 to 104+3300



8
110+3500



9
110+4300 to 110+5200



10
110+4300 to 110+5200



11
110+4300 to 110+5200



12
110+4300 to 110+5200

APPENDIX C

BORING LOCATIONS

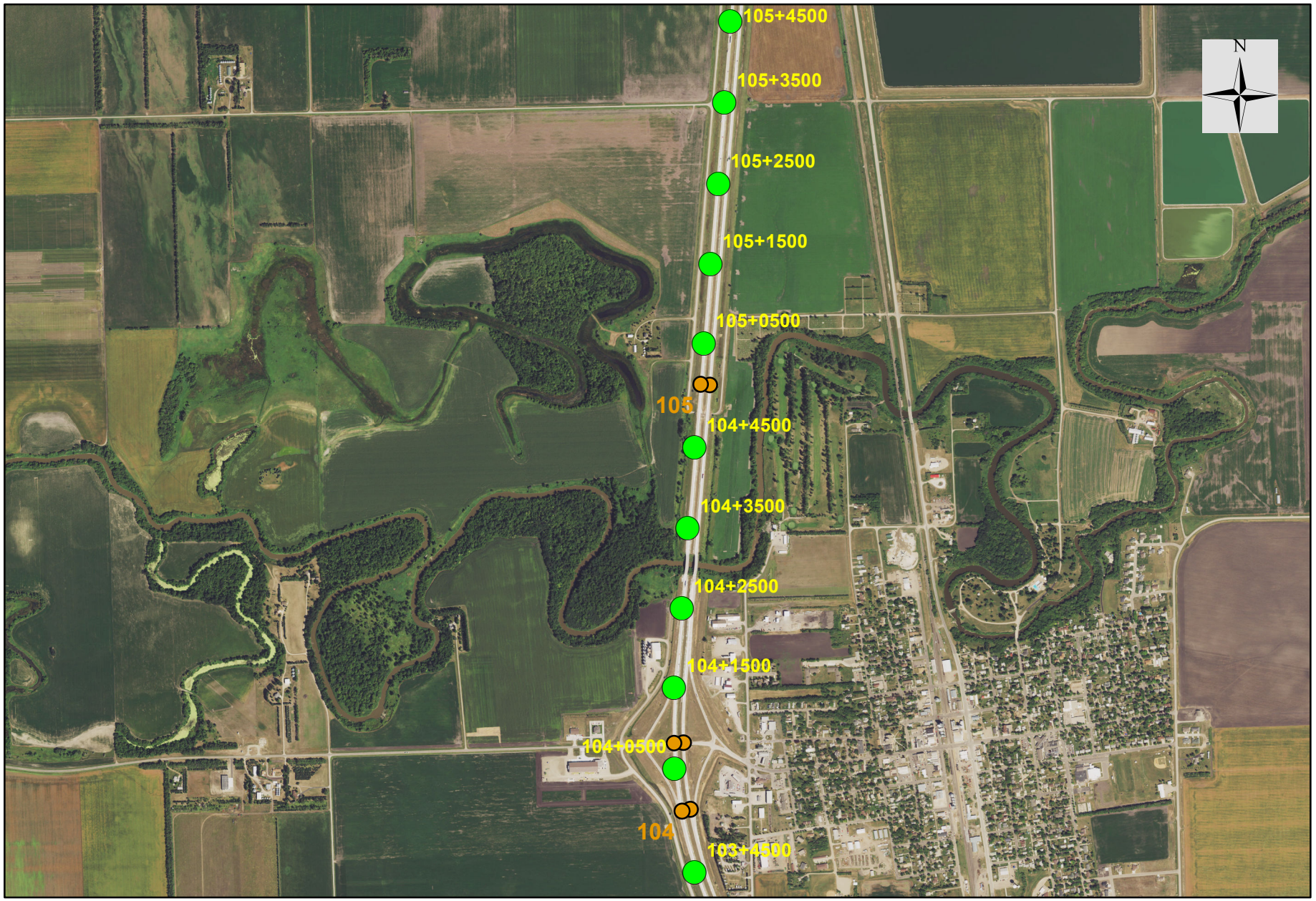


Legend

- Reference Point
- Boring Locations

0 2,250 4,500 Feet

Project Number: IM-8-029(204)101

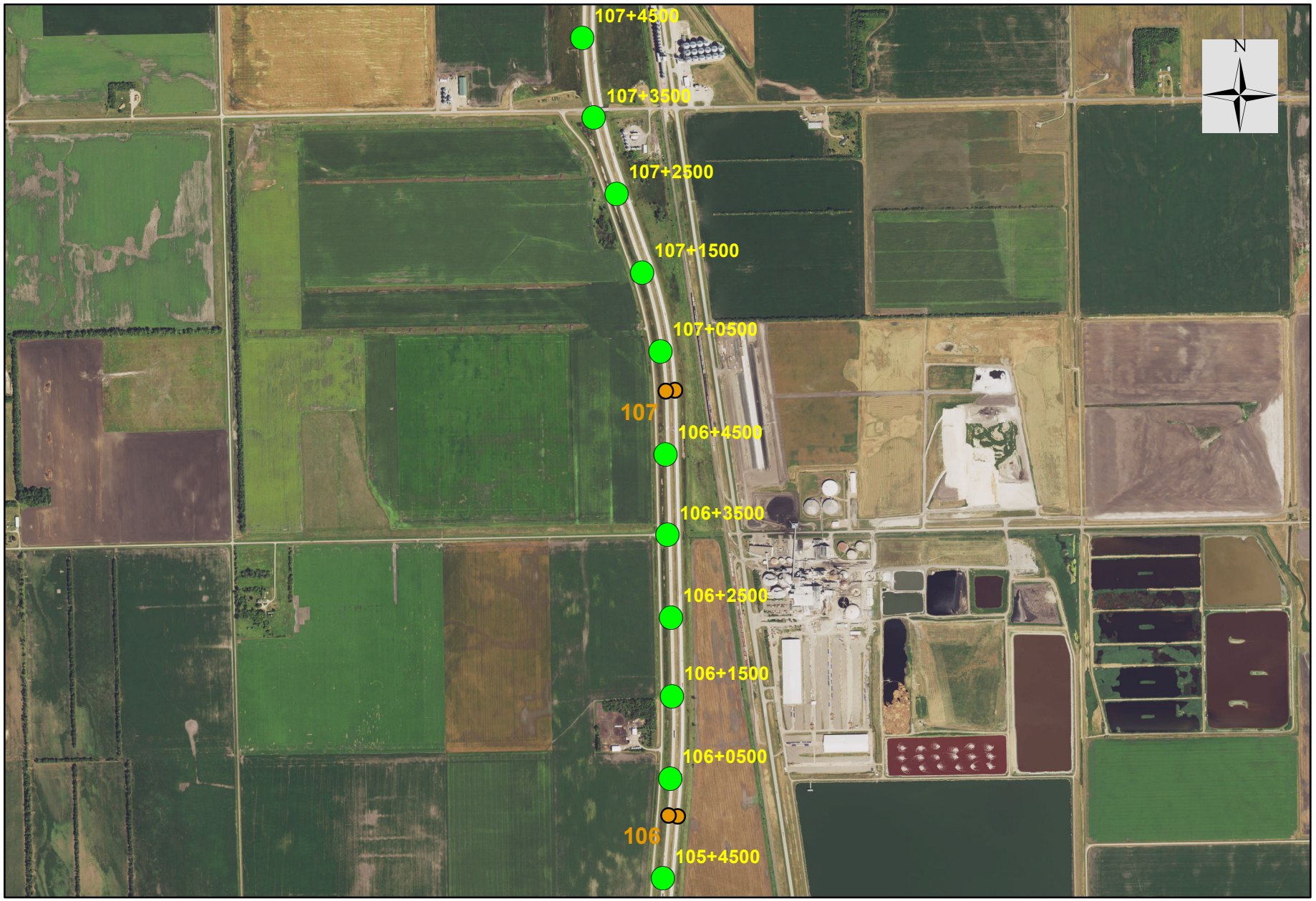


Legend

- Reference Point
- Boring Locations

0 2,250 4,500 Feet

Project Number: IM-8-029(204)101



Legend

- Reference Point
- Boring Locations

0 2,250 4,500 Feet

Project Number: IM-8-029(204)101



Legend

- Reference Point
- Boring Locations

0 2,250 4,500 Feet

Project Number: IM-8-029(204)101



Legend

- Reference Point
- Boring Locations

0 2,250 4,500 Feet

Project Number: IM-8-029(204)101

APPENDIX D

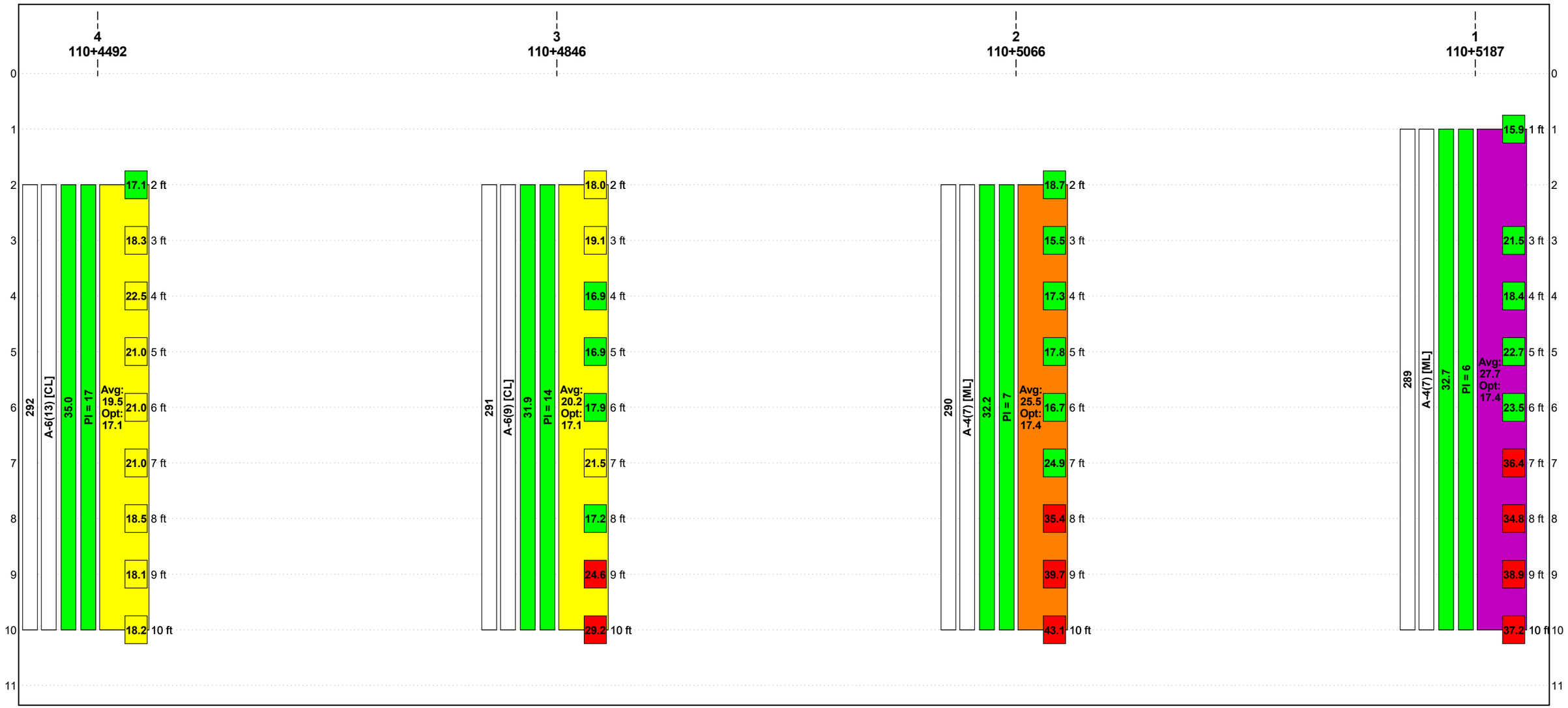
SUMMARY OF SOILS ANALYSIS

NDDOT North Dakota Department of Transportation

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

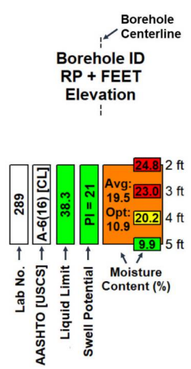
PROJECT NUMBER IM-8-029(204)101 **PCN** 23103

LOCATION Traill County

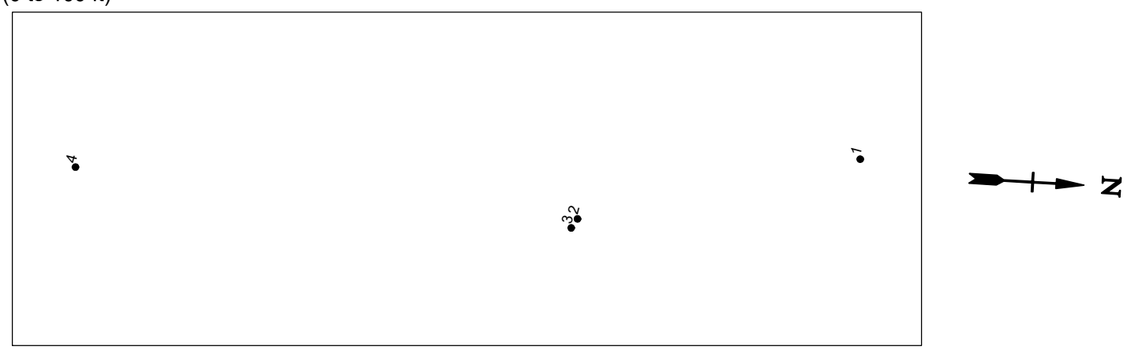


Boreholes Equally Spaced (0 to 100 ft)

LEGEND



Liquid Limit	LL<50	50<=LL<60	LL>=60	
Swell Potential	Low	Marginal	High	
Moisture Content	Below PL	0-5% Over PL	>5% Over PL	Non-Plastic
Avg. In-Place Moisture Content	MC < Opt	0<=MC<6% Over Opt	6<=MC<10% Over Opt	10<=MC<16% Over Opt	MC>16% Over Opt

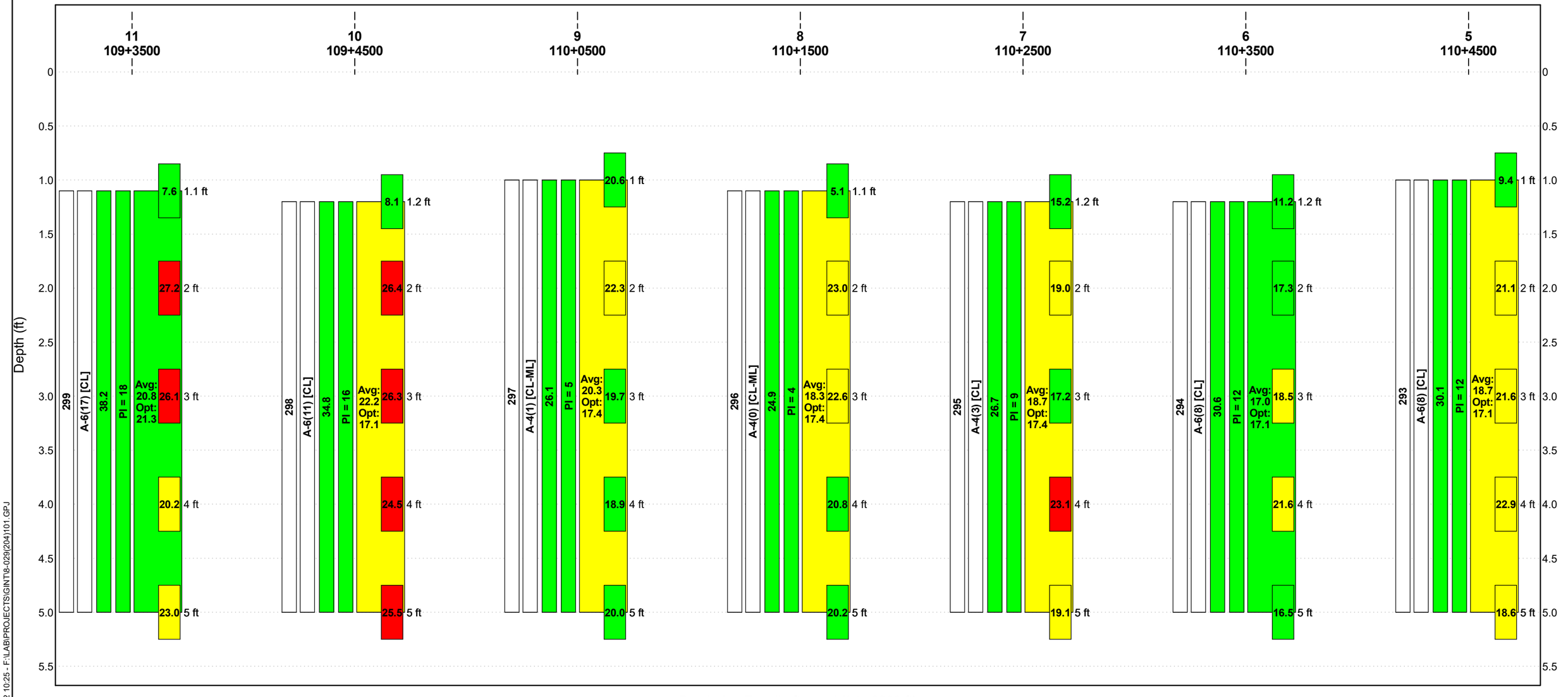


NDDOT_LINEARCOLORFENCE_DEPTH - 20171219.GDT - 11/1/22 10:25 - F:\LAB\PROJECTS\IGINT\8-029(204)101.GPJ

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

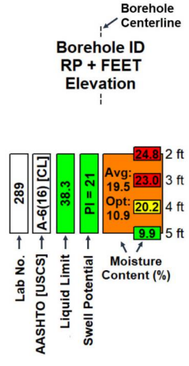
PROJECT NUMBER IM-8-029(204)101 **PCN** 23103

LOCATION Traill County

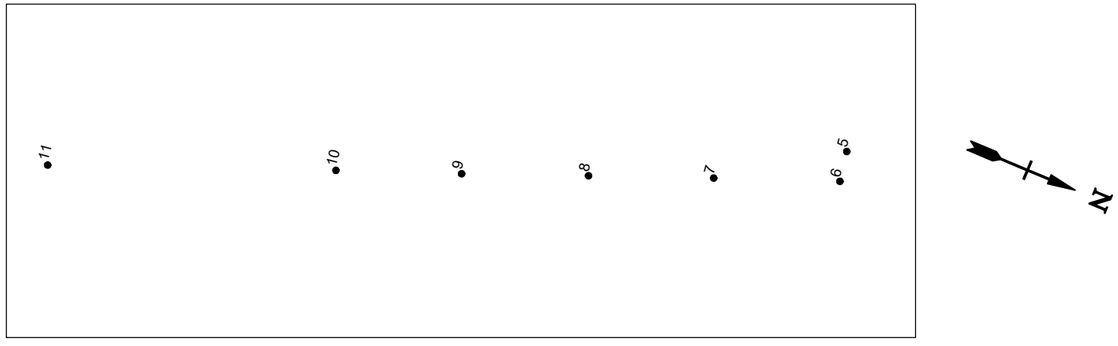


Boreholes Equally Spaced (0 to 2000 ft)

LEGEND



Liquid Limit	LL<50	50<=LL<60	LL>=60	
Swell Potential	Low	Marginal	High	
Moisture Content	Below PL	0-5% Over PL	>5% Over PL	Non-Plastic
Avg. In-Place Moisture Content	MC < Opt	0<=MC<6% Over Opt	6<=MC<10% Over Opt	10<=MC<16% Over Opt	MC>16% Over Opt

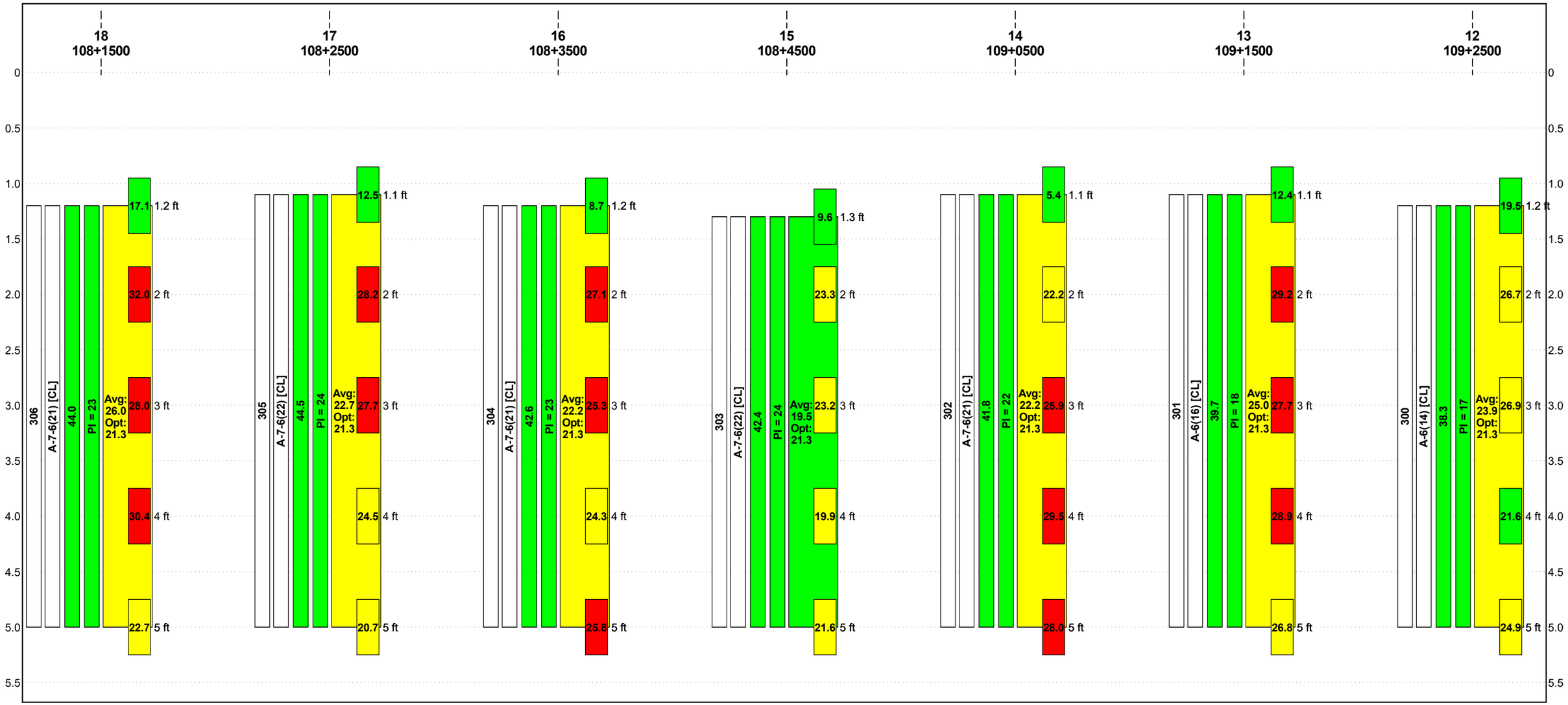


NDDOT_LINEARCOLORFENCE_DEPTH - 20171219.GDT - 11/1/22 10:25 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

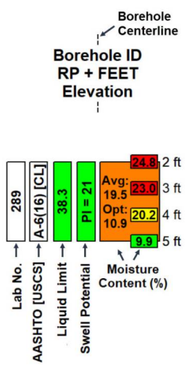
PROJECT NUMBER IM-8-029(204)101 **PCN** 23103

LOCATION Traill County

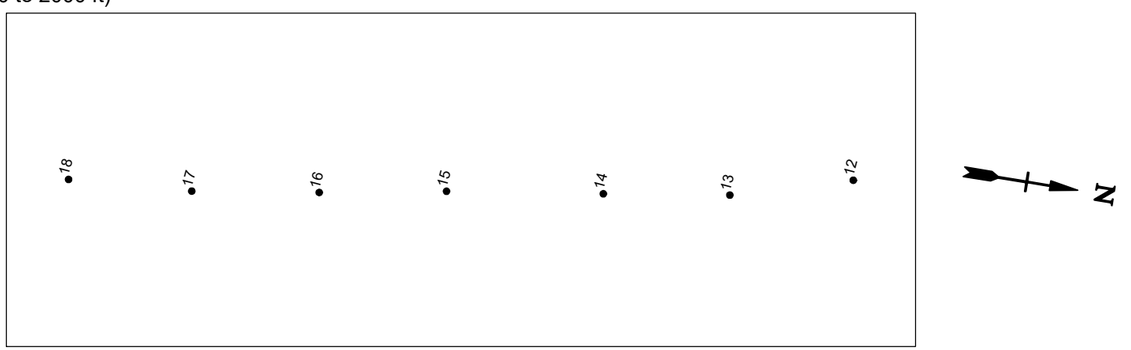


Boreholes Equally Spaced (0 to 2000 ft)

LEGEND



Liquid Limit	LL<50	50<=LL<60	LL>=60	
Swell Potential	Low	Marginal	High	
Moisture Content	Below PL	0-5% Over PL	>5% Over PL	Non-Plastic
Avg. In-Place Moisture Content	MC < Opt	0<=MC<6% Over Opt	6<=MC<10% Over Opt	10<=MC<16% Over Opt	MC>16% Over Opt



NDDOT_LINEARCOLORFENCE_DEPTH - 20171219.GDT - 11/1/22 10:26 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **PCN** 23103

LOCATION Traill County

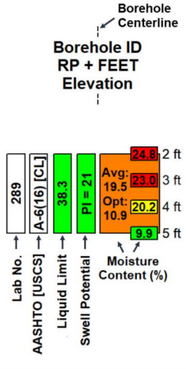
25	24	23	22	21	20	19
106+4500	107+0500	107+1500	107+2500	107+3500	107+4500	108+0500
313	312	311	310	309	308	307
A-7-6(24) [CL]	A-7-6(23) [CL]	A-6(12) [CL]	A-6(15) [CL]	A-7-6(24) [CL]	A-7-6(27) [CL]	A-7-6(35) [CH]
48.8	48.0	35.7	39.2	44.9	48.8	55.3
PI = 27	PI = 27	PI = 16	PI = 20	PI = 24	PI = 29	PI = 36
Avg: 23.8 Opt: 22.3	Avg: 23.9 Opt: 22.3	Avg: 23.9 Opt: 24.9	Avg: 25.2 Opt: 21.3	Avg: 23.6 Opt: 22.3	Avg: 23.5 Opt: 22.3	Avg: 25.1 Opt: 22.3
9.6 1.1 ft	10.9 1.1 ft	10.9 1.1 ft	12.4 1.2 ft	10.2 1.2 ft	7.1 1 ft	10.9 1.1 ft
27.9 2 ft	30.1 2 ft	27.5 2 ft	32.7 2 ft	29.5 2 ft	30.0 2 ft	32.8 2 ft
28.2 3 ft	32.3 3 ft	25.9 3 ft	24.6 3 ft	28.9 3 ft	28.4 3 ft	27.3 3 ft
28.9 4 ft	23.5 4 ft	22.5 4 ft	27.3 4 ft	29.2 4 ft	25.7 4 ft	28.0 4 ft
24.5 5 ft	22.6 5 ft	32.4 5 ft	29.0 5 ft	20.3 5 ft	26.4 5 ft	26.7 5 ft

Depth (ft)

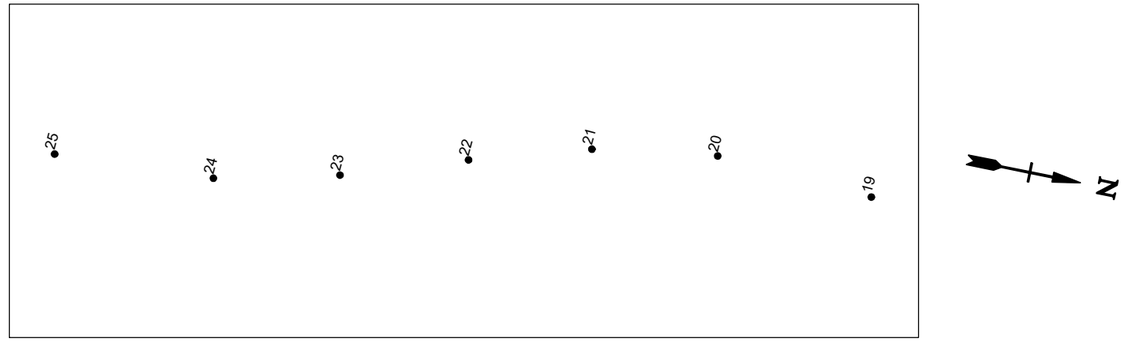
0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5

Boreholes Equally Spaced (0 to 2000 ft)

LEGEND



Liquid Limit	LL<50	50<=LL<60	LL>=60	
Swell Potential	Low	Marginal	High	
Moisture Content	Below PL	0-5% Over PL	>5% Over PL	Non-Plastic
Avg. In-Place Moisture Content	MC < Opt	0<=MC<6% Over Opt	6<=MC<10% Over Opt	10<=MC<16% Over Opt	MC>16% Over Opt

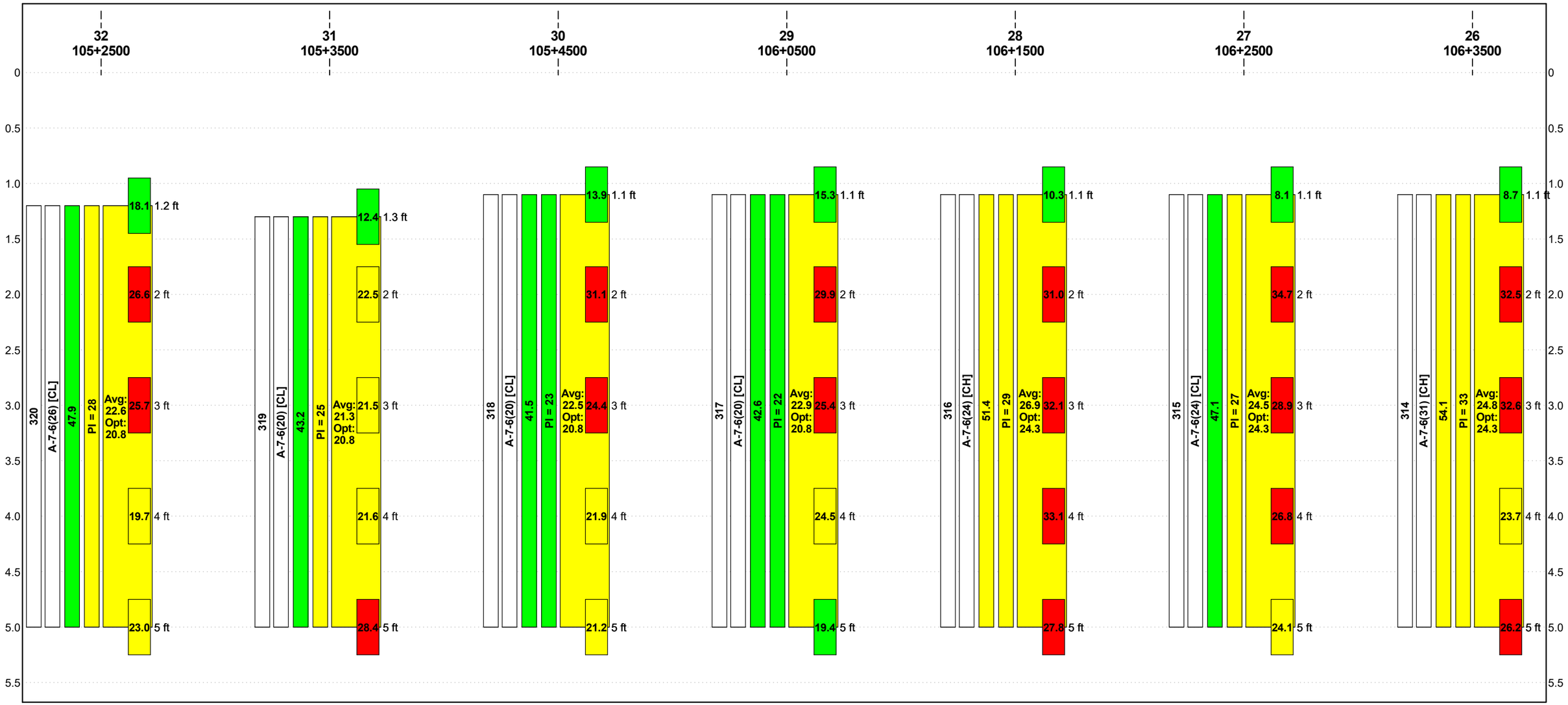


NDDOT_LINEARCOLORFENCE_DEPTH - 20171219.GDT - 12/5/22 14:48 - F:\LAB\PROJECTS\GINT\18-029(204)101.GPJ

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

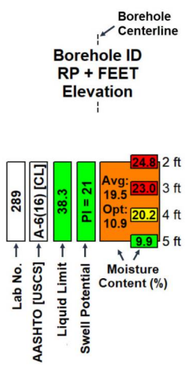
PROJECT NUMBER IM-8-029(204)101 **PCN** 23103

LOCATION Traill County

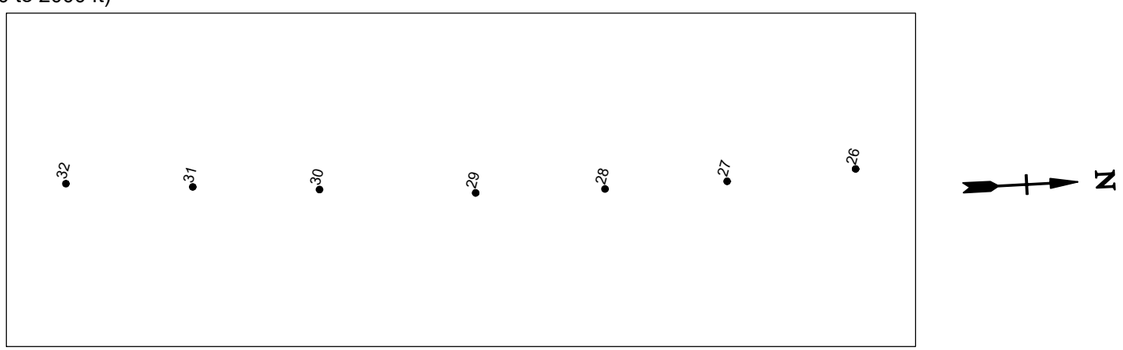


Boreholes Equally Spaced (0 to 2000 ft)

LEGEND



Liquid Limit	LL<50	50<=LL<60	LL>=60	
Swell Potential	Low	Marginal	High	
Moisture Content	Below PL	0-5% Over PL	>5% Over PL	Non-Plastic
Avg. In-Place Moisture Content	MC < Opt	0<=MC<6% Over Opt	6<=MC<10% Over Opt	10<=MC<16% Over Opt	MC>16% Over Opt



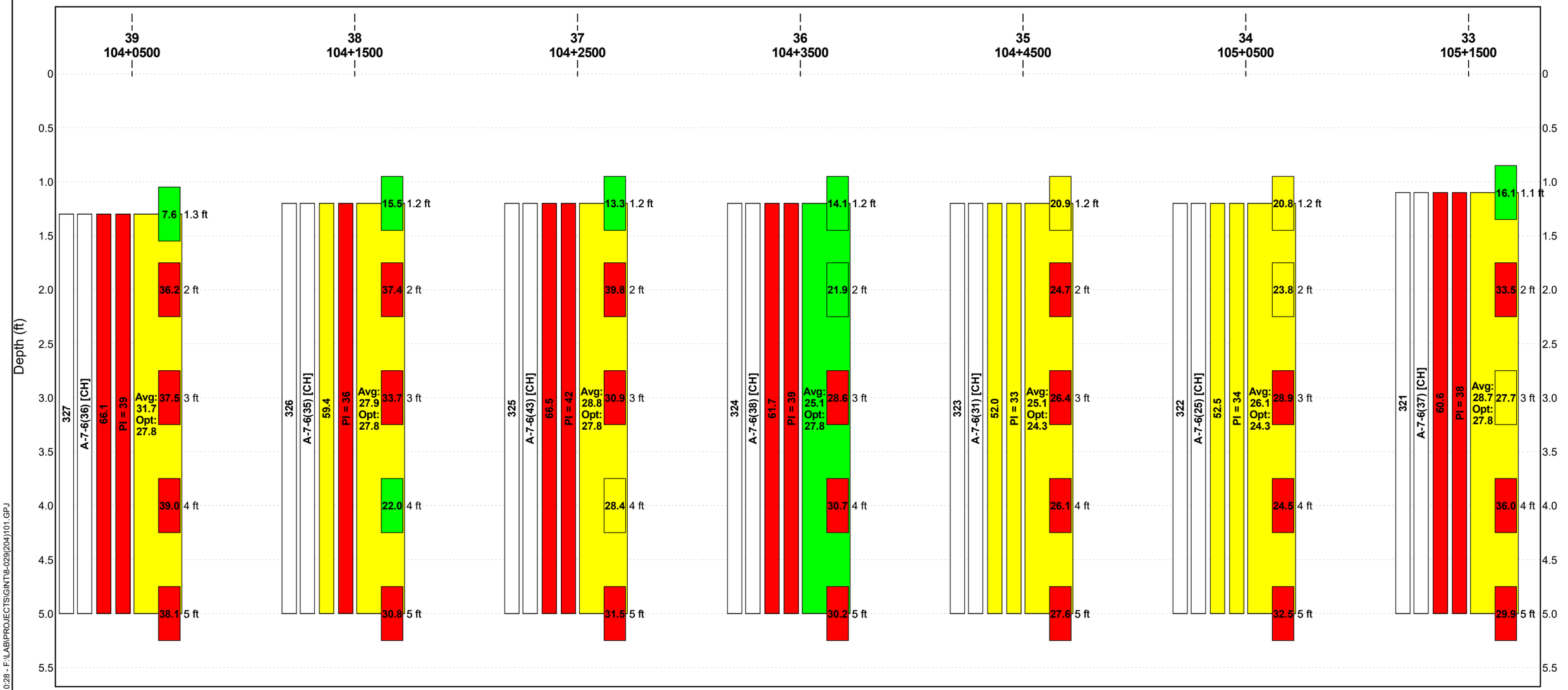
NDDOT_LINEARCOLORFENCE_DEPTH - 20171219.GDT - 11/1/22 10:27 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NDDOT North Dakota Department of Transportation

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

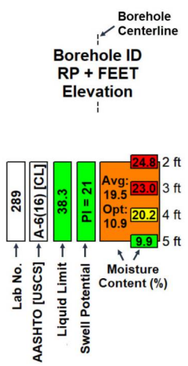
PROJECT NUMBER IM-8-029(204)101 **PCN** 23103

LOCATION Traill County

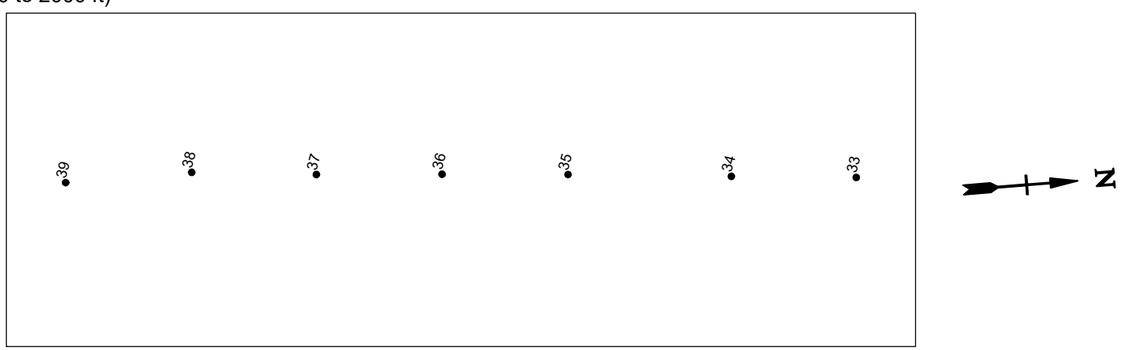


Boreholes Equally Spaced (0 to 2000 ft)

LEGEND



Liquid Limit	LL<50	50<=LL<60	LL>=60	
Swell Potential	Low	Marginal	High	
Moisture Content	Below PL	0-5% Over PL	>5% Over PL	Non-Plastic
Avg. In-Place Moisture Content	MC < Opt	0<=MC<6% Over Opt	6<=MC<10% Over Opt	10<=MC<16% Over Opt	MC>16% Over Opt



NDDOT_LINEARCOLORFENCE_DEPTH - 20171219.GDT - 11/1/22 10:28 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **PCN** 23103

LOCATION Traill County

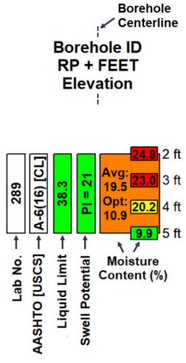
46	45	44	43	42	41	40
102+3500	102+4500	103+0500	103+1500	103+2500	103+3500	103+4500
334	333	332	331	330	329	328
A-7-6(41) [CH]	A-7-6(42) [CH]	A-7-6(38) [CH]	A-7-6(44) [CH]	A-7-6(44) [CH]	A-7-6(39) [CH]	A-7-6(36) [CH]
LL = 63.9	LL = 65.0	LL = 60.9	LL = 67.3	LL = 66.4	LL = 63.6	LL = 62.3
PI = 40	PI = 41	PI = 38	PI = 43	PI = 43	PI = 38	PI = 38
Avg: 26.5 Opt: 27	Avg: 27.3 Opt: 27	Avg: 27.4 Opt: 28.8	Avg: 27.5 Opt: 28.8	Avg: 27.7 Opt: 28.8	Avg: 27.9 Opt: 28.8	Avg: 28.1 Opt: 28.8
13.2 1.2 ft	7.9 1.4 ft	13.2 1.2 ft	12.8 1.2 ft	18.5 1.2 ft	9.3 1.2 ft	7.6 1.2 ft
32.8 2 ft	32.0 2 ft	31.5 2 ft	29.9 2 ft	30.5 2 ft	36.3 2 ft	34.4 2 ft
35.3 3 ft	34.8 3 ft	31.2 3 ft	31.7 3 ft	35.8 3 ft	34.6 3 ft	34.0 3 ft
24.7 4 ft	35.3 4 ft	32.9 4 ft	31.7 4 ft	27.4 4 ft	30.3 4 ft	34.0 4 ft
26.6 5 ft	26.4 5 ft	28.1 5 ft	31.5 5 ft	26.2 5 ft	28.9 5 ft	30.3 5 ft

Depth (ft)

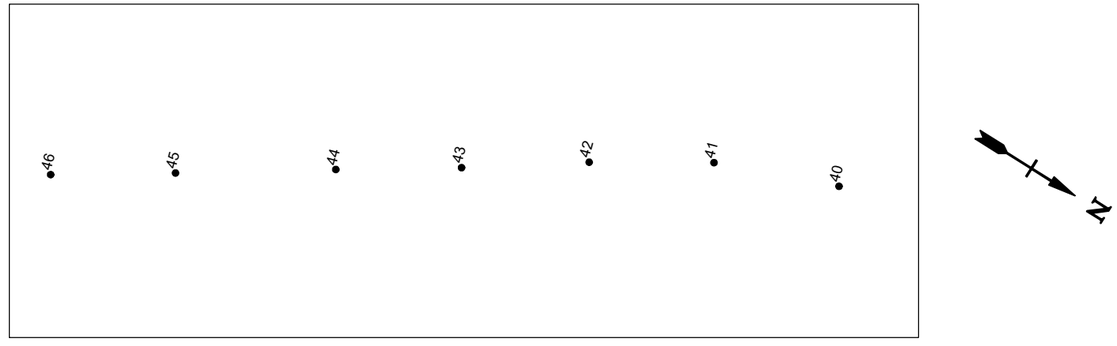
0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5

Boreholes Equally Spaced (0 to 2000 ft)

LEGEND



Liquid Limit	LL<50	50<=LL<60	LL>=60	
Swell Potential	Low	Marginal	High	
Moisture Content	Below PL	0-5% Over PL	>5% Over PL	Non-Plastic
Avg. In-Place Moisture Content	MC < Opt	0<=MC<6% Over Opt	6<=MC<10% Over Opt	10<=MC<16% Over Opt	MC>16% Over Opt

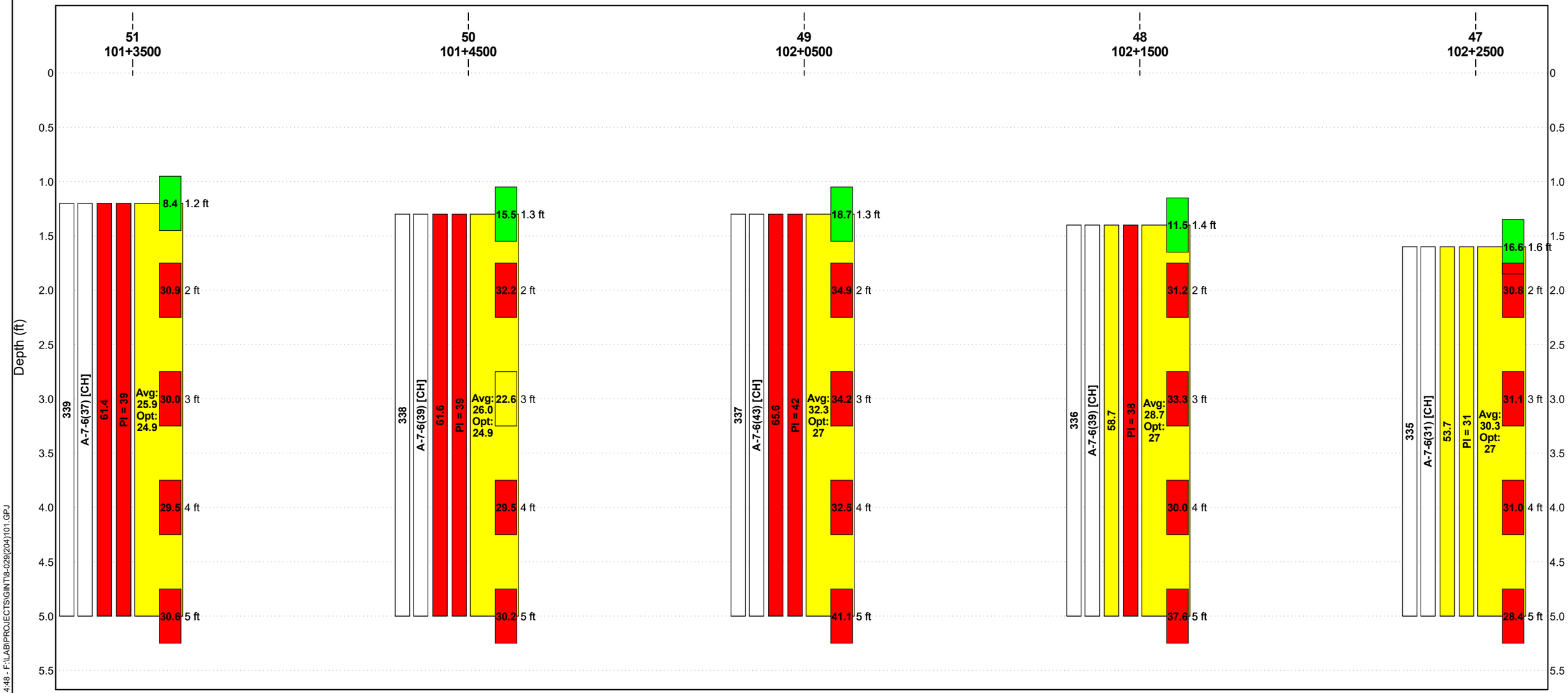


NDDOT_LINEARCOLORFENGE_DEPTH - 20171219.GDT - 11/1/22 10:28 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

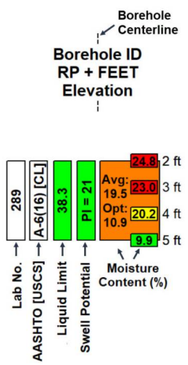
PROJECT NUMBER IM-8-029(204)101 **PCN** 23103

LOCATION Traill County

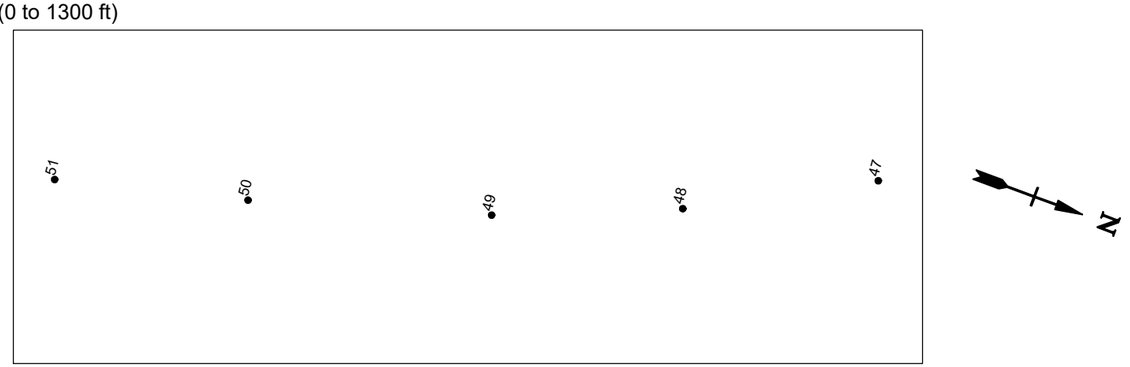


Boreholes Equally Spaced (0 to 1300 ft)

LEGEND



Liquid Limit	LL<50	50<=LL<60	LL>=60	
Swell Potential	Low	Marginal	High	
Moisture Content	Below PL	0-5% Over PL	>5% Over PL	Non-Plastic
Avg. In-Place Moisture Content	MC < Opt	0<=MC<6% Over Opt	6<=MC<10% Over Opt	10<=MC<16% Over Opt	MC>16% Over Opt



NDDOT_LINEARCOLORFENCE_DEPTH - 20171219.GDT - 12/5/22 14:48 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

APPENDIX E

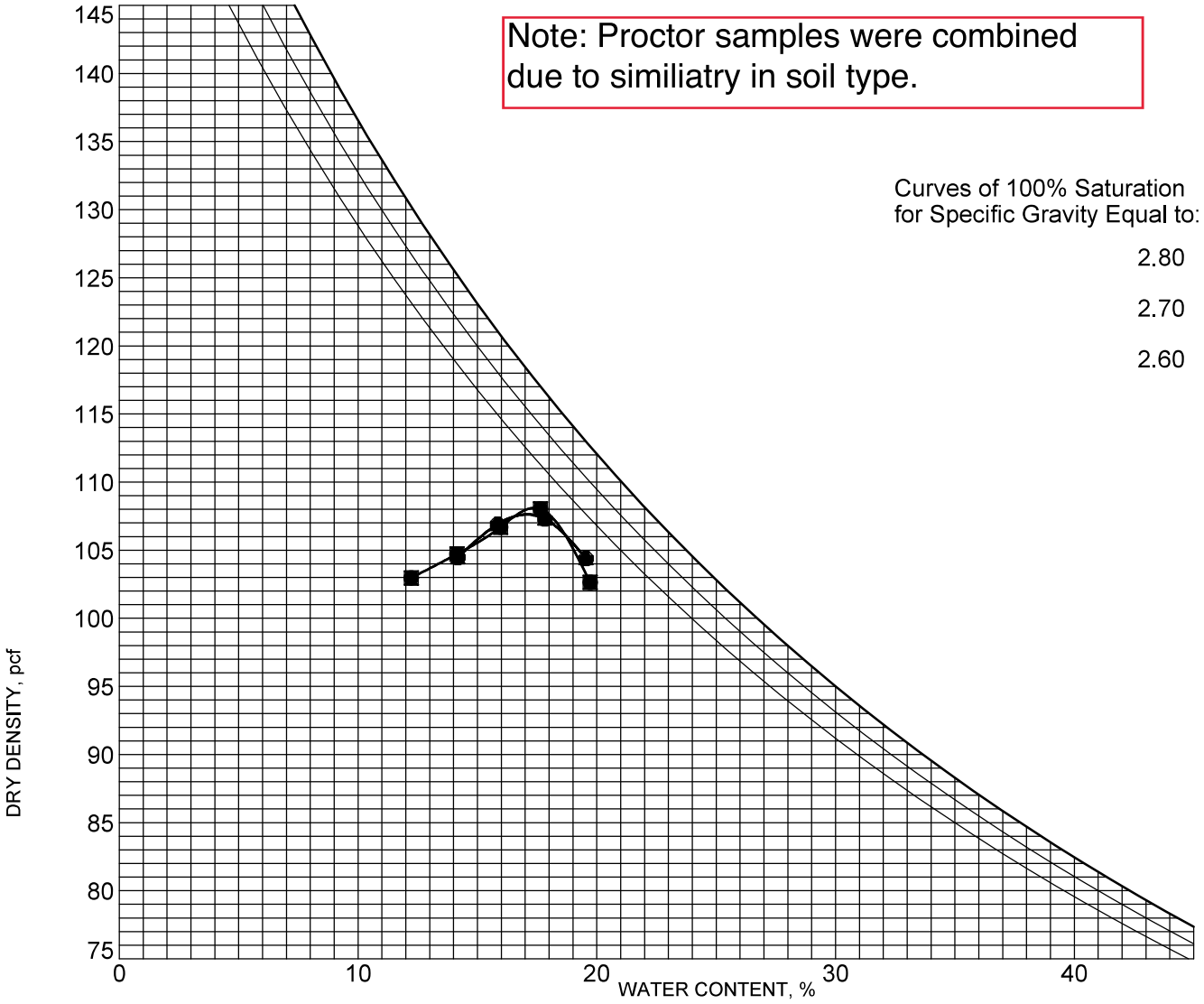
LAB RESULTS

MOISTURE-DENSITY RELATIONSHIP

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



BOREHOLE		DEPTH	AASHTO Classification	USCS Description
●	1	1.0	A-4 (7)	SILT(ML)
⊠	2	2.0	A-4 (7)	SILT(ML)
▲	3	2.0	A-6 (9)	LEAN CLAY with SAND(CL)
★	4	2.0	A-6 (13)	LEAN CLAY with SAND(CL)
⊙	5	1.0	A-6 (8)	LEAN CLAY with SAND(CL)
✿	6	1.2	A-6 (8)	LEAN CLAY with SAND(CL)

BOREHOLE		DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	1	1.0	AASHTO T-99 Method A	33	27	6	108.1 PCF	17.4 %
⊠	2	2.0	AASHTO T-99 Method A	32	25	7	108.1 PCF	17.4 %
▲	3	2.0	AASHTO T-99 Method A	32	18	14	107.6 PCF	17.1 %
★	4	2.0	AASHTO T-99 Method A	35	18	17	107.6 PCF	17.1 %
⊙	5	1.0	AASHTO T-99 Method A	30	18	12	107.6 PCF	17.1 %
✿	6	1.2	AASHTO T-99 Method A	31	18	13	107.6 PCF	17.1 %

COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

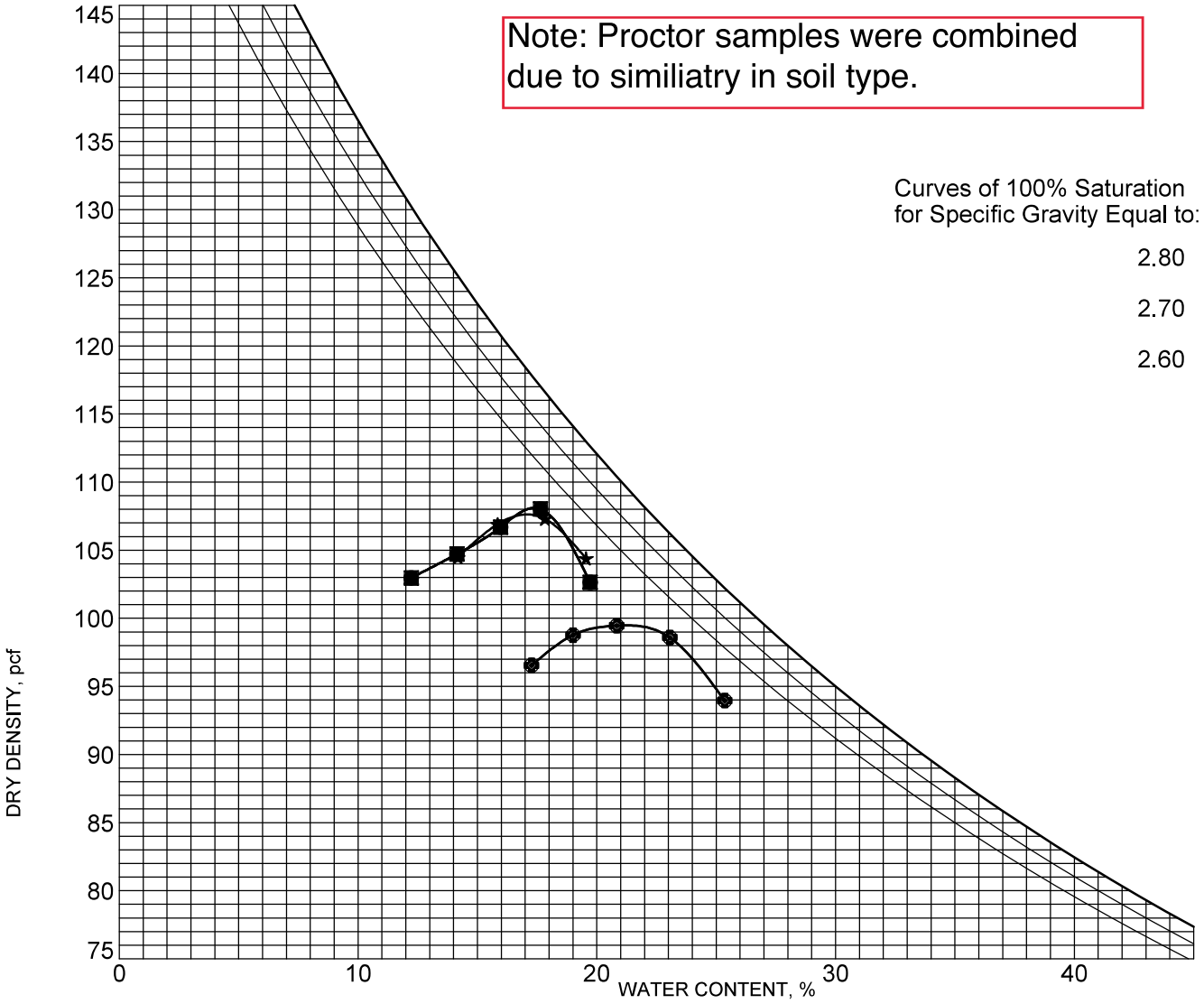
MOISTURE-DENSITY RELATIONSHIP

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103

Note: Proctor samples were combined due to similiatry in soil type.



BOREHOLE		DEPTH	AASHTO Classification	USCS Description
●	7	1.2	A-4 (3)	SANDY LEAN CLAY(CL)
⊠	8	1.1	A-4 (0)	SANDY SILTY CLAY(CL-ML)
▲	9	1.0	A-4 (1)	SANDY SILTY CLAY(CL-ML)
★	10	1.2	A-6 (11)	LEAN CLAY with SAND(CL)
⊙	11	1.1	A-6 (17)	LEAN CLAY(CL)
✿	12	1.2	A-6 (14)	LEAN CLAY(CL)

BOREHOLE		DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	7	1.2	AASHTO T-99 Method A	27	18	9	108.1 PCF	17.4 %
⊠	8	1.1	AASHTO T-99 Method A	25	21	4	108.1 PCF	17.4 %
▲	9	1.0	AASHTO T-99 Method A	26	21	5	108.1 PCF	17.4 %
★	10	1.2	AASHTO T-99 Method A	35	19	16	107.6 PCF	17.1 %
⊙	11	1.1	AASHTO T-99 Method A	38	20	18	99.5 PCF	21.3 %
✿	12	1.2	AASHTO T-99 Method A	38	22	16	99.5 PCF	21.3 %

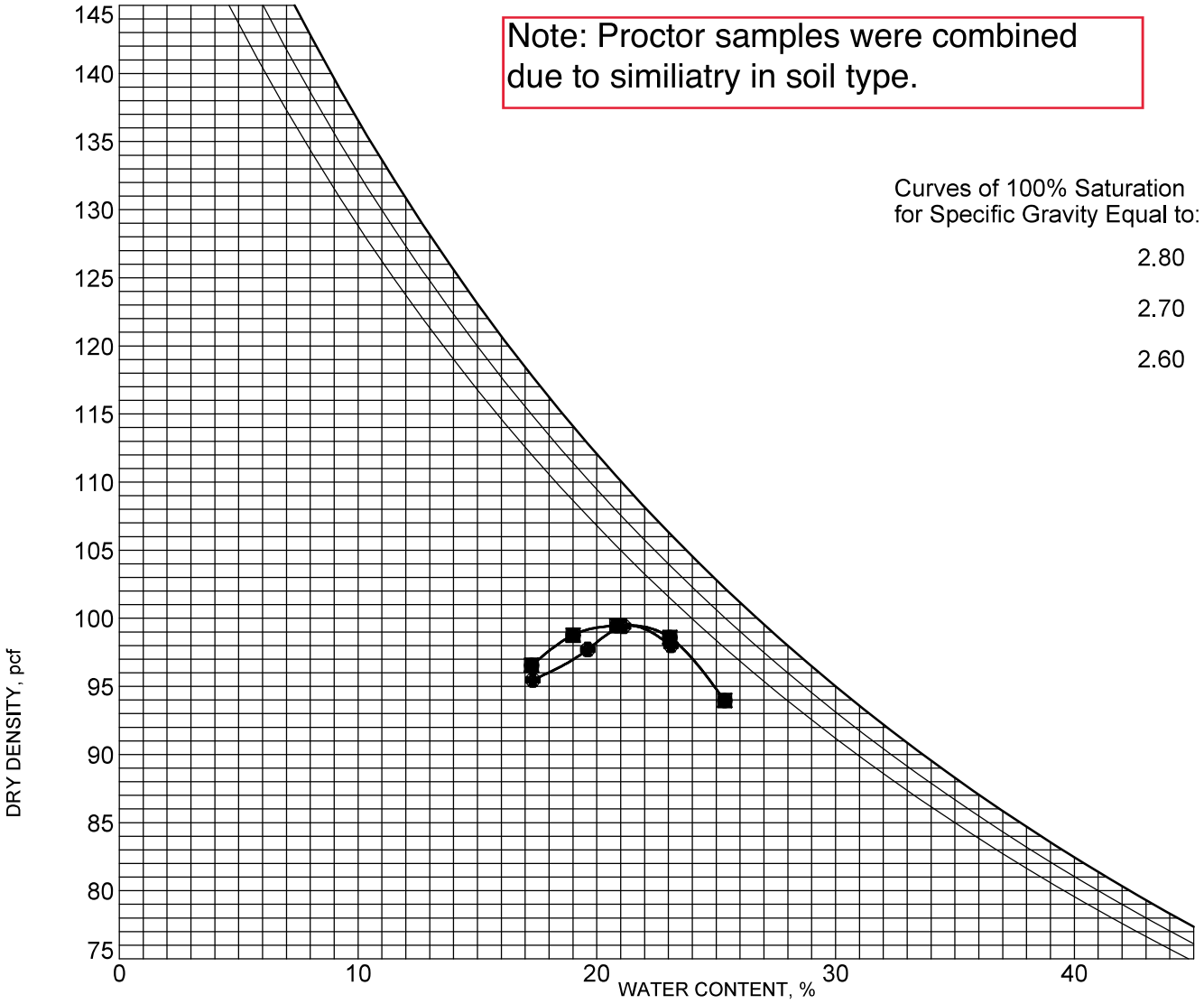
COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

MOISTURE-DENSITY RELATIONSHIP

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



Note: Proctor samples were combined due to similiatry in soil type.

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

	BOREHOLE	DEPTH	AASHTO Classification	USCS Description
●	13	1.1	A-6 (16)	LEAN CLAY(CL)
⊠	14	1.1	A-7-6 (21)	LEAN CLAY(CL)
▲	15	1.3	A-7-6 (22)	LEAN CLAY(CL)
★	16	1.2	A-7-6 (21)	LEAN CLAY(CL)
⊙	17	1.1	A-7-6 (22)	LEAN CLAY(CL)
✪	18	1.2	A-7-6 (21)	LEAN CLAY(CL)

	BOREHOLE	DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	13	1.1	AASHTO T-99 Method A	40	22	18	99.5 PCF	21.3 %
⊠	14	1.1	AASHTO T-99 Method A	42	20	22	99.5 PCF	21.3 %
▲	15	1.3	AASHTO T-99 Method A	42	19	23	99.5 PCF	21.3 %
★	16	1.2	AASHTO T-99 Method A	43	20	23	99.5 PCF	21.3 %
⊙	17	1.1	AASHTO T-99 Method A	44	20	24	99.5 PCF	21.3 %
✪	18	1.2	AASHTO T-99 Method A	44	21	23	99.5 PCF	21.3 %

COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

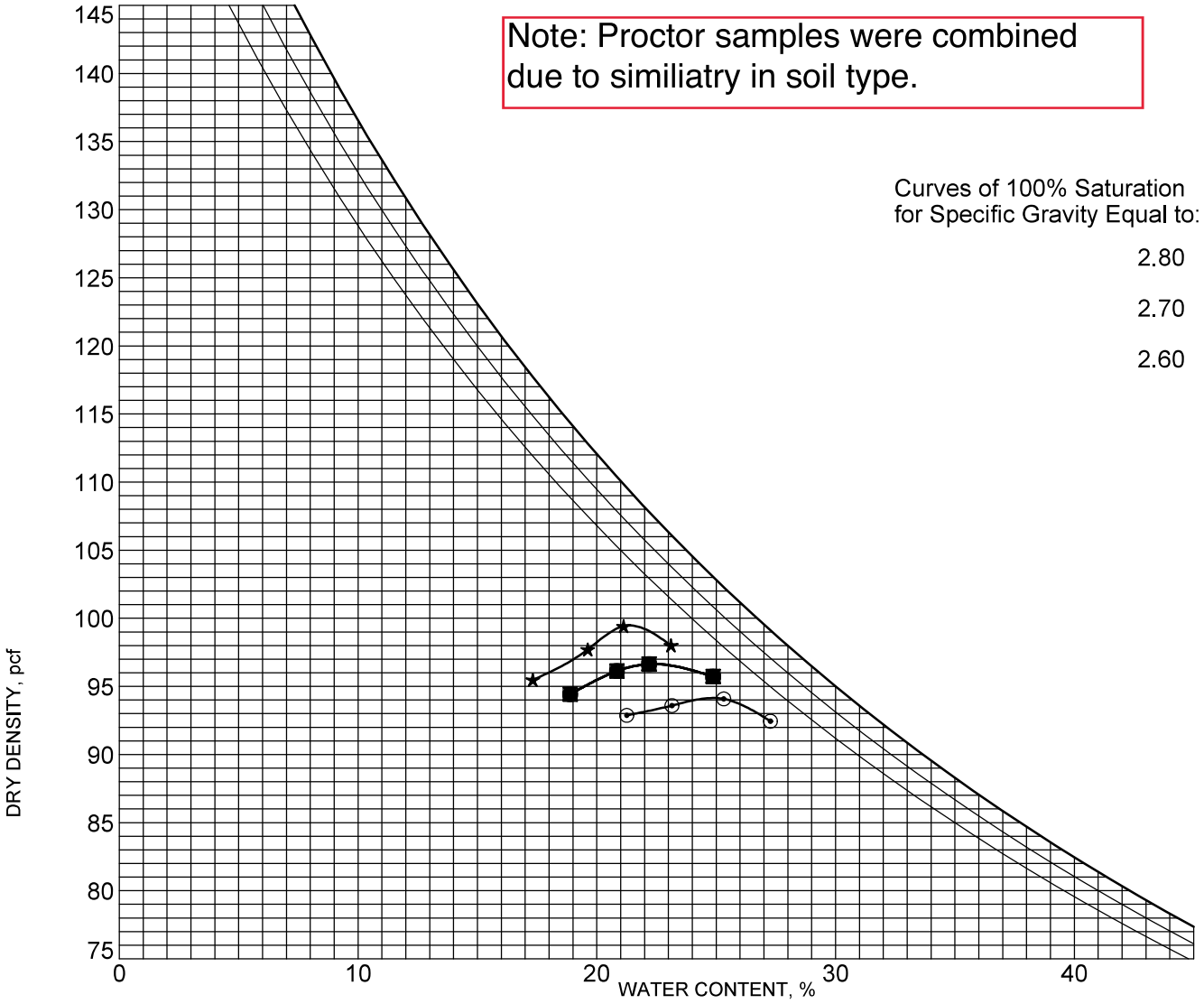
MOISTURE-DENSITY RELATIONSHIP

NDDOT North Dakota Department of Transportation

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



BOREHOLE		DEPTH	AASHTO Classification	USCS Description
●	19	1.1	A-7-6 (35)	FAT CLAY(CH)
⊠	20	1.0	A-7-6 (27)	LEAN CLAY(CL)
▲	21	1.2	A-7-6 (24)	LEAN CLAY(CL)
★	22	1.2	A-6 (15)	LEAN CLAY with SAND(CL)
⊙	23	1.1	A-6 (12)	LEAN CLAY with SAND(CL)
✿	24	1.1	A-7-6 (23)	LEAN CLAY with SAND(CL)

BOREHOLE		DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	19	1.1	AASHTO T-99 Method A	55	19	36	96.6 PCF	22.3 %
⊠	20	1.0	AASHTO T-99 Method A	49	19	30	96.6 PCF	22.3 %
▲	21	1.2	AASHTO T-99 Method A	45	21	24	96.6 PCF	22.3 %
★	22	1.2	AASHTO T-99 Method A	39	20	19	99.5 PCF	21.3 %
⊙	23	1.1	AASHTO T-99 Method A	36	19	17	94.2 PCF	24.9 %
✿	24	1.1	AASHTO T-99 Method A	48	21	27	96.6 PCF	22.3 %

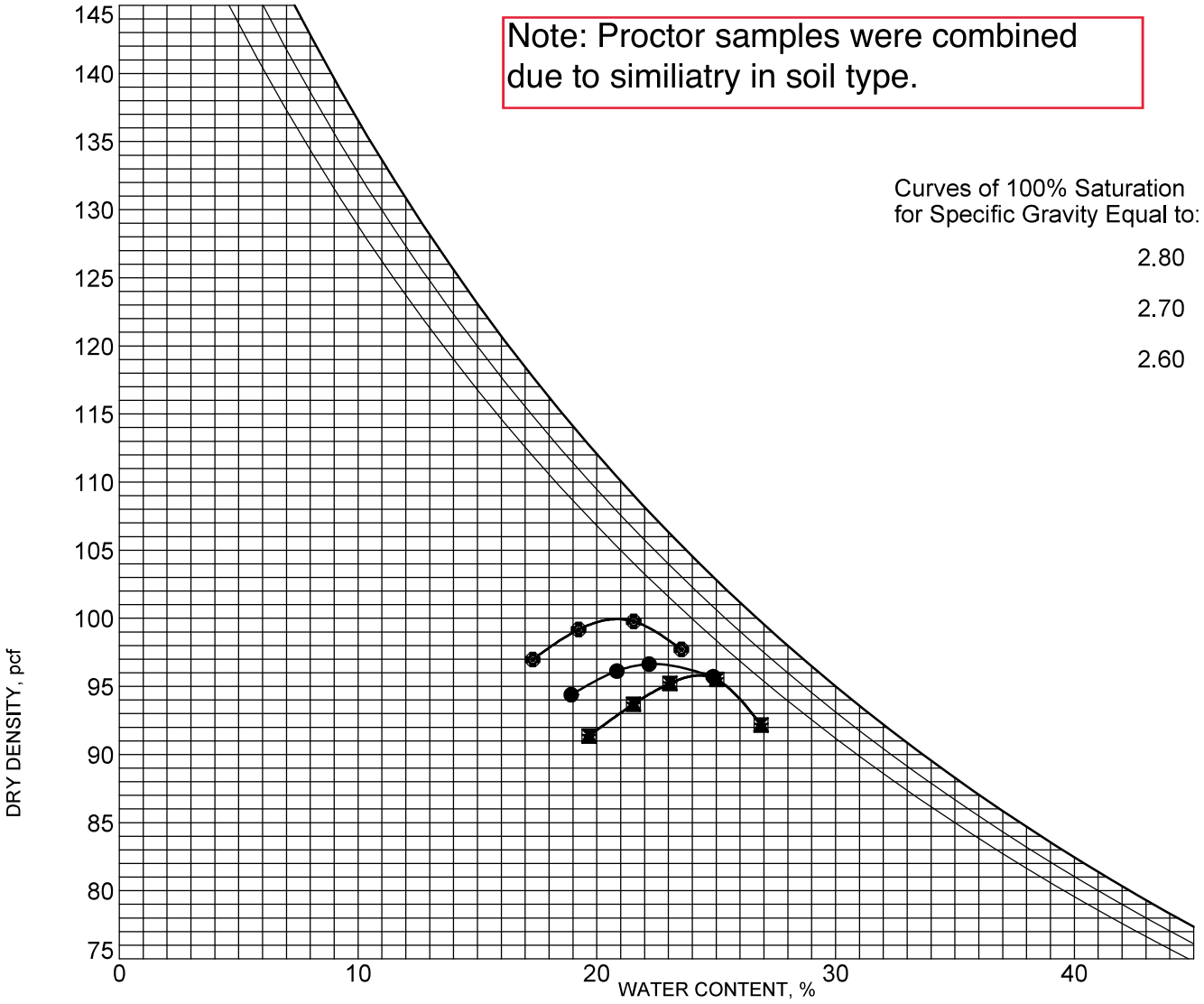
COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

MOISTURE-DENSITY RELATIONSHIP

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



BOREHOLE		DEPTH	AASHTO Classification	USCS Description
●	25	1.1	A-7-6 (24)	LEAN CLAY with SAND(CL)
⊠	26	1.1	A-7-6 (31)	FAT CLAY(CH)
▲	27	1.1	A-7-6 (24)	LEAN CLAY(CL)
★	28	1.1	A-7-6 (24)	FAT CLAY with SAND(CH)
⊙	29	1.1	A-7-6 (20)	LEAN CLAY with SAND(CL)
✿	30	1.1	A-7-6 (20)	LEAN CLAY(CL)

BOREHOLE		DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	25	1.1	AASHTO T-99 Method A	49	22	27	96.6 PCF	22.3 %
⊠	26	1.1	AASHTO T-99 Method A	54	21	33	95.8 PCF	24.3 %
▲	27	1.1	AASHTO T-99 Method A	47	20	27	95.8 PCF	24.3 %
★	28	1.1	AASHTO T-99 Method A	51	22	29	95.8 PCF	24.3 %
⊙	29	1.1	AASHTO T-99 Method A	43	20	23	99.9 PCF	20.8 %
✿	30	1.1	AASHTO T-99 Method A	42	19	23	99.9 PCF	20.8 %

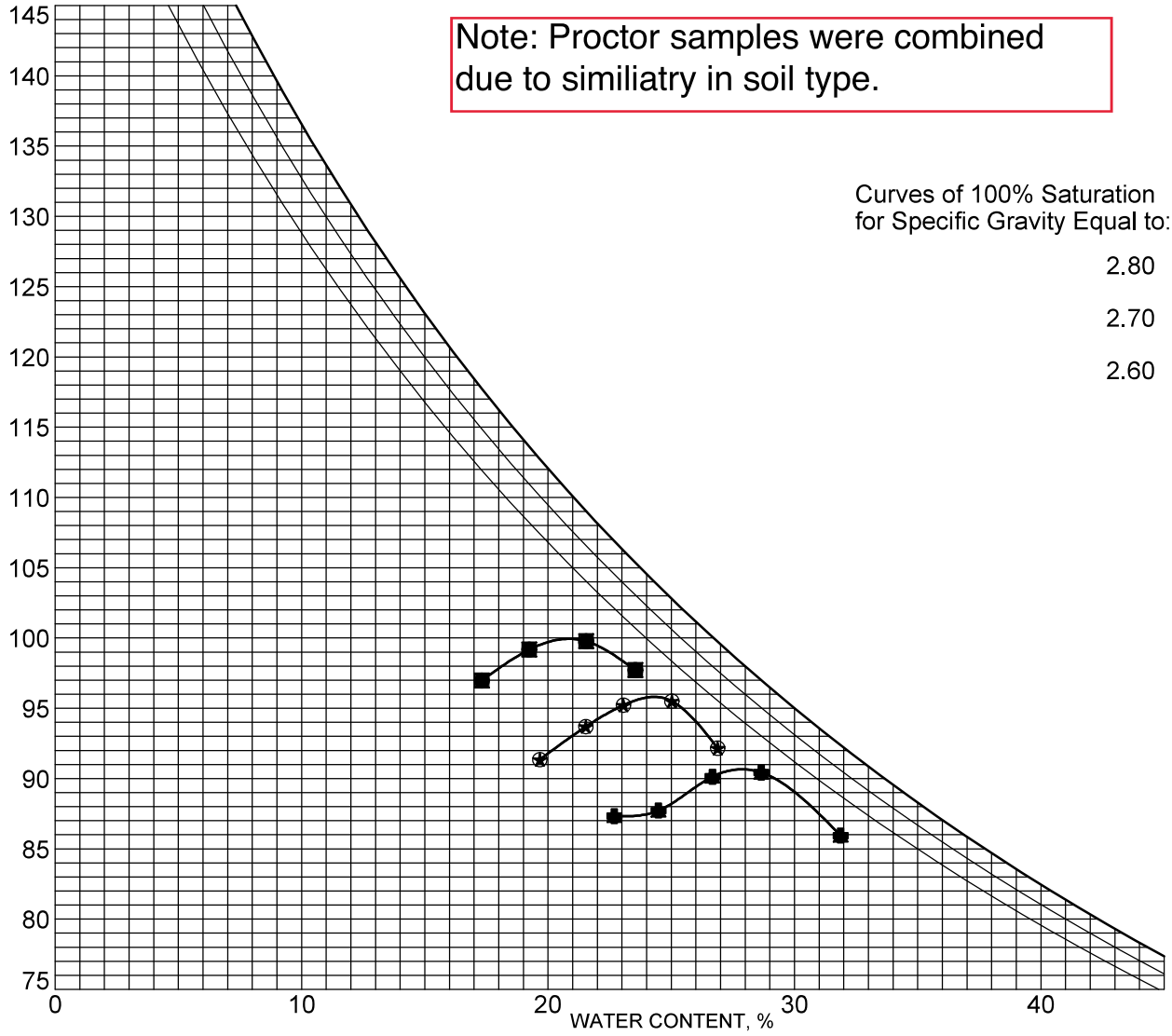
COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

MOISTURE-DENSITY RELATIONSHIP

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



BOREHOLE		DEPTH	AASHTO Classification	USCS Description
●	31	1.3	A-7-6 (20)	LEAN CLAY with SAND(CL)
⊠	32	1.2	A-7-6 (26)	LEAN CLAY(CL)
▲	33	1.1	A-7-6 (37)	FAT CLAY(CH)
★	34	1.2	A-7-6 (25)	FAT CLAY with SAND(CH)
⊙	35	1.2	A-7-6 (31)	FAT CLAY(CH)
✪	36	1.2	A-7-6 (38)	FAT CLAY(CH)

BOREHOLE		DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	31	1.3	AASHTO T-99 Method A	43	18	25	99.9 PCF	20.8 %
⊠	32	1.2	AASHTO T-99 Method A	48	19	29	99.9 PCF	20.8 %
▲	33	1.1	AASHTO T-99 Method A	61	23	38	90.7 PCF	27.8 %
★	34	1.2	AASHTO T-99 Method A	52	19	33	95.8 PCF	24.3 %
⊙	35	1.2	AASHTO T-99 Method A	52	19	33	95.8 PCF	24.3 %
✪	36	1.2	AASHTO T-99 Method A	62	22	40	90.7 PCF	27.8 %

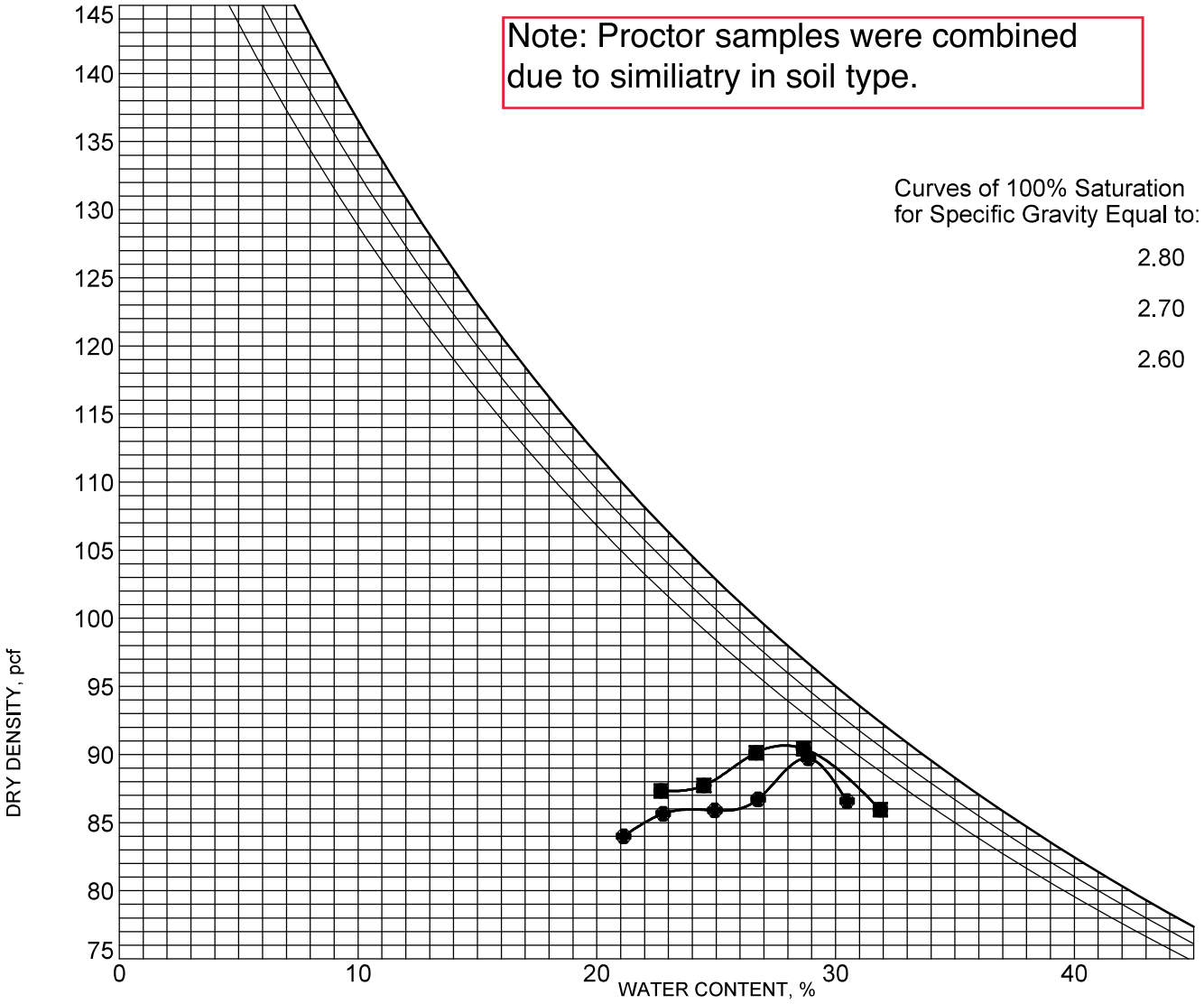
COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

MOISTURE-DENSITY RELATIONSHIP

NDDOT North Dakota Department of Transportation
NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



BOREHOLE		DEPTH	AASHTO Classification	USCS Description
●	37	1.2	A-7-6 (43)	FAT CLAY(CH)
⊠	38	1.2	A-7-6 (35)	FAT CLAY(CH)
▲	39	1.3	A-7-6 (36)	FAT CLAY with SAND(CH)
★	40	1.2	A-7-6 (36)	FAT CLAY(CH)
⊙	41	1.2	A-7-6 (39)	FAT CLAY(CH)
✿	42	1.2	A-7-6 (44)	FAT CLAY(CH)

BOREHOLE		DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	37	1.2	AASHTO T-99 Method A	67	25	42	90.7 PCF	27.8 %
⊠	38	1.2	AASHTO T-99 Method A	59	23	36	90.7 PCF	27.8 %
▲	39	1.3	AASHTO T-99 Method A	66	27	39	90.7 PCF	27.8 %
★	40	1.2	AASHTO T-99 Method A	62	25	37	89.7 PCF	28.8 %
⊙	41	1.2	AASHTO T-99 Method A	64	26	38	89.7 PCF	28.8 %
✿	42	1.2	AASHTO T-99 Method A	66	23	43	89.7 PCF	28.8 %

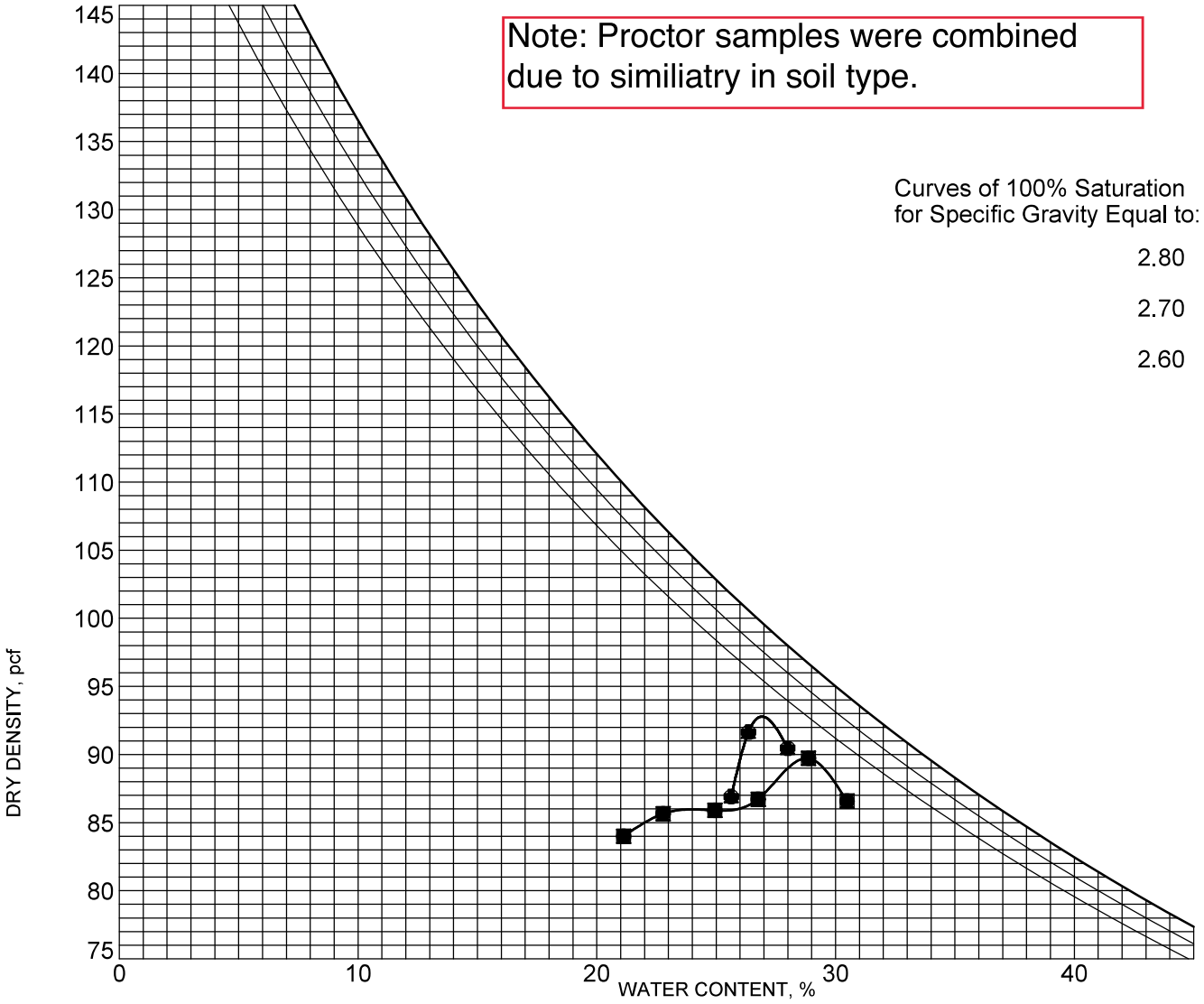
COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

MOISTURE-DENSITY RELATIONSHIP

NDDOT North Dakota Department of Transportation
NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



BOREHOLE		DEPTH	AASHTO Classification	USCS Description
●	43	1.2	A-7-6 (44)	FAT CLAY(CH)
⊠	44	1.2	A-7-6 (38)	FAT CLAY(CH)
▲	45	1.4	A-7-6 (42)	FAT CLAY(CH)
★	46	1.2	A-7-6 (41)	FAT CLAY(CH)
⊙	47	1.6	A-7-6 (31)	FAT CLAY(CH)
✿	48	1.4	A-7-6 (39)	FAT CLAY(CH)

BOREHOLE		DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	43	1.2	AASHTO T-99 Method A	67	24	43	89.7 PCF	28.8 %
⊠	44	1.2	AASHTO T-99 Method A	61	23	38	89.7 PCF	28.8 %
▲	45	1.4	AASHTO T-99 Method A	65	24	41	92.8 PCF	27.0 %
★	46	1.2	AASHTO T-99 Method A	64	23	41	92.8 PCF	27.0 %
⊙	47	1.6	AASHTO T-99 Method A	54	23	31	92.8 PCF	27.0 %
✿	48	1.4	AASHTO T-99 Method A	59	20	39	92.8 PCF	27.0 %

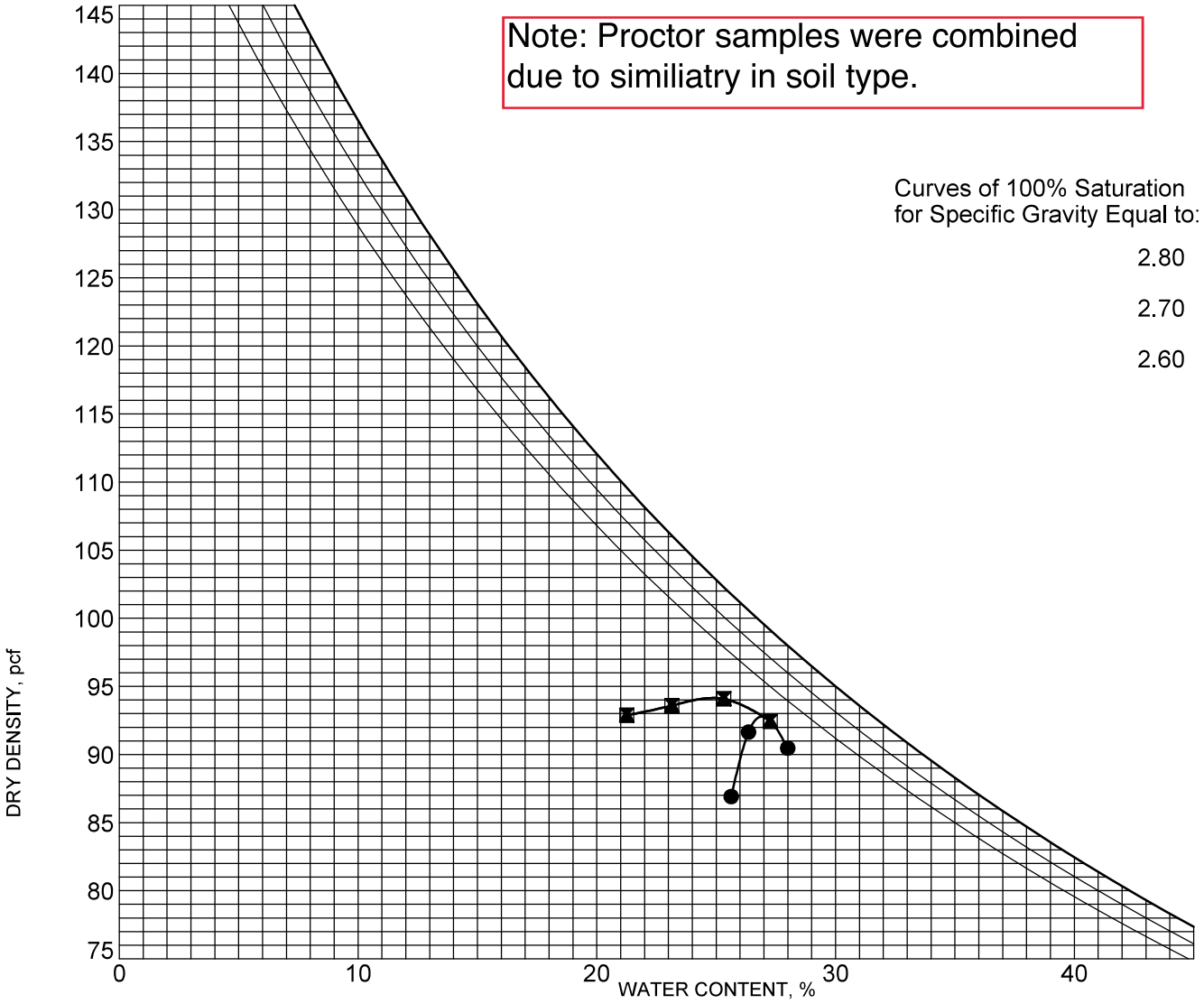
COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

MOISTURE-DENSITY RELATIONSHIP

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



Note: Proctor samples were combined due to similiatry in soil type.

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

2.60

	BOREHOLE	DEPTH	AASHTO Classification	USCS Description
●	**49**	**1.3**	**A-7-6 (43)**	**FAT CLAY(CH)**
⊠	**50**	**1.3**	**A-7-6 (39)**	**FAT CLAY(CH)**
▲	**51**	**1.2**	**A-7-6 (37)**	**FAT CLAY(CH)**

	BOREHOLE	DEPTH	Test Method	LL	PL	PI	Max DD	Optimum WC
●	**49**	**1.3**	**AASHTO T-99 Method A**	**66**	**23**	**43**	**92.8 PCF**	**27.0 %**
⊠	**50**	**1.3**	**AASHTO T-99 Method A**	**62**	**22**	**40**	**94.2 PCF**	**24.9 %**
▲	**51**	**1.2**	**AASHTO T-99 Method A**	**61**	**23**	**38**	**94.2 PCF**	**24.9 %**

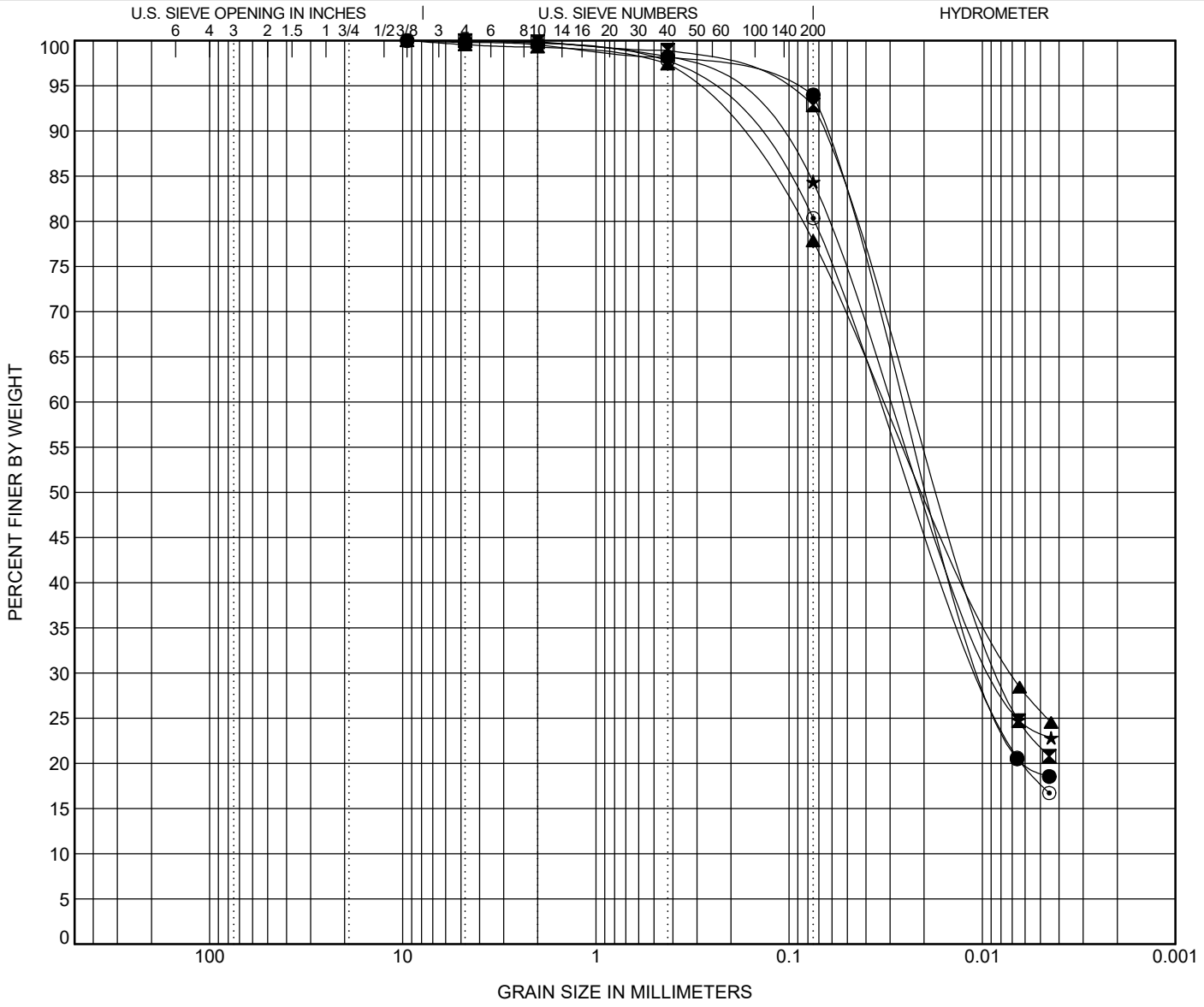
COMPACTION (MULTIPLE CURVES) - 20171219.GDT - 12/5/22 14:50 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE		DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
●	1	1.0	A-4 (7)	ML	33	27	6		
⊠	2	2.0	A-4 (7)	ML	32	25	7		
▲	3	2.0	A-6 (9)	CL	32	18	14		
★	4	2.0	A-6 (13)	CL	35	18	17		
⊙	5	1.0	A-6 (8)	CL	30	18	12		

BOREHOLE		DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
●	1	1.0	9.5	0.018	0.009		0.2	5.8	94.0	
⊠	2	2.0	4.75	0.016	0.008		0.0	7.1	92.9	
▲	3	2.0	9.5	0.019	0.007		0.5	21.7	77.8	
★	4	2.0	9.5	0.018	0.008		0.1	15.6	84.4	
⊙	5	1.0	9.5	0.022	0.01		0.0	19.6	80.3	

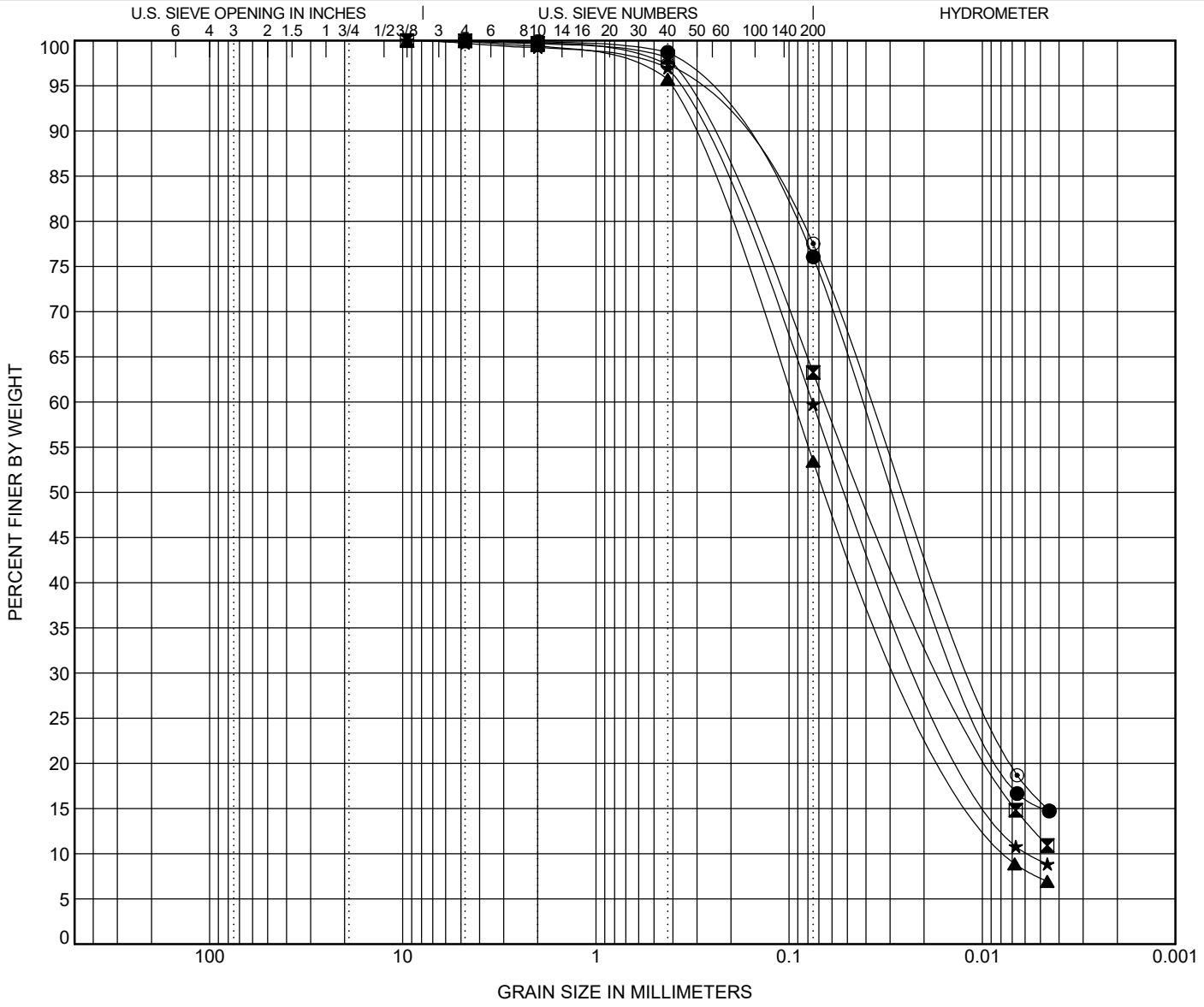
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
●	6	1.2	A-6 (8)	CL	31	18	13		
⊠	7	1.2	A-4 (3)	CL	27	18	9		
▲	8	1.1	A-4 (0)	CL-ML	25	21	4	0.63	13.59
★	9	1.0	A-4 (1)	CL-ML	26	21	5	0.69	13.23
⊙	10	1.2	A-6 (11)	CL	35	19	16		

	BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
●	6	1.2	4.75	0.026	0.011	0.005	0.0	23.9	76.1	
⊠	7	1.2	9.5	0.039	0.014	0.007	0.0	36.7	63.3	
▲	8	1.1	9.5	0.062	0.021	0.009	0.1	46.5	53.4	
★	9	1.0	9.5	0.046	0.017	0.008	0.3	40.0	59.7	
⊙	10	1.2	4.75	0.024	0.011	0.005	0.0	22.5	77.5	

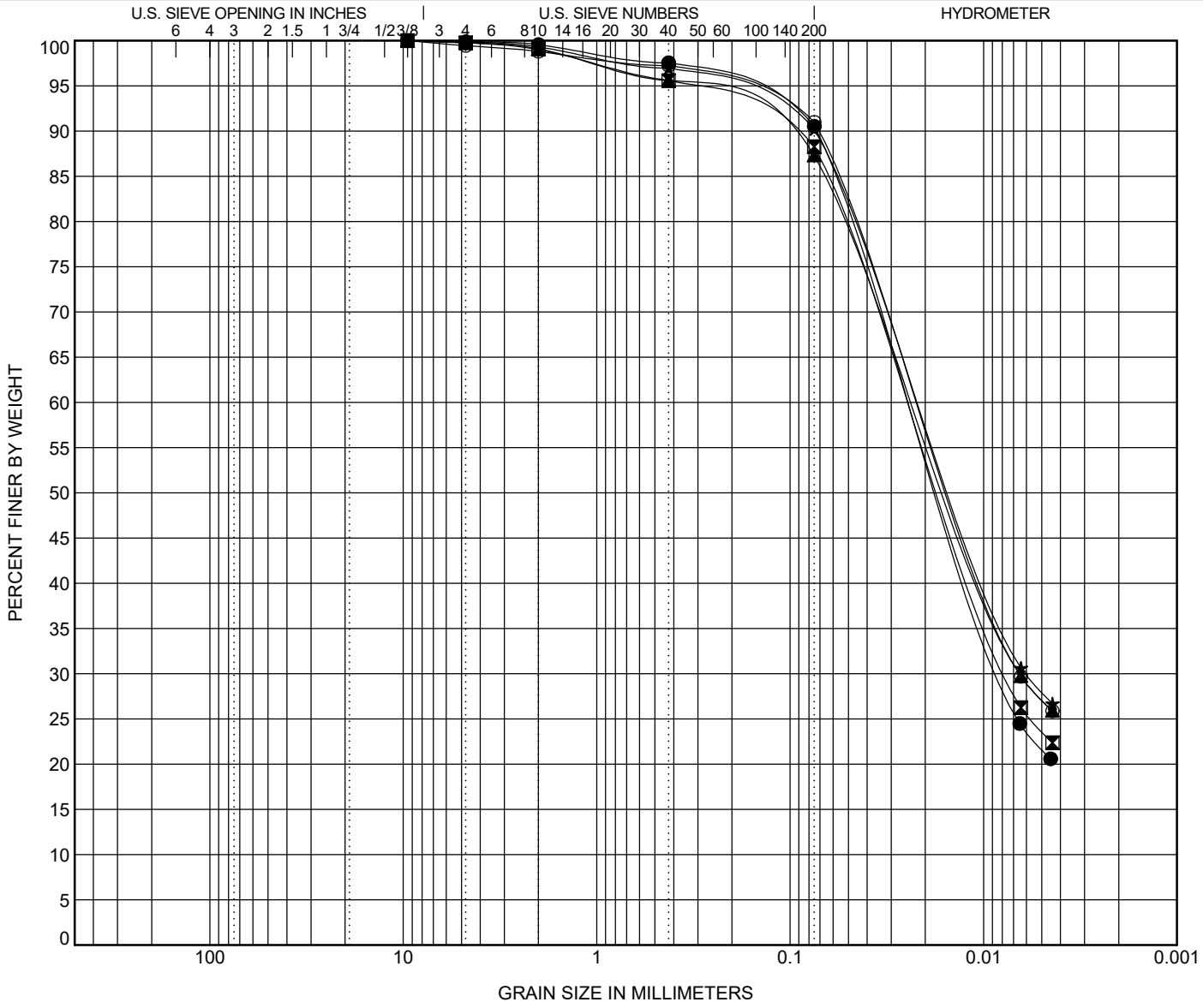
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
●	11	1.1	A-6 (17)	CL	38	20	18		
⊠	12	1.2	A-6 (14)	CL	38	22	16		
▲	13	1.1	A-6 (16)	CL	40	22	18		
★	14	1.1	A-7-6 (21)	CL	42	20	22		
⊙	15	1.3	A-7-6 (22)	CL	42	19	23		

	BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
●	11	1.1	9.5	0.017	0.008		0.1	9.3	90.5	
⊠	12	1.2	9.5	0.016	0.007		0.2	11.5	88.3	
▲	13	1.1	9.5	0.015	0.006		0.2	12.5	87.3	
★	14	1.1	9.5	0.014	0.006		0.1	9.7	90.2	
⊙	15	1.3	9.5	0.014	0.006		0.6	8.4	91.0	

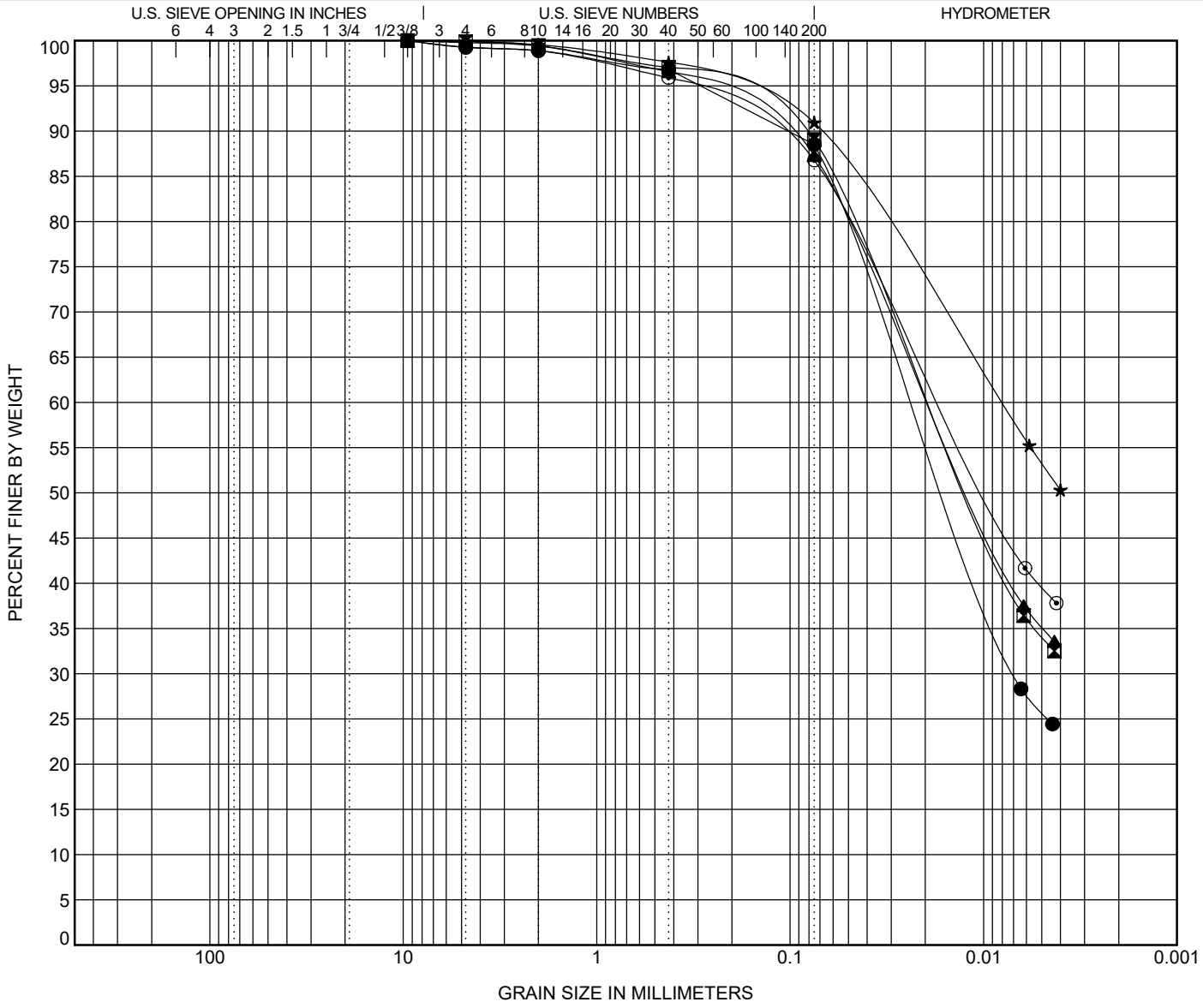
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
●	16	1.2	A-7-6 (21)	CL	43	20	23		
⊠	17	1.1	A-7-6 (22)	CL	44	20	24		
▲	18	1.2	A-7-6 (21)	CL	44	21	23		
★	19	1.1	A-7-6 (35)	CH	55	19	36		
⊙	20	1.0	A-7-6 (27)	CL	49	19	30		

	BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
●	16	1.2	9.5	0.016	0.007		0.8	10.7	88.5	
⊠	17	1.1	9.5	0.012			0.1	10.8	89.1	
▲	18	1.2	9.5	0.012			0.2	12.5	87.3	
★	19	1.1	9.5				0.1	9.0	90.9	
⊙	20	1.0	9.5	0.01			0.7	12.5	86.8	

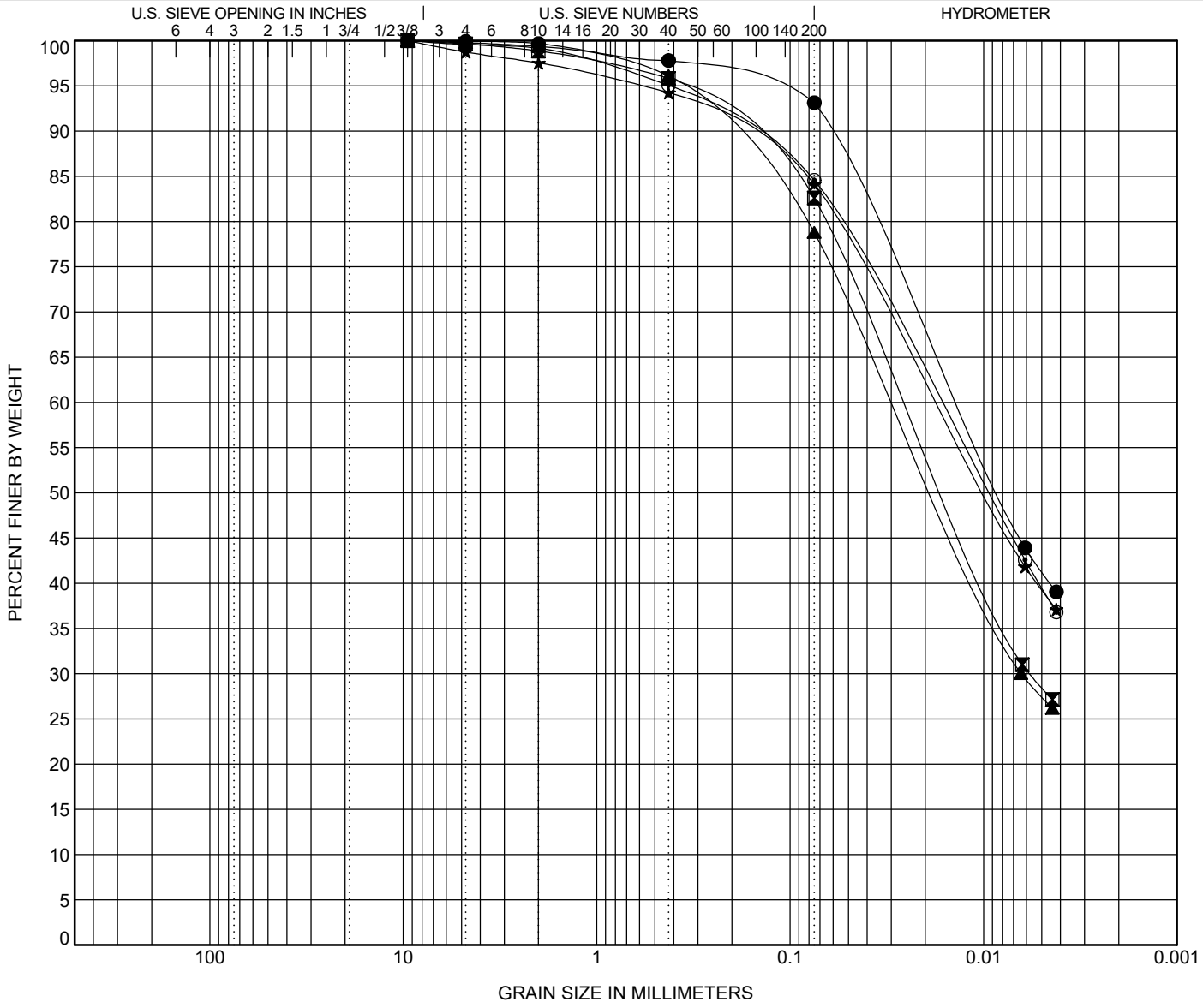
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NDDOT North Dakota Department of Transportation
NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
● 21	1.2	A-7-6 (24)	CL	45	21	24		
⊠ 22	1.2	A-6 (15)	CL	39	20	19		
▲ 23	1.1	A-6 (12)	CL	36	19	17		
★ 24	1.1	A-7-6 (23)	CL	48	21	27		
⊙ 25	1.1	A-7-6 (24)	CL	49	22	27		

BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
● 21	1.2	9.5	0.008			0.1	6.8	93.1	
⊠ 22	1.2	9.5	0.016	0.006		0.4	17.0	82.6	
▲ 23	1.1	9.5	0.018	0.006		0.2	21.0	78.8	
★ 24	1.1	9.5	0.01			1.3	14.6	84.1	
⊙ 25	1.1	9.5	0.009			0.4	15.0	84.6	

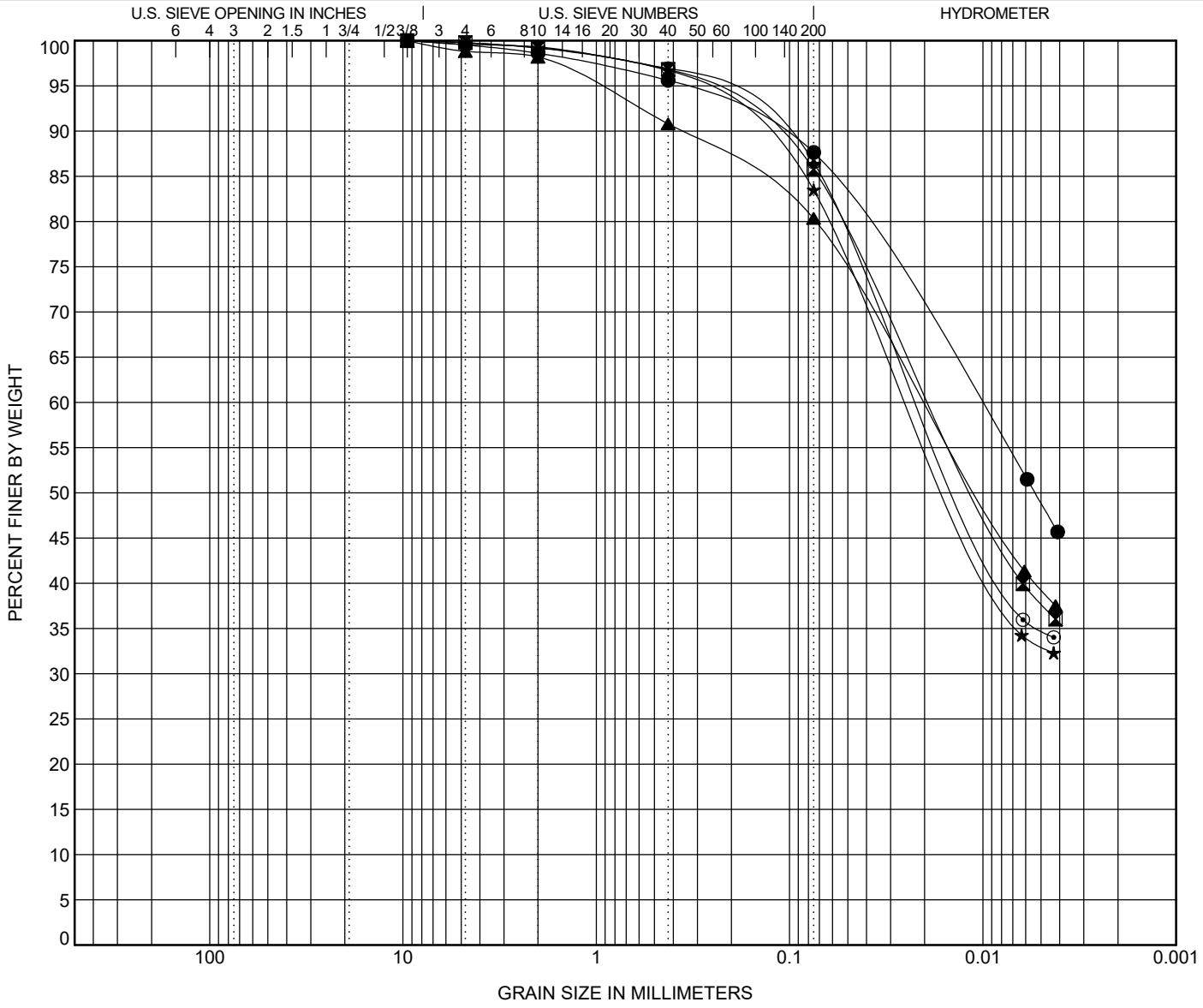
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NDDOT North Dakota Department of Transportation
NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
● 26	1.1	A-7-6 (31)	CH	54	21	33		
⊠ 27	1.1	A-7-6 (24)	CL	47	20	27		
▲ 28	1.1	A-7-6 (24)	CH	51	22	29		
★ 29	1.1	A-7-6 (20)	CL	43	20	23		
⊙ 30	1.1	A-7-6 (20)	CL	42	19	23		

BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
● 26	1.1	9.5	0.005			0.5	11.9	87.6	
⊠ 27	1.1	9.5	0.011			0.2	14.0	85.8	
▲ 28	1.1	9.5	0.011			1.2	18.5	80.3	
★ 29	1.1	9.5	0.014			0.2	16.3	83.5	
⊙ 30	1.1	9.5	0.012			0.4	13.0	86.6	

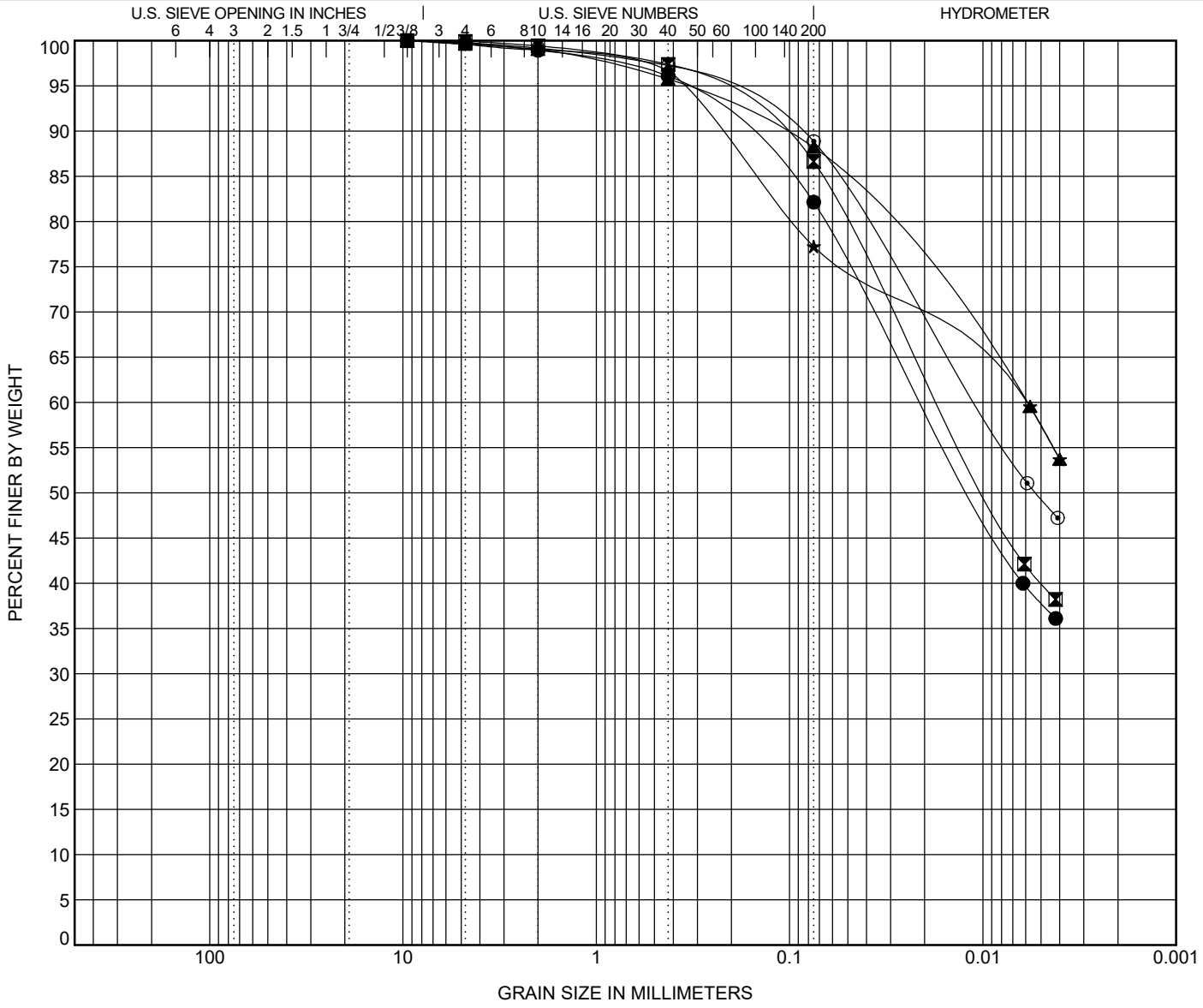
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NDDOT North Dakota Department of Transportation
NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
● 31	1.3	A-7-6 (20)	CL	43	18	25		
⊠ 32	1.2	A-7-6 (26)	CL	48	19	29		
▲ 33	1.1	A-7-6 (37)	CH	61	23	38		
★ 34	1.2	A-7-6 (25)	CH	52	19	33		
⊙ 35	1.2	A-7-6 (31)	CH	52	19	33		

BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
● 31	1.3	9.5	0.011			0.3	17.6	82.1	
⊠ 32	1.2	9.5	0.01			0.1	13.3	86.6	
▲ 33	1.1	9.5				0.4	11.4	88.2	
★ 34	1.2	9.5				0.4	22.3	77.2	
⊙ 35	1.2	9.5	0.005			0.2	10.9	88.9	

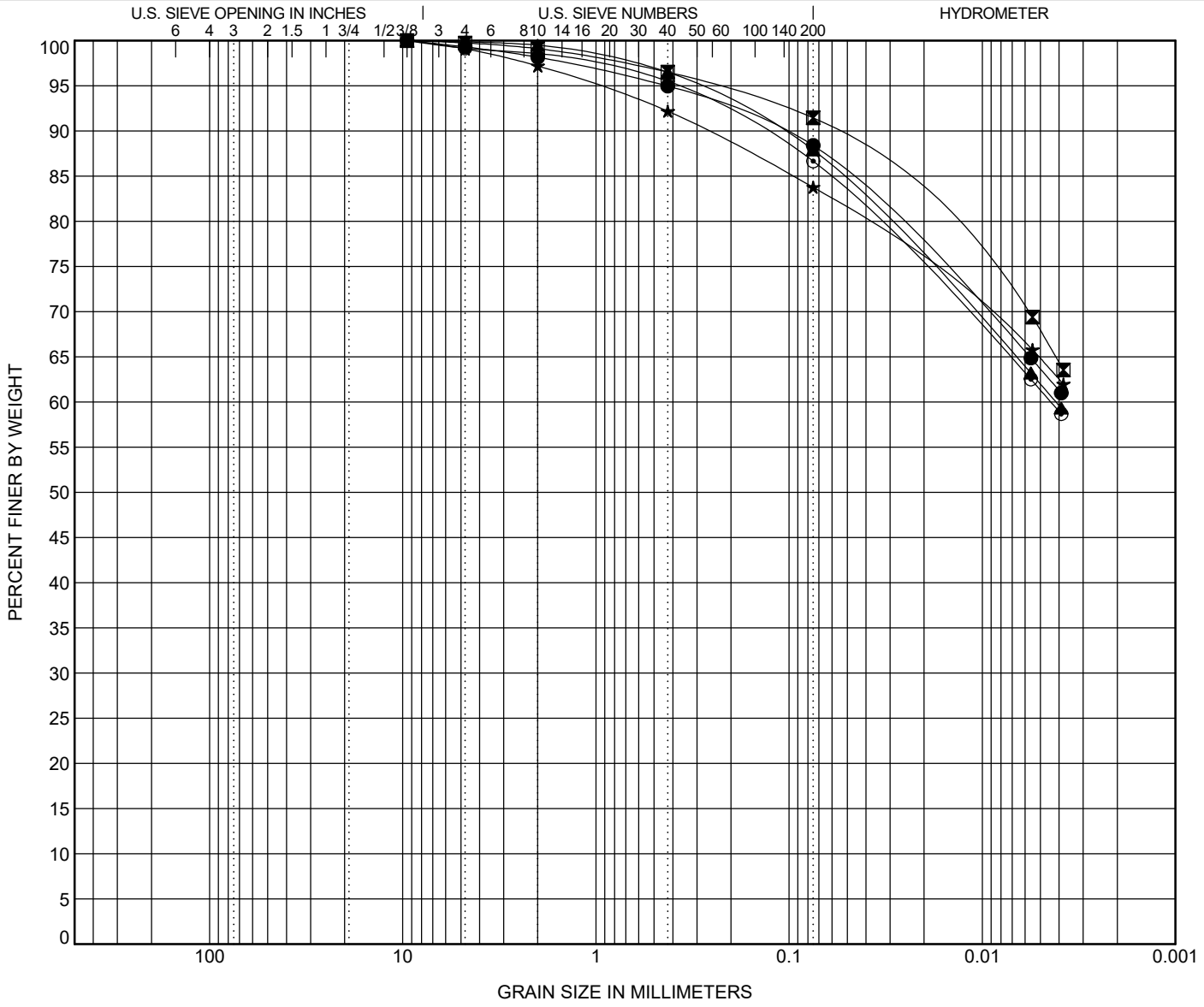
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
●	36	1.2	A-7-6 (38)	CH	62	22	40		
⊠	37	1.2	A-7-6 (43)	CH	67	25	42		
▲	38	1.2	A-7-6 (35)	CH	59	23	36		
★	39	1.3	A-7-6 (36)	CH	66	27	39		
⊙	40	1.2	A-7-6 (36)	CH	62	25	37		

	BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
●	36	1.2	9.5				0.7	10.9	88.4	
⊠	37	1.2	9.5				0.3	8.3	91.5	
▲	38	1.2	9.5				0.1	12.0	87.9	
★	39	1.3	9.5				0.9	15.3	83.8	
⊙	40	1.2	9.5				0.8	12.5	86.7	

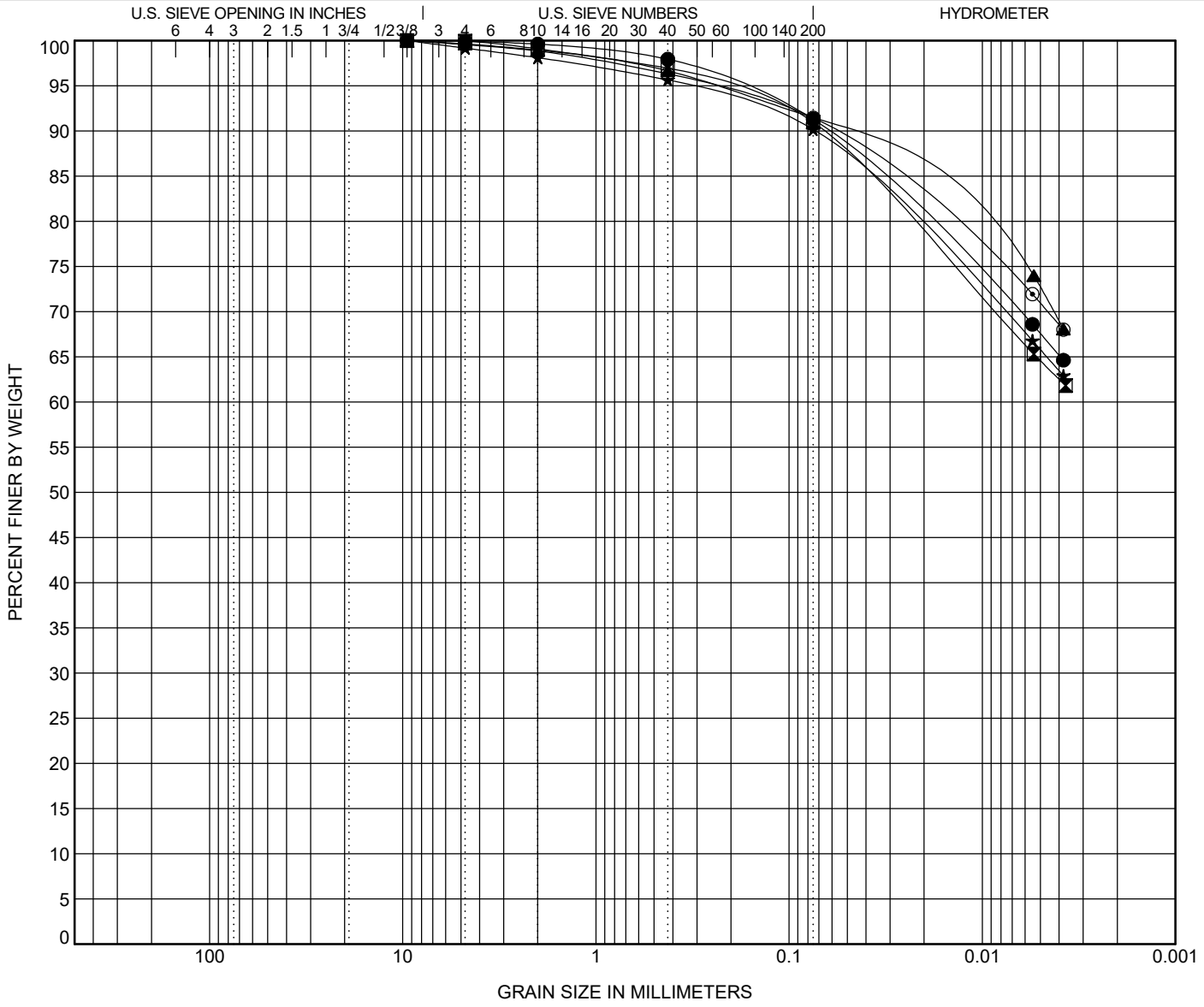
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
●	41	1.2	A-7-6 (39)	CH	64	26	38		
⊠	42	1.2	A-7-6 (44)	CH	66	23	43		
▲	43	1.2	A-7-6 (44)	CH	67	24	43		
★	44	1.2	A-7-6 (38)	CH	61	23	38		
⊙	45	1.4	A-7-6 (42)	CH	65	24	41		

	BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
●	41	1.2	9.5				0.1	8.6	91.3	
⊠	42	1.2	9.5				0.1	9.0	91.0	
▲	43	1.2	9.5				0.4	8.2	91.5	
★	44	1.2	9.5				0.8	9.0	90.2	
⊙	45	1.4	9.5				0.4	8.1	91.5	

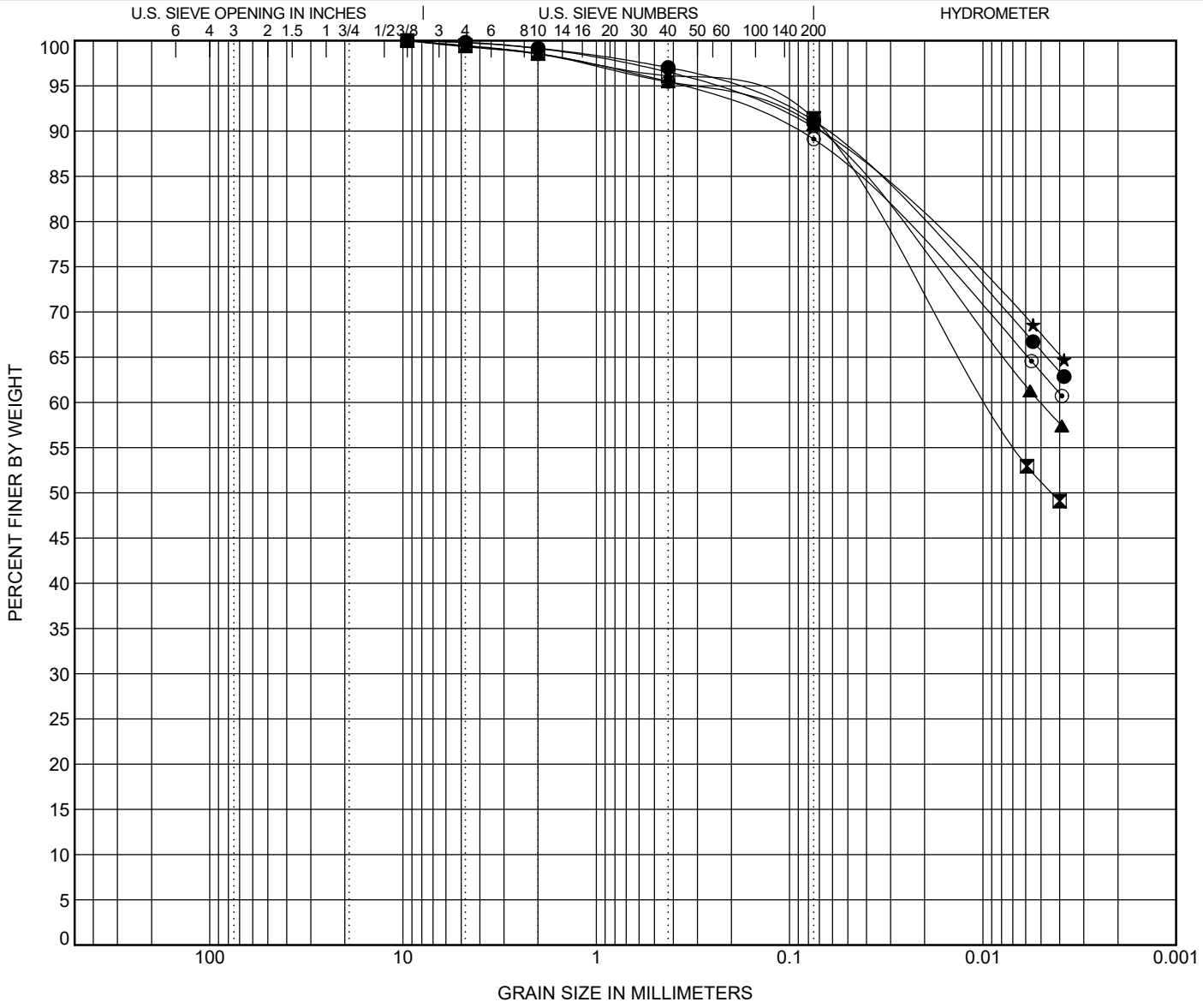
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
●	46	1.2	A-7-6 (41)	CH	64	23	41		
⊠	47	1.6	A-7-6 (31)	CH	54	23	31		
▲	48	1.4	A-7-6 (39)	CH	59	20	39		
★	49	1.3	A-7-6 (43)	CH	66	23	43		
⊙	50	1.3	A-7-6 (39)	CH	62	22	40		

	BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
●	46	1.2	9.5				0.2	8.7	91.2	
⊠	47	1.6	9.5	0.004			0.5	8.1	91.4	
▲	48	1.4	9.5				0.7	8.6	90.7	
★	49	1.3	9.5				0.2	9.3	90.5	
⊙	50	1.3	9.5				0.6	10.3	89.1	

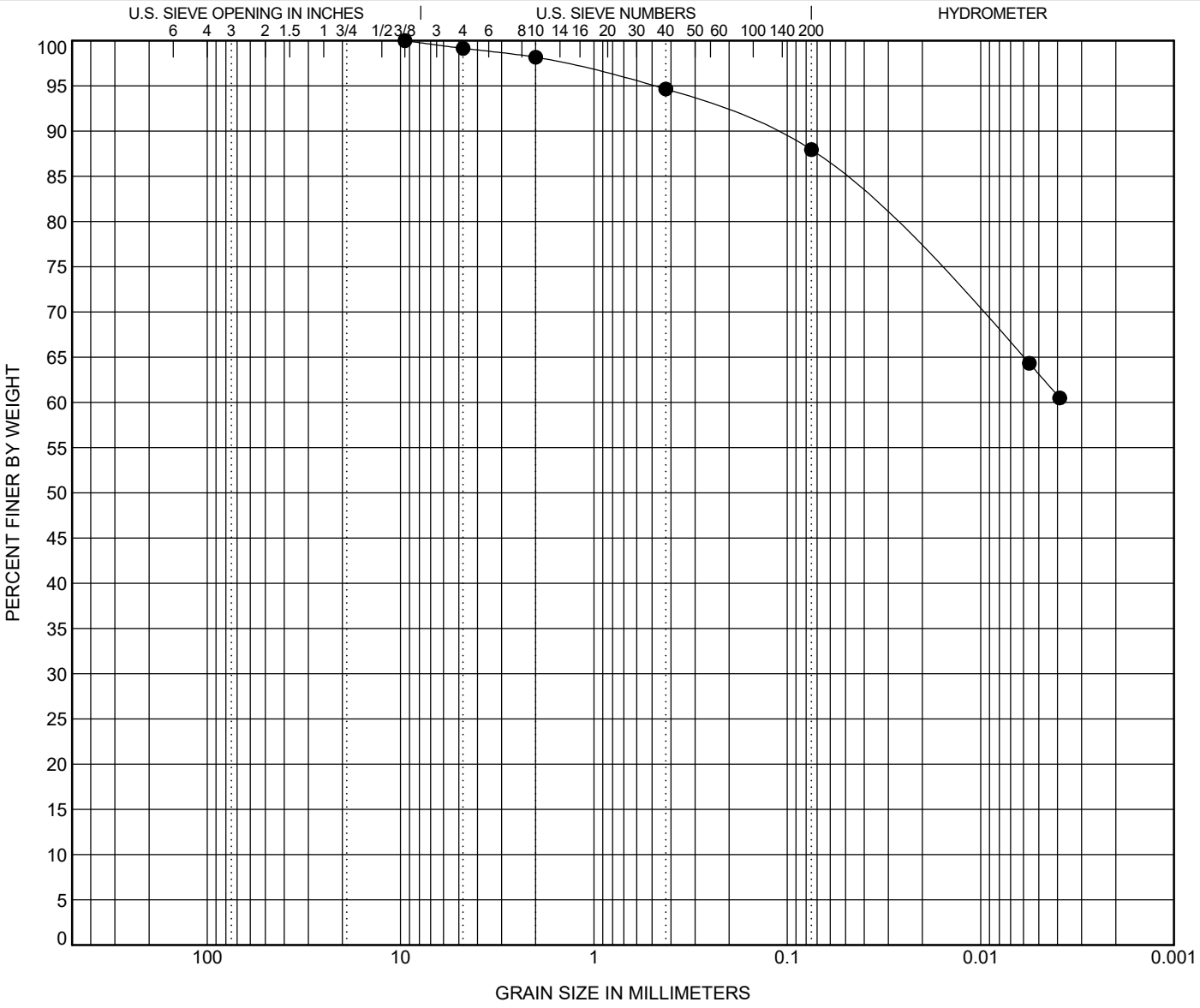
GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

GRAIN SIZE DISTRIBUTION

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	AASHTO Classification	USCS Classification	LL	PL	PI	Cc	Cu
●	**51**	**1.2**	**A-7-6 (37)**	**CH**	**61**	**23**	**38**		

	BOREHOLE	DEPTH	D100	D50	D30	D15	%Gravel	%Sand	%Silt	%Clay
●	**51**	**1.2**	**9.5**				**0.9**	**11.2**	**87.9**	

GRAIN SIZE D ADJUSTED - 20171219.GDT - 11/1/22 10:20 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

SUMMARY OF LABORATORY RESULTS

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	AASHTO Classification	USCS Class-ification	Water Content (%)	Avg. Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
1	1.0	33	27	6	9.5	94	A-4 (7)	ML	15.9	27.0			
1	2.0								21.1	27.0			
1	3.0								21.5	27.0			
1	4.0								18.4	27.0			
1	5.0								22.7	27.0			
1	6.0								23.5	27.0			
1	7.0								36.4	27.0			
1	8.0								34.8	27.0			
1	9.0								38.9	27.0			
1	10.0								37.2	27.0			
2	2.0	32	25	7	4.75	93	A-4 (7)	ML	18.7	25.5			
2	3.0								15.5	25.5			
2	4.0								17.3	25.5			
2	5.0								17.8	25.5			
2	6.0								16.7	25.5			
2	7.0								24.9	25.5			
2	8.0								35.4	25.5			
2	9.0								39.7	25.5			
2	10.0								43.1	25.5			
3	2.0	32	18	14	9.5	78	A-6 (9)	CL	18.0	20.2			
3	3.0								19.1	20.2			
3	4.0								16.9	20.2			
3	5.0								16.9	20.2			
3	6.0								17.9	20.2			
3	7.0								21.5	20.2			
3	8.0								17.2	20.2			
3	9.0								24.6	20.2			
3	10.0								29.2	20.2			
4	2.0	35	18	17	9.5	84	A-6 (13)	CL	17.1	19.5			
4	3.0								18.3	19.5			
4	4.0								22.5	19.5			
4	5.0								21.0	19.5			
4	6.0								21.0	19.5			
4	7.0								21.0	19.5			
4	8.0								18.5	19.5			
4	9.0								18.1	19.5			
4	10.0								18.2	19.5			
5	1.0	30	18	12	9.5	80	A-6 (8)	CL	9.4	18.7			
5	2.0								21.1	18.7			
5	3.0								21.6	18.7			
5	4.0								22.9	18.7			
5	5.0								18.6	18.7			
6	1.2	31	18	13	4.75	76	A-6 (8)	CL	11.2	17.0			

LAB SUMMARY - 20171219.GDT - 11/2/22 07:38 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NDDOT North Dakota Department of Transportation
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
300 AIRPORT ROAD
BISMARCK, ND 58504

SUMMARY OF LABORATORY RESULTS

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	AASHTO Classification	USCS Class-ification	Water Content (%)	Avg. Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
6	2.0								17.3	17.0			
6	3.0								18.5	17.0			
6	4.0								21.6	17.0			
6	5.0								16.5	17.0			
7	1.2	27	18	9	9.5	63	A-4 (3)	CL	15.2	18.7			
7	2.0								19.0	18.7			
7	3.0								17.2	18.7			
7	4.0								23.1	18.7			
7	5.0								19.1	18.7			
8	1.1	25	21	4	9.5	53	A-4 (0)	CL-ML	5.1	18.3			
8	2.0								23.0	18.3			
8	3.0								22.6	18.3			
8	4.0								20.8	18.3			
8	5.0								20.2	18.3			
9	1.0	26	21	5	9.5	60	A-4 (1)	CL-ML	20.6	20.3			
9	2.0								22.3	20.3			
9	3.0								19.7	20.3			
9	4.0								18.9	20.3			
9	5.0								20.0	20.3			
10	1.2	35	19	16	4.75	78	A-6 (11)	CL	8.1	22.2			
10	2.0								26.4	22.2			
10	3.0								26.3	22.2			
10	4.0								24.5	22.2			
10	5.0								25.5	22.2			
11	1.1	38	20	18	9.5	91	A-6 (17)	CL	7.6	20.8			
11	2.0								27.2	20.8			
11	3.0								26.1	20.8			
11	4.0								20.2	20.8			
11	5.0								23.0	20.8			
12	1.2	38	22	16	9.5	88	A-6 (14)	CL	19.5	23.9			
12	2.0								26.7	23.9			
12	3.0								26.9	23.9			
12	4.0								21.6	23.9			
12	5.0								24.9	23.9			
13	1.1	40	22	18	9.5	87	A-6 (16)	CL	12.4	25.0			
13	2.0								29.2	25.0			
13	3.0								27.7	25.0			
13	4.0								28.9	25.0			
13	5.0								26.8	25.0			
14	1.1	42	20	22	9.5	90	A-7-6 (21)	CL	5.4	22.2			
14	2.0								22.2	22.2			
14	3.0								25.9	22.2			
14	4.0								29.5	22.2			

LAB SUMMARY - 20171219.GDT - 11/2/22 07:38 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

SUMMARY OF LABORATORY RESULTS

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	AASHTO Classification	USCS Class-ification	Water Content (%)	Avg. Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
14	5.0								28.0	22.2			
15	1.3	42	19	23	9.5	91	A-7-6 (22)	CL	9.6	19.5			
15	2.0								23.3	19.5			
15	3.0								23.2	19.5			
15	4.0								19.9	19.5			
15	5.0								21.6	19.5			
16	1.2	43	20	23	9.5	89	A-7-6 (21)	CL	8.7	22.2			
16	2.0								27.1	22.2			
16	3.0								25.3	22.2			
16	4.0								24.3	22.2			
16	5.0								25.8	22.2			
17	1.1	44	20	24	9.5	89	A-7-6 (22)	CL	12.5	22.7			
17	2.0								28.2	22.7			
17	3.0								27.7	22.7			
17	4.0								24.5	22.7			
17	5.0								20.7	22.7			
18	1.2	44	21	23	9.5	87	A-7-6 (21)	CL	17.1	26.0			
18	2.0								32.0	26.0			
18	3.0								28.0	26.0			
18	4.0								30.4	26.0			
18	5.0								22.7	26.0			
19	1.1	55	19	36	9.5	91	A-7-6 (35)	CH	10.9	25.1			
19	2.0								32.8	25.1			
19	3.0								27.3	25.1			
19	4.0								28.0	25.1			
19	5.0								26.7	25.1			
20	1.0	49	19	30	9.5	87	A-7-6 (27)	CL	7.1	23.5			
20	2.0								30.0	23.5			
20	3.0								28.4	23.5			
20	4.0								25.7	23.5			
20	5.0								26.4	23.5			
21	1.2	45	21	24	9.5	93	A-7-6 (24)	CL	10.2	23.6			
21	2.0								29.5	23.6			
21	3.0								28.9	23.6			
21	4.0								29.2	23.6			
21	5.0								20.3	23.6			
22	1.2	39	20	19	9.5	83	A-6 (15)	CL	12.4	25.2			
22	2.0								32.7	25.2			
22	3.0								24.6	25.2			
22	4.0								27.3	25.2			
22	5.0								29.0	25.2			
23	1.1	36	19	17	9.5	79	A-6 (12)	CL	10.9	23.9			
23	2.0								27.5	23.9			

LAB SUMMARY - 20171219.GDT - 11/2/22 07:38 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NDDOT North Dakota Department of Transportation
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
300 AIRPORT ROAD
BISMARCK, ND 58504

SUMMARY OF LABORATORY RESULTS

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	AASHTO Classification	USCS Class-ification	Water Content (%)	Avg. Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
23	3.0								25.9	23.9			
23	4.0								22.5	23.9			
23	5.0								32.4	23.9			
24	1.1	48	21	27	9.5	84	A-7-6 (23)	CL	10.9	23.9			
24	2.0								30.1	23.9			
24	3.0								32.3	23.9			
24	4.0								23.5	23.9			
24	5.0								22.6	23.9			
25	1.1	49	22	27	9.5	85	A-7-6 (24)	CL	9.6	23.8			
25	2.0								27.9	23.8			
25	3.0								28.2	23.8			
25	4.0								28.9	23.8			
25	5.0								24.5	23.8			
26	1.1	54	21	33	9.5	88	A-7-6 (31)	CH	8.7	24.8			
26	2.0								32.5	24.8			
26	3.0								32.6	24.8			
26	4.0								23.7	24.8			
26	5.0								26.2	24.8			
27	1.1	47	20	27	9.5	86	A-7-6 (24)	CL	8.1	24.5			
27	2.0								34.7	24.5			
27	3.0								28.9	24.5			
27	4.0								26.8	24.5			
27	5.0								24.1	24.5			
28	1.1	51	22	29	9.5	80	A-7-6 (24)	CH	10.3	26.9			
28	2.0								31.0	26.9			
28	3.0								32.1	26.9			
28	4.0								33.1	26.9			
28	5.0								27.8	26.9			
29	1.1	43	20	23	9.5	84	A-7-6 (20)	CL	15.3	22.9			
29	2.0								29.9	22.9			
29	3.0								25.4	22.9			
29	4.0								24.5	22.9			
29	5.0								19.4	22.9			
30	1.1	42	19	23	9.5	87	A-7-6 (20)	CL	13.9	22.0			
30	2.0								31.1	22.0			
30	3.0								22.1	22.0			
30	4.0								21.9	22.0			
30	5.0								21.2	22.0			
31	1.3	43	18	25	9.5	82	A-7-6 (20)	CL	12.4	21.3			
31	2.0								22.5	21.3			
31	3.0								21.5	21.3			
31	4.0								21.6	21.3			
31	5.0								28.4	21.3			

LAB SUMMARY - 20171219.GDT - 11/2/22 07:38 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NDDOT North Dakota Department of Transportation
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
300 AIRPORT ROAD
BISMARCK, ND 58504

SUMMARY OF LABORATORY RESULTS

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	AASHTO Classification	USCS Class-ification	Water Content (%)	Avg. Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
32	1.2	48	19	29	9.5	87	A-7-6 (26)	CL	18.1	22.6			
32	2.0								26.6	22.6			
32	3.0								25.7	22.6			
32	4.0								19.7	22.6			
32	5.0								23.0	22.6			
33	1.1	61	23	38	9.5	88	A-7-6 (37)	CH	16.1	28.7			
33	2.0								33.5	28.7			
33	3.0								27.7	28.7			
33	4.0								36.0	28.7			
33	5.0								29.9	28.7			
34	1.2	52	19	33	9.5	77	A-7-6 (25)	CH	20.8	26.1			
34	2.0								23.8	26.1			
34	3.0								28.9	26.1			
34	4.0								24.5	26.1			
34	5.0								32.5	26.1			
35	1.2	52	19	33	9.5	89	A-7-6 (31)	CH	20.9	25.1			
35	2.0								24.7	25.1			
35	3.0								26.4	25.1			
35	4.0								26.1	25.1			
35	5.0								27.6	25.1			
36	1.2	62	22	40	9.5	88	A-7-6 (38)	CH	14.1	25.1			
36	2.0								21.9	25.1			
36	3.0								28.6	25.1			
36	4.0								30.7	25.1			
36	5.0								30.2	25.1			
37	1.2	67	25	42	9.5	91	A-7-6 (43)	CH	13.3	28.8			
37	2.0								39.8	28.8			
37	3.0								30.9	28.8			
37	4.0								28.4	28.8			
37	5.0								31.5	28.8			
38	1.2	59	23	36	9.5	88	A-7-6 (35)	CH	15.5	27.9			
38	2.0								37.4	27.9			
38	3.0								33.7	27.9			
38	4.0								22.0	27.9			
38	5.0								30.8	27.9			
39	1.3	66	27	39	9.5	84	A-7-6 (36)	CH	7.6	30.7			
39	2.0								36.2	30.7			
39	3.0								37.5	30.7			
39	4.0								39.0	30.7			
39	5.0								33.0	30.7			
40	1.2	62	25	37	9.5	87	A-7-6 (36)	CH	7.6	28.1			
40	2.0								34.4	28.1			
40	3.0								34.0	28.1			

LAB SUMMARY - 20171219.GDT - 11/2/22 07:38 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

SUMMARY OF LABORATORY RESULTS

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	AASHTO Classification	USCS Class-ification	Water Content (%)	Avg. Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
40	4.0								34.0	28.1			
40	5.0								30.3	28.1			
41	1.2	64	26	38	9.5	91	A-7-6 (39)	CH	9.3	27.9			
41	2.0								36.3	27.9			
41	3.0								34.6	27.9			
41	4.0								30.3	27.9			
41	5.0								28.9	27.9			
42	1.2	66	23	43	9.5	91	A-7-6 (44)	CH	18.5	27.7			
42	2.0								30.5	27.7			
42	3.0								35.8	27.7			
42	4.0								27.4	27.7			
42	5.0								26.2	27.7			
43	1.2	67	24	43	9.5	91	A-7-6 (44)	CH	12.8	27.5			
43	2.0								29.9	27.5			
43	3.0								31.7	27.5			
43	4.0								31.7	27.5			
43	5.0								31.5	27.5			
44	1.2	61	23	38	9.5	90	A-7-6 (38)	CH	13.2	27.4			
44	2.0								31.5	27.4			
44	3.0								31.2	27.4			
44	4.0								32.9	27.4			
44	5.0								28.1	27.4			
45	1.4	65	24	41	9.5	91	A-7-6 (42)	CH	7.9	27.4			
45	2.0								32.7	27.4			
45	3.0								34.8	27.4			
45	4.0								35.3	27.4			
45	5.0								26.4	27.4			
46	1.2	64	23	41	9.5	91	A-7-6 (41)	CH	13.2	26.5			
46	2.0								32.8	26.5			
46	3.0								35.3	26.5			
46	4.0								24.7	26.5			
46	5.0								26.6	26.5			
47	1.6	54	23	31	9.5	91	A-7-6 (31)	CH	16.6	27.6			
47	2.0								30.8	27.6			
47	3.0								31.1	27.6			
47	4.0								31.0	27.6			
47	5.0								28.4	27.6			
48	1.4	59	20	39	9.5	91	A-7-6 (39)	CH	11.5	28.7			
48	2.0								31.2	28.7			
48	3.0								33.3	28.7			
48	4.0								30.0	28.7			
48	5.0								37.6	28.7			
49	1.3	66	23	43	9.5	90	A-7-6 (43)	CH	18.7	32.3			

LAB SUMMARY - 20171219.GDT - 11/2/22 07:38 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ

NORTH DAKOTA DEPARTMENT OF TRANSPORATION
300 AIRPORT ROAD
BISMARCK, ND 58504

SUMMARY OF LABORATORY RESULTS

PROJECT NUMBER IM-8-029(204)101 **LOCATION** Traill County

PCN 23103

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	AASHTO Classification	USCS Class-ification	Water Content (%)	Avg. Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
49	2.0								34.9	32.3			
49	3.0								34.2	32.3			
49	4.0								32.5	32.3			
49	5.0								41.1	32.3			
50	1.3	62	22	40	9.5	89	A-7-6 (39)	CH	15.5	26.0			
50	2.0								32.2	26.0			
50	3.0								22.6	26.0			
50	4.0								29.5	26.0			
50	5.0								30.2	26.0			
51	1.2	61	23	38	9.5	88	A-7-6 (37)	CH	8.4	25.9			
51	2.0								30.9	25.9			
51	3.0								30.0	25.9			
51	4.0								29.5	25.9			
51	5.0								30.6	25.9			

LAB SUMMARY - 20171219.GDT - 11/2/22 07:38 - F:\LAB\PROJECTS\GINT\8-029(204)101.GPJ