GEOTECHNICAL DATA REPORT – APRIL 2023 REVISION

I-405, Brickyard to SR 527 Improvement Project

XL5446, I-405, MP 21.4 – 27.1



Washington State Department of Transportation
Multimodal Development & Delivery
Construction Division
Geotechnical Office
1655 2nd Avenue SW
Tumwater, WA 98512-6951

April 17, 2023

This geotechnical data report (GDR) is issued as part of the Request for Proposals (RFP) for the subject project. The GDR has been prepared to provide geotechnical data for use by the Design-Builder as described in Chapter 1 of the RFP. It should not be used, in part or in whole, for other purposes, without contacting the WSDOT Geotechnical Office for a review of the applicability of such reuse.

This *Geotechnical Data Report*, dated April 17, 2023 fully replaces the Geotechnical Data Report provided February 2023. This GDR April 2023 revision includes the correct boring log for NE-12p-19.



Prepared by:	Deborah Ladd, PE, LHg Geotechnical Engineer
Reviewed by:	Conrad W. Felice, PhD, PE Geotechnical Design Manager
Agency Approval Authority:	Andrew Fiske, PE State Geotechnical Engineer

Contents

1 INTRODUCTION 1
1.1 PURPOSE AND SCOPE 1
1.2 PROJECT OVERVIEW 1
1.3 REFERENCE DOCUMENTS 2
2 FIELD EXPLORATIONS 2
2.1 TEST BORINGS 2
3 GEOTECHNICAL LABORATORY TESTS 3
4 GROUNDWATER INFORMATION 3
5 INCLINOMETER INFORMATION 4
6 LIMITATIONS 4
7 REFERENCES 5

FIGURES

Figure 1: Vicinity Map
Figure 2: Site and Exploration Plan

APPENDICES

Appendix A: Project Exploration Logs
Appendix B: Project Laboratory Test Results
Appendix C: Project Groundwater Monitoring Data
Appendix D: Inclinometer Data

1 INTRODUCTION

1.1 PURPOSE AND SCOPE

This Geotechnical Data Report (GDR) April 2023 Revision (GDR) is issued as part of the Request for Proposals (RFP) for the design and construction of the I-405, Brickyard to SR 527 Improvement Project (Project) in Bothell, Washington, on Interstate 405 (I-405).

This GDR covers I-405 MP 21.4 to MP 27.10 as shown on Figure 1.

This report describes the data gathering procedures and presents the subsurface exploration logs, laboratory test data, and groundwater data assembled for this Project. The data in this GDR was used by WSDOT in developing the Geotechnical Baseline Report (GBR) and supporting conceptual designs while preparing the Request for Proposals (RFP).

This GDR does not include information provided in the *Geotechnical Data Report, Supplement for Hillside Area.*

Geotechnical reference documents are provided in RFP Appendix G.

1.2 PROJECT OVERVIEW

Funded by the Move Ahead Washington and Sound Transit, the Project will create a dual express toll lane (ETL) system from south of the I-405/SR 522 interchange to the I-405/SR 527 interchange.

The Project will include multiple retaining walls and noise walls to support roadway improvements. Six fish barriers with restored stream connections will be constructed as well as stream improvement. The Project will also include drainage improvements, and tolling gantries, signing, and intelligent transportation system (ITS) elements with associated cabinets.

The Project will remove bridge piers near SR 522 and new and widened bridges will be constructed.

The Project will construct a new median transit stop south of the NE 160th Street interchange including Bus Rapid Transit (BRT) elements, elevators, and stairwells. A new pedestrian structure will be constructed across I-405 connecting the east side and Brickyard Park and Ride to the new median transit stop.

The I-405/SR 522 interchange will be reconfigured and direct access ramps with BRT stations and a transit hub will be constructed.

New direct access ramps will be constructed at 17th Ave NE. This will include new BRT stations, reconfiguration of the Canyon Park, Park and Ride, and partial demolition/reconstruction of the existing pedestrian bridge over I-405. The Project will

install The Project will install tolling gantries, signing, and intelligent transportation system (ITS) elements with associated cabinets.

1.3 REFERENCE DOCUMENTS

There are additional publications that are issued as reference documents to the Contract from past or nearby construction projects. **Reference documents in the RFP are provided for information only and are not Contract documents.**

2 FIELD EXPLORATIONS

The geotechnical investigations completed along the Project alignment included in this GDR were planned, coordinated, and managed by WSDOT and by outside private firms. This work included subsurface borings, well installations, and groundwater monitoring.

The subsurface investigation for this Project was conducted for the purpose of providing the data needed for the Design-Builder to develop an informed cost proposal for the Work. The Design-Builder must be aware that the explorations contained in the GDR are not sufficient to comply with the WSDOT Geotechnical Design Manual (GDM) for the Project. The Design-Builder will need to perform additional explorations for Contract compliance.

2.1 TEST BORINGS

Data and information for seventy-one (71) new borings, completed for the Project to collect subsurface information, are provided in this GDR. An additional four borings and six CPTs are presented in the *Geotechnical Data Report, Supplement for Hillside Area.*

The locations of most Project borings and associated instrumentation were surveyed by WSDOT crews. The exception is NE-07si-19, which was located by a handheld GPS. The boring datum is indicated on the logs. Figure 2 shows the locations of the Project explorations that are considered Contract data as identified by the baseline criteria described in the GBR. The boring logs also provide latitude and longitude; the latitude and longitude shall not be used for Contractual location of borings.

The Project explorations were continuously monitored, logs of subsurface conditions were maintained, and representative samples were collected. The soil samples collected were visually classified per the GDM based on modified procedures outlined in ASTM D-2488. Logs for the explorations including, a key for symbols and further description of the field exploration, are in Appendix A.

The Project explorations performed during conceptual plan development were based on anticipated locations of Project features and structures. As the conceptual plan development progressed and staging of contract delivery was developed, some adjustments to the Project were made after the explorations had been performed; therefore, some explorations are no longer relevant to the Project or to a Project feature.

3 GEOTECHNICAL LABORATORY TESTS

Soil index testing was conducted for the Project for the purpose of classifying soils according to the Unified Soil Classification System and for development of index properties. Soil index testing for this geotechnical investigation consisted of Atterberg limits, moisture content testing, and gradation testing.

Other laboratory testing was conducted to characterize strength, consolidation, and other properties of Project soils.

WSDOT's laboratory testing was performed at the WSDOT Materials Laboratory in accordance with the following test methods:

Laboratory Test	Test Method
Atterberg Limits	AASHTO[1] T89/90
Moisture Content	AASHTO T265
Gradation	AASHTO T11/27
Organic Content	AASHTO T267
Soil pH and Resistivity	WSDOT T417
Direct Shear	ASTM[2] D6258
1-D Consolidation	AASHTO T216

[1] AASHTO - American Association of State Highway and Transportation Officials
[2] American Society for Testing and Materials

The laboratory test results are provided in Appendix B.

4 GROUNDWATER INFORMATION

One-inch diameter open standpipe piezometers were installed in thirty-eight (38) of the Project borings. Vibrating wire piezometers were installed in six (6) of the Project Borings. Piezometer designs are shown on the right side of each test boring log in Appendix A.

Groundwater monitoring consisted of manual periodic measurements of groundwater elevations in piezometers and data acquisition from automated pressure transducer data loggers. Groundwater measurements have been compiled and are presented in Appendix C.

5 INCLINOMETER INFORMATION

Standard slope inclinometer casing was installed in two (2) of the exploratory borings, NE-7si-19 and NE-9si-19 at depths ranging from 118 to 148.5 feet. This casing was installed for the purpose of monitoring potential future slope deformations during construction of the Project. One set of initial readings were taken for each inclinometer and the initial inclinometer profiles are included in Appendix D. One set of initial readings was taken in the “A” track, while the other set of initial readings was taken on the “B” track. The “A” track corresponds approximately with the downslope direction; the “B” track direction is perpendicular to the “A” track.

The inclinometer casing is permanently installed in each of the boreholes. Potential movement of the inclinometer casing is measured/surveyed in terms of casing deflection, using an inclinometer probe fitted with wheels that follow grooves on the inside of the casing installed. Signals are sent through a control cable to a portable digital readout unit at the ground surface. The signal displayed on the readout unit represents the tilt of the casing at the depth at which the inclinometer probe is positioned. Inclination measurements are obtained at 2-foot intervals from the bottom to the top of the casing and recorded in the readout unit. The recorded data is then transferred to a database for analysis and presentation. Initial readings were taken after the grout had set around the casing. The initial survey results establish the baseline profile of the installed casing. Subsequent surveys will reveal changes in the profile if ground movement occurred.

6 LIMITATIONS

This GDR has been prepared for the exclusive use of the Project team for specific application to the Project. The data contained herein is based on site conditions as they existed at the time of the field explorations. Within the limitations of the scope, schedule, and budget, the data presented in this report was collected and presented in accordance with generally accepted professional geotechnical practice in this area at the time this report was prepared. No other warranty, expressed or implied, is made.

This report was completed to provide prospective design-build bidders with geotechnical information. No design recommendations or interpretive information is provided herein.

The exploration program completed to date is not sufficient for final design. The design team will need to augment the geotechnical information in this report to support Project design and construction.

This report provides the geotechnical data obtained at certain exploration locations and is not a warranty of subsurface conditions across the Project area.

The GDR does not include environmental site assessments or evaluations regarding the presence or absence of hazardous or toxic materials in the soil, cultural resources, surface water, groundwater, or air, on or below the site, or for evaluation or disposal of contaminated soils or groundwater, should any be encountered.

7 REFERENCES

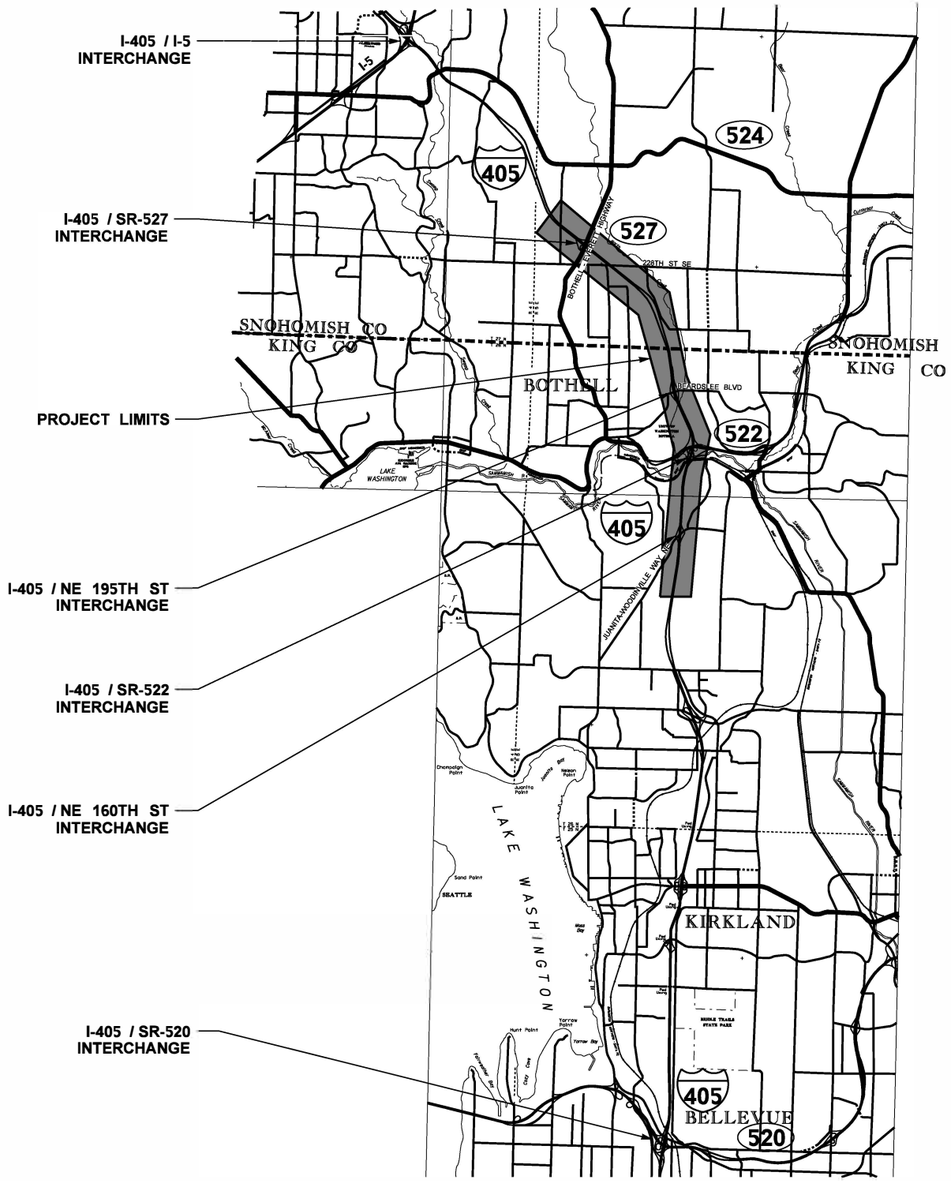
American Association of State Highway and Transportation Officials, 2020, AASHTO Guide Specifications for LRFD Seismic Bridge Design 2nd Edition, American Association of State Highway and Transportation Officials, Washington, DC.

Washington State Department of Transportation, 2022, Geotechnical Design Manual. Publication M 46-03.16. Washington State Dept. of Transportation, Olympia, WA.

Washington State Department of Transportation, 2022, Standard Specifications for Road, Bridge, and Municipal Construction. Publication M 41-10. Washington State Dept. of Transportation, Olympia, WA.

FIGURES

I-405
BRICKYARD TO SR 527 IMPROVEMENT PROJECT



PROJECT LOCATION MAP
NTS

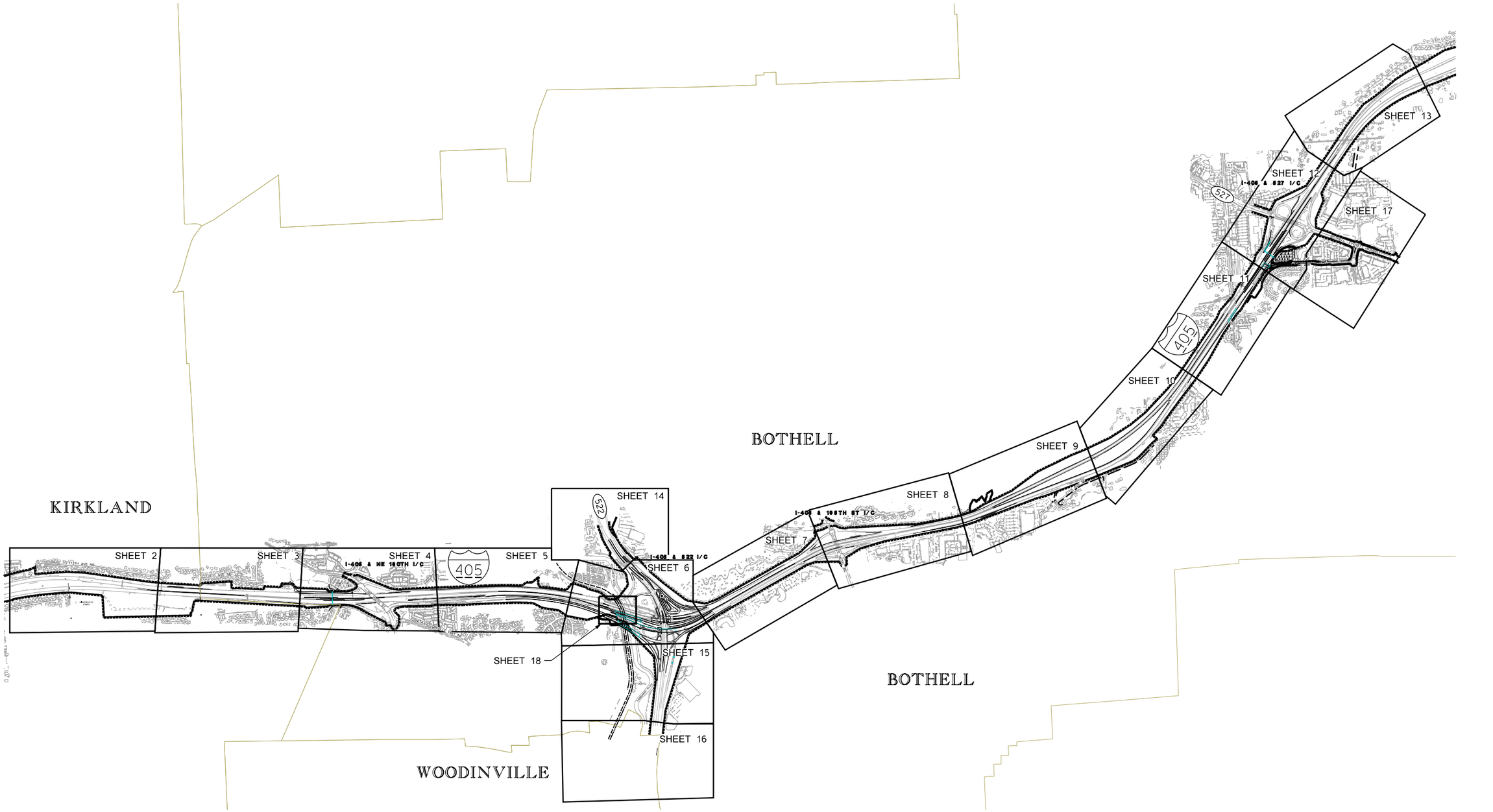
c:\users\bungerk\pw_wsdot\d0182071\XL5446_PS_GEO_VicinityMap.dgn

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527
TOLL LANES IMPROVEMENT PROJECT

FIGURE 1: VICINITY MAP

SHEET 1 OF 1 SHEETS



Washington State Department of Transportation

I-405

SR 522 VICINITY TO SR 527 EXPRESS TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 1 OF 18 SHEETS

2/6/2023 12:46:42 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_001.dgn

MP 21.20
MP 21.25
MP 21.30
MP 21.35
MP 21.40
MP 21.45
MP 21.50
MP 21.55
MP 21.60
MP 21.65
MP 21.70
MP 21.75

MATCH LINE - SEE SHEET 3

LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

0 100 200
SCALE IN FEET

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 2 OF 18 SHEETS

2/6/2023
12:46:55 PM
BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_002.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

0 100 200
SCALE IN FEET

Washington State Department of Transportation

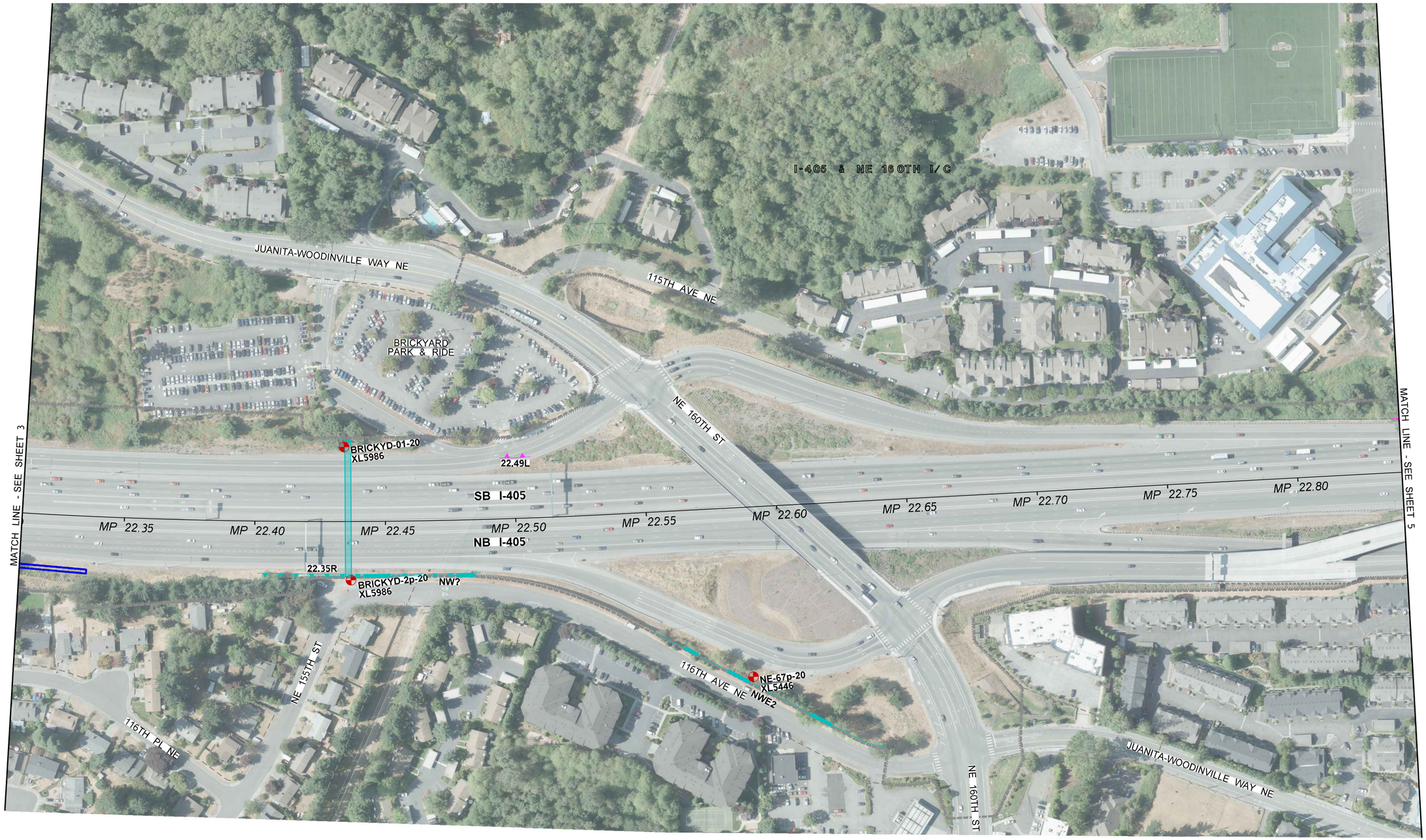
I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 3 OF 18 SHEETS

2/6/2023 12:47:50 PM BungerK

c:\users\bungerk\pw_wsdotd0529705\XL5446_PS_GDR_003.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

0 100 200
SCALE IN FEET

Washington State Department of Transportation

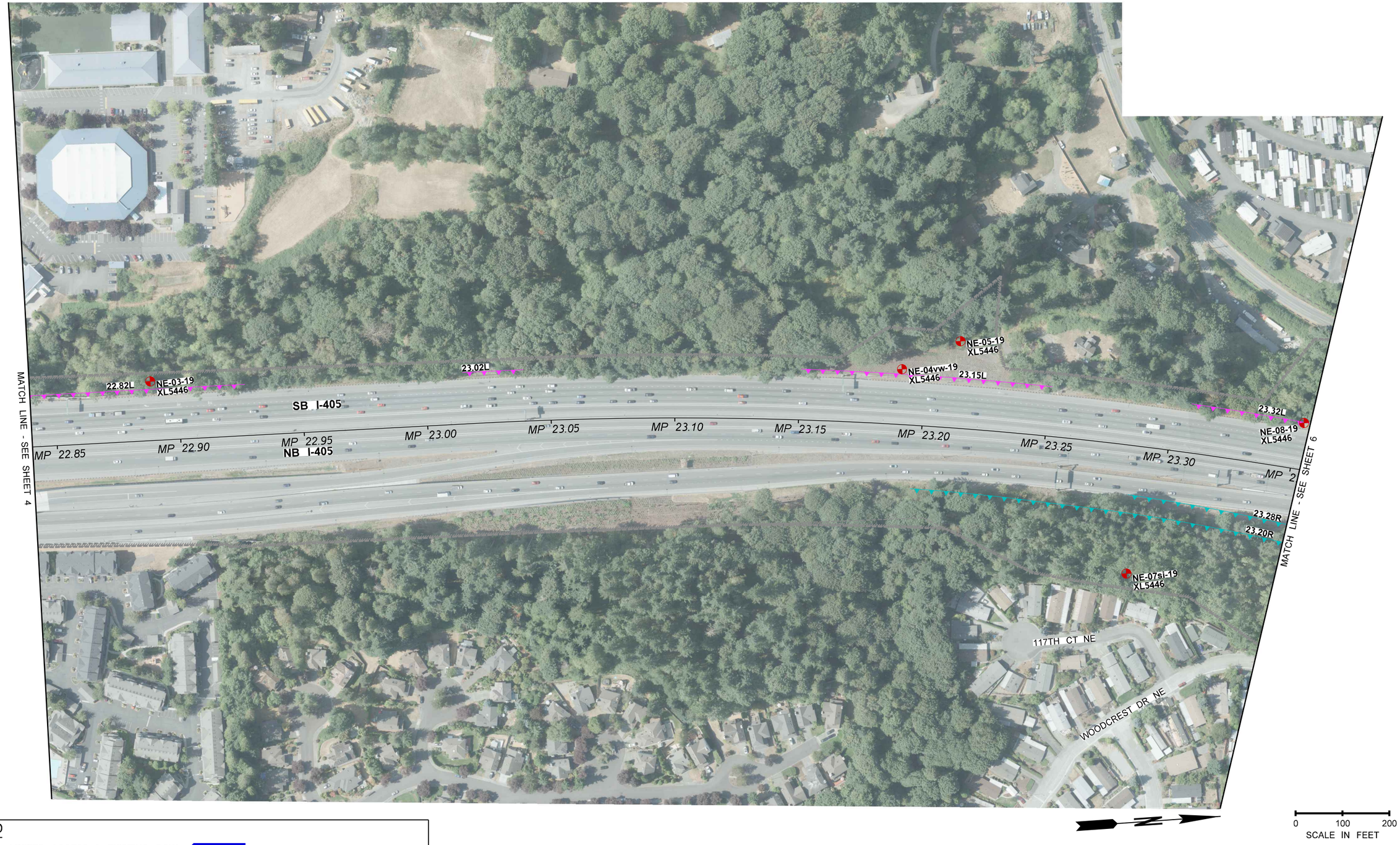
I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 4 OF 18 SHEETS

2/6/2023 12:48:43 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_004.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

0 100 200
SCALE IN FEET

Washington State Department of Transportation

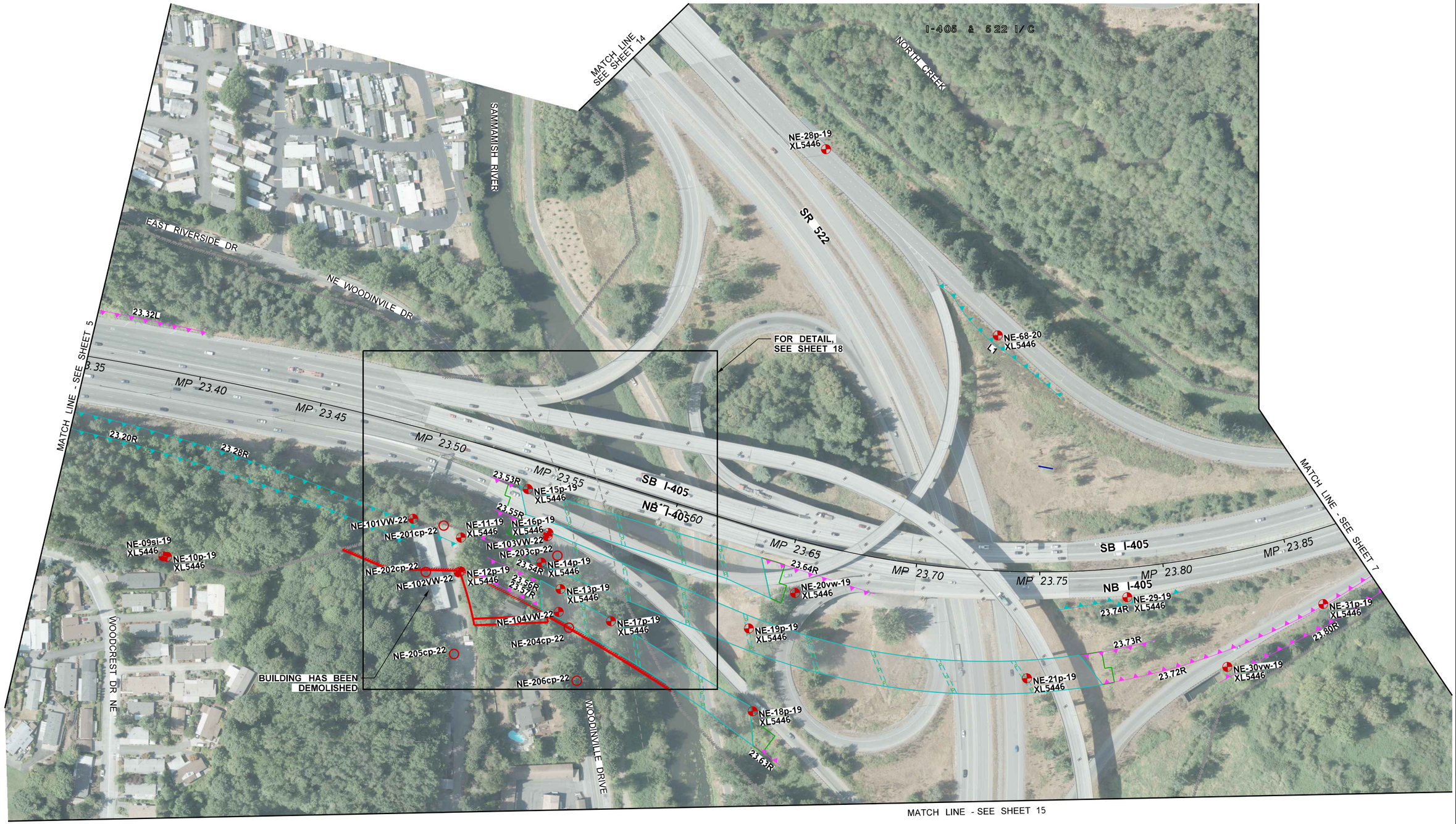
I-405
SR 522 VICINITY TO SR 527 EXPRESS TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 5 OF 18 SHEETS

2/6/2023 12:49:30 PM BungerK

c:\users\bungerk\pw_wsdotd0529705\XL5446_PS_GDR_005_REV1.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE
- CONTRACT CPT

N

0 100 200
SCALE IN FEET

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 6 OF 18 SHEETS

2/6/2023 12:50:17 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_006_Rev1.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 7 OF 18 SHEETS

2/6/2023 12:51:01 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_007.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 8 OF 18 SHEETS

c:\users\bungerk\pw_wsdotd0529705\XL5446_PS_GDR_008.dgn
12:51:55 PM
2/6/2023
BungerK



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

0 100 200
SCALE IN FEET

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 9 OF 18 SHEETS

2/6/2023 12:52:54 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_009_REV1.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

0 100 200
SCALE IN FEET

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 10 OF 18 SHEETS

2/6/2023

12:53:56 PM

BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_010.dgn

MATCH LINE - SEE SHEET 10

MATCH LINE - SEE SHEET 12

19TH AVE SE

228TH ST SE

SB I-405

NB I-405

MP 26.05 MP 26.10 MP 26.15 MP 26.20 MP 26.25 MP 26.30 MP 26.35 MP 26.40 MP 26.45 MP 26.50

NE-39-19 XL5446

NE-40-19 XL5446

NE-45-19 XL5446

26.42L

26.38R

NE-72p-20 XL5446

NWE6

26.02R

26.11R

NE-41-19 XL5446

NE-42p-19 XL5446

26.34R NW1

NE-43-19 XL5446

NE-44p-19 XL5446

NE-46p-19 XL5446

26.48R

228TH ST SE

20TH AVE SE

227TH ST SE

225TH ST SE

0 100 200
SCALE IN FEET

LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

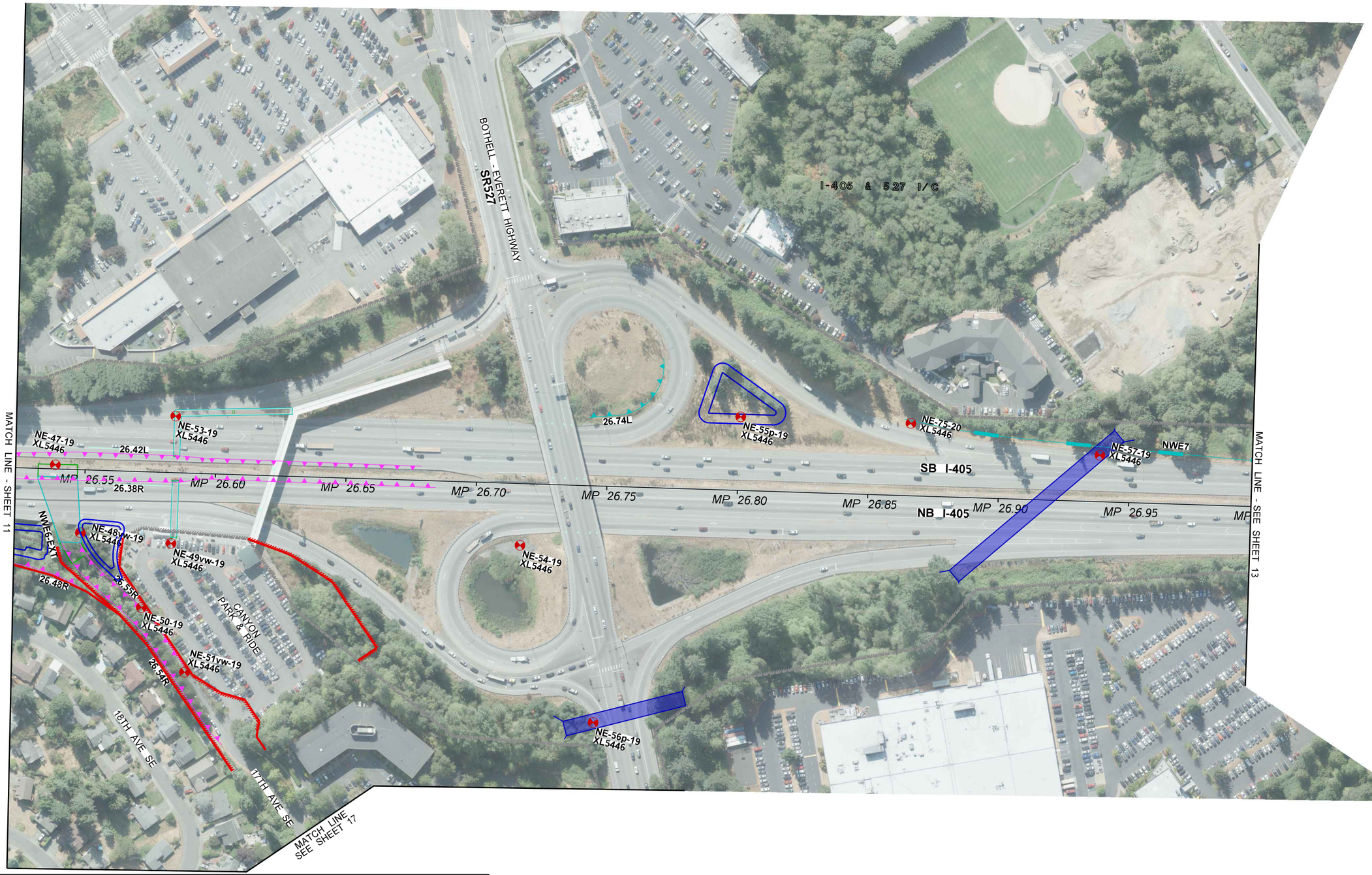
SHEET 11 OF 18 SHEETS

2/6/2023

12:54:54 PM

BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_011_REV1.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 12 OF 18 SHEETS

2/6/2023 12:55:50 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_012.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

0 100 200
SCALE IN FEET

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 13 OF 18 SHEETS

2/6/2023

12:56:52 PM

BungerK

c:\users\bungerk\pw_wsdotd0529705\XL5446_PS_GDR_013.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

N

0 100 200
SCALE IN FEET

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 14 OF 18 SHEETS

2/6/2023 12:57:45 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_014.dgn

MATCH LINE - SEE SHEET 6



MATCH LINE - SEE SHEET 16

0 100 200
SCALE IN FEET

LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 15 OF 18 SHEETS

2/6/2023 12:58:22 PM BungerK

c:\users\bungerk\pw_wsdotd0529705\XL5446_PS_GDR_015.dgn



0 100 200
SCALE IN FEET

LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 16 OF 18 SHEETS

2/6/2023 12:59:10 PM BungerK

c:\users\bungerk\pw_wsdotd0529705\XL5446_PS_GDR_016.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE

0 100 200
SCALE IN FEET

Washington State
Department of Transportation

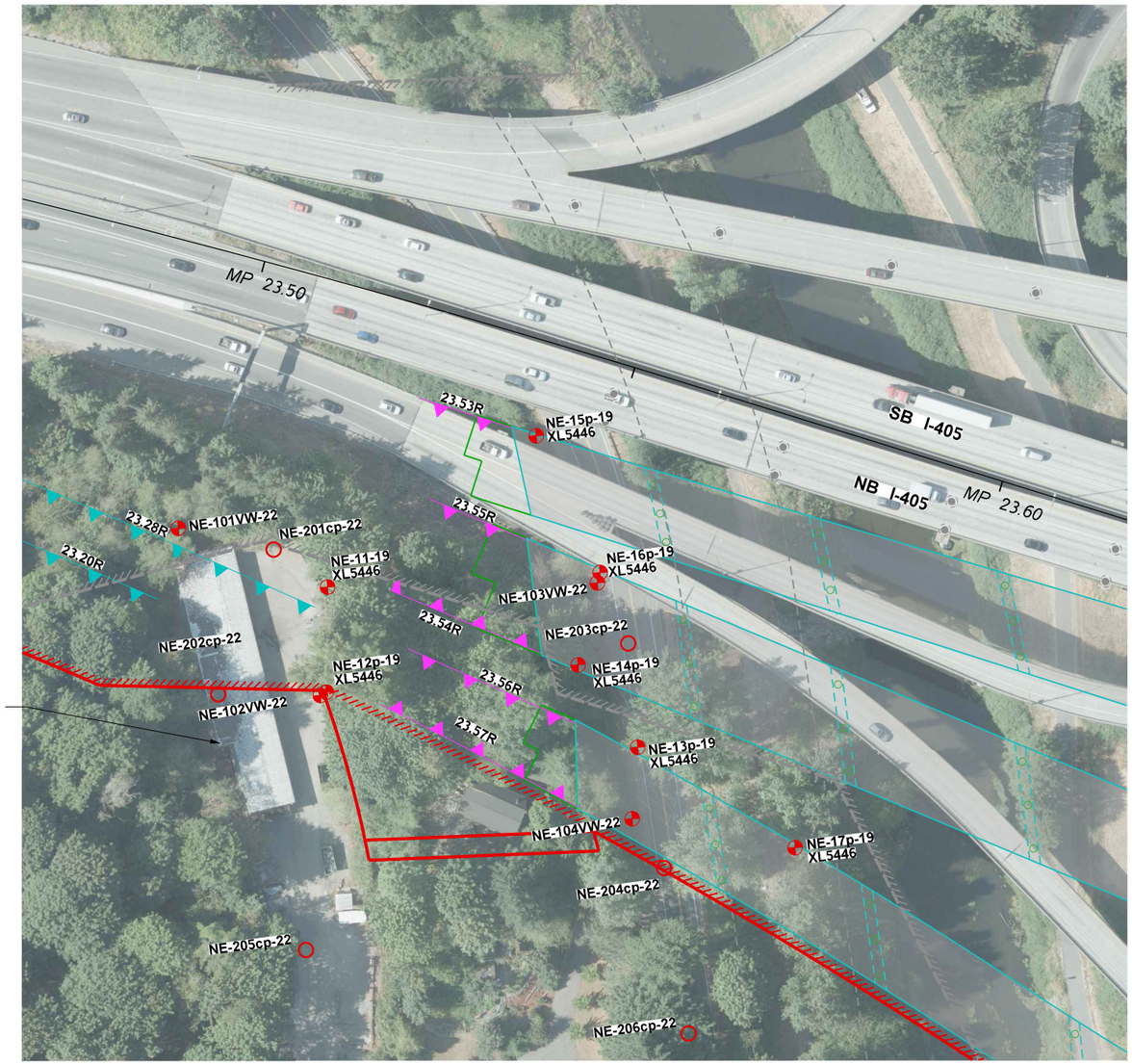
I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 17 OF 18 SHEETS

2/6/2023 12:59:46 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_017.dgn



LEGEND

- LIMITED ACCESS & EXISTING ROW
- PROPOSED RIGHT OF WAY
- NEW RETAINING WALL (FILL)
- NEW RETAINING WALL (CUT)
- NEW NOISE WALL
- DETENTION POND
- FISH PASSAGE AND DRAINAGE STRUCTURES
- NEW BRIDGE
- CONTRACT PROJECT BOREHOLE
- CONTRACT CPT

0 50 100
SCALE IN FEET

Washington State Department of Transportation

I-405
SR 522 VICINITY TO SR 527 EXPRESS
TOLL LANES IMPROVEMENT PROJECT

FIGURE 2: SITE AND EXPLORATION PLAN

SHEET 18 OF 18 SHEETS

2/6/2023 1:00:28 PM BungerK

c:\users\bungerk\pw_wsdot\d0529705\XL5446_PS_GDR_018_Rev1.dgn

APPENDIX A – PROJECT EXPLORATION LOGS

Table A-1 Summary of New Field Explorations for I-405, Brickyard to SR527 Improvement Project

Boring ID	Northing (ft) [1]	Easting (ft) [1]	Elevation (ft) [2]	Total Depth (feet)	Finish Date	Well Installed[3]	Other Installation[4]	Well ID#	Hammer Type	Hammer Energy %
BRICKYD-01-20	273007.286	1307189.625	281.674	79.9	07-23-20	---	---	---	AutoHammer	87.9
BRICKYD-2p-20	273002.723	1307459.213	289.908	49.7	07-23-20	Y	none	BMB-767	AutoHammer	81.3
NE-01-19	270284.772	1306922.028	248.888	57.4	05-29-19	---	---	---	AutoHammer	81.29
NE-02p-19	270335.257	1307140.506	241.045	79.8	06-04-19	Y	none	BLA-724	AutoHammer	87.9
NE-03-19	275399.068	1307266.505	214.638	33.0	05-01-19	---	---	---	AutoHammer	88.3
NE-04vw-19	277002.321	1307351.776	161.976	64.2	04-28-19	Y (VW)	none	BLA-714	AutoHammer	88.3
NE-05-19	277131.031	1307300.817	119.335	75.5	04-26-19	---	---	---	AutoHammer	88.3
NE-07si-19	277450	1307820	none	118.5	06-28-19	N	SI	BLA-747	AutoHammer	81.29
NE-08-19	277850.638	1307525.760	127.067	76.5	04-24-19	---	---	---	AutoHammer	88.3
NE-09si-19	277964.946	1308062.104	211.643	150.0	07-03-19	N	SI	BLA-748	AutoHammer	81.29
NE-10p-19	277972.569	1308063.671	211.260	29.5	07-03-19	Y	none	BLA-749	AutoHammer	81.29
NE-11-19	278602.541	1308066.246	105.560	160.5	07-17-19	---	---	---	AutoHammer	91.1
NE-12p-19	278596.649	1308138.052	104.537	151.0	07-18-19	Y	none	BLA-716	AutoHammer	81.3
NE-13p-19	278807.065	1308190.532	53.684	123.8	12-19-19	Y	none	BLA-744	AutoHammer	91.1
NE-14p-19	278770.248	1308131.344	61.192	110.3	07-18-19	Y	none	BLA-745	AutoHammer	81.29
NE-15p-19	278752.435	1307972.735	57.446	136.0	07-26-19	Y	none	BLA-717	AutoHammer	81.29
NE-16p-19	278789.635	1308069.228	54.204	119.3	12-06-19	Y	none	BLA-718	AutoHammer	87.9
NE-17p-19	278910.001	1308266.656	39.066	150.2	06-12-19	Y	none	BLA719	AutoHammer	87.9
NE-18p-19	279198.941	1308479.801	55.931	160.5	06-20-19	Y	none	BLA-721	AutoHammer	81.29
NE-19p-19	279203.136	1308302.600	32.644	166.0	06-06-19	Y	none	BLA-730	AutoHammer	81.3
NE-20vw-19	279306.977	1308233.642	32.635	150.5	02-23-19	Y (VW)	none	BLA-729	AutoHammer	91.7
NE-21p-19	279788.838	1308450.057	36.861	171.0	03-15-19	Y	none	BLA-728	AutoHammer	89.4
NE-22p-19	279516.101	1309098.273	31.566	50.5	06-05-19	Y	none	BLA-732	AutoHammer	87.9
NE-23-19	279741.688	1309078.715	33.949	51.0	03-05-19	---	---	---	AutoHammer	91.7
NE-24-19	279293.488	1310511.123	33.092	46.0	04-09-19	---	---	---	AutoHammer	91.7
NE-25p-19	279463.470	1310494.138	35.320	41.0	03-06-19	Y	none	BLA-733	AutoHammer	91.7
NE-26-19	279217.762	1310899.471	33.016	41.0	04-10-19	---	---	---	AutoHammer	91.7
NE-28p-19	279438.586	1307292.154	38.699	31.5	09-28-19	Y	none	BLA-731	AutoHammer	91.1
NE-29-19	280014.983	1308291.985	60.803	101.5	05-13-19	---	---	---	AutoHammer	81.29
NE-30vw-19	280218.002	1308455.414	36.118	81.5	05-08-19	Y (VW)	none	BLA-725	AutoHammer	81.29
NE-31p-19	280432.006	1308335.547	39.510	75.5	09-24-19	Y	none	BLA-726	AutoHammer	91.1
NE-32p-19	280583.144	1308278.506	35.548	75.5	06-11-19	Y	none	BLA-727	AutoHammer	81.29
NE-33-19	280901.894	1308128.806	28.432	51.5	06-12-19	---	---	---	AutoHammer	81.29
NE-34p-19	283517.613	1306750.664	46.690	50.5	04-22-19	Y	none	BLA-720	AutoHammer	87.9
NE-35p-19	286428.149	1306350.352	97.154	49.8	04-23-19	Y	none	BLA-723	AutoHammer	87.9
NE-36p-19	287782.428	1305830.225	152.150	65.3	05-30-19	Y	none	BLN-030	AutoHammer	87.9
NE-37-19	288898.708	1305430.872	193.631	64.4	05-29-19	---	---	---	AutoHammer	81.29
NE-38-19	290387.506	1304211.958	170.153	29.8	05-28-19	---	---	---	AutoHammer	87.9
NE-39-19	291116.102	1303254.001	145.022	31.5	05-22-19	---	---	---	AutoHammer	81.29
NE-40-19	291389.541	1302932.536	131.601	30.4	05-21-19	---	---	---	AutoHammer	81.29
NE-41-19	291579.354	1302934.776	130.726	70.5	06-04-19	---	---	---	AutoHammer	81.29

Table A-1 Summary of New Field Explorations for I-405, Brickyard to SR527 Improvement Project

Boring ID	Northing (ft) [1]	Easting (ft) [1]	Elevation (ft) [2]	Total Depth (feet)	Finish Date	Well Installed[3]	Other Installation[4]	Well ID#	Hammer Type	Hammer Energy %
NE-42p-19	291766.502	1302694.140	123.492	49.5	06-05-19	Y	none	BLA-741	AutoHammer	81.29
NE-43-19	291920.469	1302521.729	118.119	45.5	06-06-19	---	---	---	AutoHammer	81.29
NE-44p-19	292100.763	1302321.364	115.738	49.5	07-30-19	Y	none	BLN-023	AutoHammer	81.29
NE-45-19	292062.065	1302016.313	112.400	50.4	05-01-19	---	---	---	AutoHammer	89.4
NE-46p-19	292299.266	1302084.121	114.464	49.5	08-01-19	Y	none	BLN-024	AutoHammer	81.29
NE-47-19	292354.081	1301835.394	118.714	61.5	06-09-19	---	---	---	AutoHammer	81.29
NE-48vw-19	292494.943	1301875.710	119.117	76.5	08-15-19	Y (VW)	none	BLA-743	AutoHammer	81.29
NE-49vw-19	292620.411	1301740.469	121.132	75.5	09-29-19	Y (VW)	none	BLA-750	AutoHammer	91.1
NE-50-19	292689.563	1301865.384	117.349	60.5	05-19-19	---	---	---	AutoHammer	87.9
NE-51vw-19	292846.802	1301872.213	113.747	49.5	05-19-19	Y (VW)	none	BLN-031	AutoHammer	91.1
NE-53-19	292418.483	1301580.567	121.806	75.5	09-27-19	---	---	---	AutoHammer	91.1
NE-54-19	293040.563	1301173.083	124.048	40.5	06-08-19	---	---	---	AutoHammer	81.29
NE-55p-19	293094.752	1300659.334	155.175	30.5	06-06-19	Y	none	BLA-722	AutoHammer	87.7
NE-56p-19	293416.990	1301265.240	140.462	50.0	06-07-19	Y	none	BLN-034	AutoHammer	81.29
NE-57-19	293586.502	1300119.017	172.187	60.5	09-26-19	---	---	---	AutoHammer	91.1
NE-64p-19	287869.459	1306092.025	124.593	50.5	05-15-19	Y	none	BLA-739	AutoHammer	81.29
NE-65p-19	288977.046	1305738.334	147.412	50.5	05-20-19	Y	none	BLA-740	AutoHammer	81.29
NE-67p-20	273801.382	1307710.587	291.397	50.5	08-21-20	Y	none	BMB-777	AutoHammer	91.1
NE-68-20	279777.511	1307714.657	54.785	60.5	08-17-20	---	---	---	AutoHammer	88.3
NE-69p-20	286112.026	1306485.824	82.042	50.5	08-11-20	Y	none	BMM-414	AutoHammer	91.1
NE-70p-20	286089.326	1306633.899	84.987	55.0	08-05-20	Y	none	BMB-778	AutoHammer	88.3
NE-72p-20	291355.332	1303239.663	139.256	41.5	08-12-20	Y	none	BMB-779	AutoHammer	88.3
NE-73p-20	293905.288	1301458.046	124.386	40.4	11-17-20	Y	none	BMB-780	AutoHammer	91.7
NE-74p-20	293789.741	1299863.562	181.447	39.3	08-20-20	Y	none	BMB-800	AutoHammer	91.1
NE-75-20	293308.631	1300389.270	155.432	44.5	08-21-20	---	---	---	AutoHammer	91.1
NE-76p-20	286206.385	1306383.975	90.303	60.5	07-29-20	Y	none	BMM334	AutoHammer	91.1
NE-77p-20	286322.179	1306322.743	96.213	60.5	07-28-20	Y	none	BMM335	AutoHammer	91.1
NE-78p-20	286266.957	1306306.815	106.475	50.0	08-19-20	Y	none	BMM-339	AutoHammer	88.3
NE-79p-20	286169.369	1306648.309	68.543	41.5	08-07-20	Y	none	BMM-343	AutoHammer	88.3
NE-80p-20	286023.692	1306451.827	82.059	60.5	07-30-20	Y	none	BMM344	AutoHammer	91.1

Notes

[1] Washington State Plan North

[2] NGVD 1988

[3] VW = Vibrating Wire Pressure Transducer / Piezometer; "---" = none

[4] SI - Slope Inclinometer

Field Exploration Summary

Drilling Methods

The drill rigs used by the WSDOT Geotechnical Office are manufactured by Central Mine Equipment (CME) Company. Track mounted and skid type drills are often used on WSDOT's projects. The boring logs indicate what model of drill was used and the drilling method. Typically, wet rotary methods are used with water acting to remove cuttings, lubricate, and cool the bits. Depending on the soils encountered, polymer or bentonite slurry is used to control caving and heave. In addition to wet rotary methods, hollow stem augers may be used.

Disturbed Sampling of Soil

Disturbed samples are generally taken at 2 1/2- to 5-foot intervals in the borings to evaluate stratigraphy by visual examination and to obtain soil specimens for laboratory index testing. Disturbed samples are collected using split-barrel samplers following AASHTO T206 and ASTM D 1586 procedures for Standard Penetration Testing (SPT) of soil. The drill rigs used on this Project were equipped with CME automatic hammers with a chain mounted "dog" that lifts and repeatedly drops the 140-pound hammer from a height of 30 inches during SPT testing. SPT tests were generally driven 18 inches in three successive 6-inch long increments. The initial 6-inch increment is considered a seating drive and is typically ignored. The blows required for the second and third 6-inch increments are totaled to provide blows/foot. This total is referred to as the SPT resistance or "N-value". The blow counts recorded in the field are summarized on the boring logs for the Project and have not been corrected for overburden pressure, flexure of the rods, or silt content. Where the soils are very dense, the testing is terminated when the blows for a 6-inch increment exceed 50 blows per foot to avoid damaging the equipment. In this case, the blows are reported as 50 over the distance driven in 50 blows, such as 50/4 inches.

Undisturbed Sampling of Soil

Undisturbed soil samples are taken for performing laboratory strength and consolidation testing on generally cohesive soils. Thin-walled, 3-inch, Shelby tubes are preferred for obtaining relatively undisturbed samples of the soils. For the direct-push sampling method using a Shelby tube, the steel thin-walled tube is connected to a sampling head that is attached to the drill rods. The tube is pushed by the hydraulic rams of the drill rig into the soil below the bottom of a drill hole and then retracted to obtain a sample.

Similar to Shelby tubes, piston samplers were pushed into the undisturbed soil at the bottoms of boreholes hydraulically. The piston sampler uses a stationary piston at the top of the soil to be sampled, creating suction while the sampler is retrieved and achieving increased sample retention compared to a Shelby tube.

However, if the soils are too stiff, an oversized sampler may be used. The sampler is pushed, but may be driven, to retrieve the sample. The boring logs indicate the sampler type used.

WSDOT EXPLORATION LOG LEGEND

In Situ Sample and Test Symbols

	Standard Penetration Test
	Non-standard Penetration Test
	Shelby Tube
P	Piston Sampler
	WSDOT Undisturbed Sampler
	Core Sample
G	Grab Sample
	California Sampler
	Vane Shear Test
P	Pressuremeter Test

Backfill and Instrument Symbols

	Cement Surface Seal
	Bentonite Chips
	Bentonite Cement Grout (BCM)
	Sand Filter Pack
	Slough (Hole Collapse)
	Pipe (Piezometer or Instrument) in BCM
	Well Screen in Sand Filter Pack
	Vibrating Wire Piezometer in BCM

Water Level Symbols

▽	Water Level During Drilling	→	Transducer Depth
	Water Range in Piezometer	DRY	Water is Below Transducer

Laboratory Testing Codes

AL	Atterberg Limits Test
CD	Consolidated Drained Triaxial Test
CN	1-Dimensional Consolidation Test
CSS	Cyclic Simple Shear Test
CU	Consolidated Undrained Triaxial Test
DG	Degradation Test
DN	Density Test
DS	Direct Shear Test
DSS	Direct Simple Shear Test
GS	Grain Size Distribution Test
HC	Hydraulic Conductivity Test
HT	Hydrometer Test
JS	Jar Slake Test
LA	LA Abrasion Test
LOI	Loss on Ignition Test
MC	Moisture Content Test
PH	pH Test
PT	Point Load Compressive Test
RES	Resistivity Test
RS	Torsional Ring Shear Test
SG	Specific Gravity Test
SL	Slake Durability Test
UC	Unconfined Compression Test
UU	Unconlidated Undrained Triaxal Test

Soil Stratigraphy Symbols

COARSE GRAINED	FINE GRAINED & ORGANIC
GW: Well-graded Gravel	CL: Lean Clay
GP: Poorly graded Gravel	ML: Silt
GM: Silty Gravel	CH: Fat Clay
GC: Clayey Gravel	MH: Elastic Silt
SW: Well-graded Sand	OL: Organic Silt
SP: Poorly graded Sand	OH: Organic Clay
SM: Silty Sand	CL-ML: Silty Clay (dual symbol)
SC: Clayey Sand	PT: Peat or Highly Organic Soil

Soil classification is per Chapter 4.2 of the WSDOT Geotechnical Design Manual (GDM). The soil groups above contain less than 15% of other constituents. When more than 15% other constituents are observed, the soil group names are modified (e.g. Silty Gravel with Sand; Sandy, Elastic Silt with Gravel) per ASTM 2488. For dual classifications, a split symbol is used (e.g. CL-ML above). Refer to the Material Description column on the log for a complete description of the observed soil conditions.

Soil Density/Consistency

WSDOT GDM 4.2.5

COHESIONLESS SOILS		COHESIVE SOILS	
Blows/Ft	Density Term	Blows/Ft	Consistency Term
< 5	Very Loose	< 2	Very Soft
5 - 10	Loose	2 - 4	Soft
11 - 24	Medium Dense	5 - 8	Medium Stiff
25 - 50	Dense	9 - 15	Stiff
> 50	Very Dense	16 - 30	Very Stiff
		31 - 60	Hard
		> 60	Very Hard

(REF) is indicated on the log for any soil type when the penetration resistance exceeded 100 blows per foot (refusal conditions).

Soil Angularity

WSDOT GDM 4.2.4

Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

Soil Moisture

WSDOT GDM 4.2.7

Dry	Absence of moisture, dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible Free Water

Soil Structure

WSDOT GDM 4.2.8

Stratified	Alternating layers of varying material or color with layers at least 0.25 inch thick
Laminated	Alternating layers of varying material or color with layers less than 0.25 inch thick
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into smaller angular lumps which resists further breakdown
Disrupted	Soil structure is broken and mixed. Infers that material has moved substantially - landslide debris
Homogeneous	Same color and appearance throughout
Cemented	Particles are held together by a binding agent

DATUM ABBREVIATIONS: NAD = North American Datum; NAVD = North American Vertical Datum; SPN = State Plane North; SPS = State Plane South

WSDOT

LOG OF BORING BRICKYD-01-20

Project: Pedestrian Bridge and BRT Station
Job Number: XL6138
Route & MP Range: SR 405 MP 21.40 - 23.60
Northing: 273,007.3 feet
Latitude: 47.740398 deg.
Driller/Inspector: Walker, Robert (#2864) / Shepherd, Robert #2710
Easting: 1,307,189.6 feet
Longitude: -122.187709 deg.
Start Card: SE-74668 AE-61804
Elevation: 281.7 feet
Collector: Region Survey
Drilling Method: Casing Advancer
Hole Diam.: 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88
Equipment: CME 850 (ID:9C2-4)
Rod Type: AWJ
Started: July 22, 2020
Completed: July 23, 2020
Hammer Type: AutoHammer
Historic Efficiency: 87.9%
Remark: Brickyard Pedestrian Bridge

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	280	12 37 15 (52) Rec=0.9'		D-1		SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.
5	275	8 10 9 (19) Rec=1.4'		D-2	GS, AL	SILTY SAND, medium dense, light brown, moist, homogeneous, Bottom .4 had FEO Stains.
		11 19 37 (56) Rec=0.9'		D-3		SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.
10		24 50/6" (REF) Rec=1.0'		D-4	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.
	270	13 50/6" (REF) Rec=1.0'		D-5		SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.
		50/6" (REF) Rec=0.6'		D-6		SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.
15	265	40 50/3" (REF) Rec=0.8'		D-7	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.
		50/3" (REF) Rec=0.4'		D-8		SILTY SAND WITH GRAVEL, subrounded, very dense, light brownish gray, moist, homogeneous.
20	260					
		50/3" (REF) Rec=0.2'		D-9		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.
25	255					
30		50/4" (REF) Rec=0.4'		D-10		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Water Observations: 07-23-20 ▽

Backfill

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL6138 405 BRTBRICKYARDPK&RIDE.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

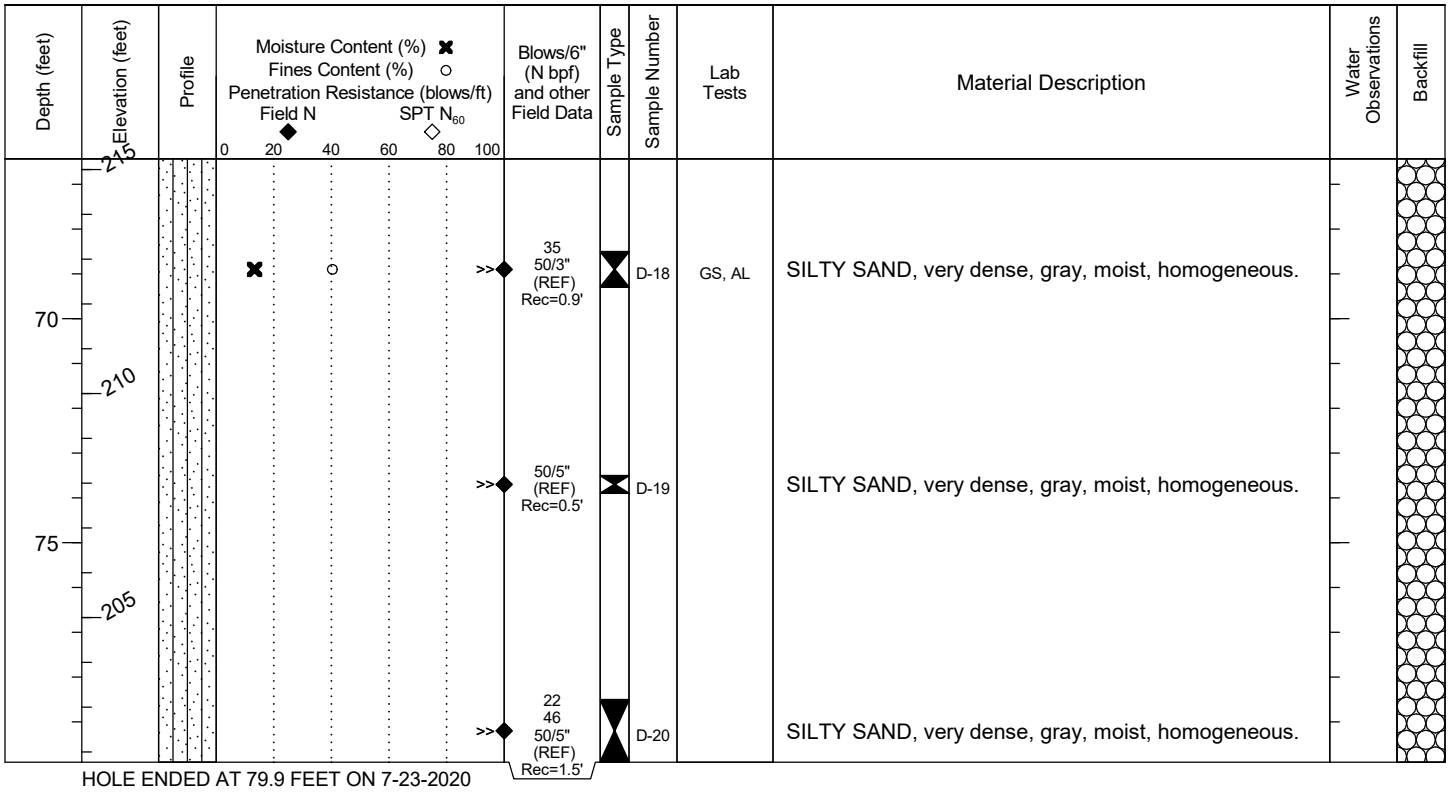
Project: Pedestrian Bridge and BRT Station *Job Number:* XL6138 *Route & MP Range:* SR 405 MP 21.40 - 23.60

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
	250									
35			○ ✖ ◆ ◇	22 29 37 (66) Rec=1.5'		D-11	GS, AL	POORLY GRADED SAND WITH SILT, very dense, gray, wet, homogeneous, Trace Gravel. *-Drilling behavior indicates gravels at approx. 35 ft.*		
	245									
40			✖ ○	>> ◆ 33 50/6" (REF) Rec=1.1'		D-12	GS, AL	SILTY SAND, very dense, gray, moist, homogeneous.		
	240									
45				>> ◆ 50/4" (REF) Rec=0.5'		D-13		SILTY SAND, very dense, gray, moist, homogeneous.		
	235									
50				>> ◆ 50/5" (REF) Rec=0.6'		D-14		SILTY SAND, very dense, gray, moist, homogeneous.		
	230									
55				>> ◆ 45 50/1" (REF) Rec=0.8'		D-15		SILTY SAND, very dense, gray, moist, homogeneous.		
	225									
60				>> ◆ 50/2" (REF) Rec=0.0'		D-16		NO RECOVERY		
	220									
65				>> ◆ 43 50/3" (REF) Rec=0.8'		D-17		SILTY SAND, very dense, gray, moist, homogeneous.		

STANDARD BORING LOG XL6138 405 BRTBRICKYARDPK&RIDE.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: Pedestrian Bridge and BRT Station *Job Number:* XL6138 *Route & MP Range:* SR 405 MP 21.40 - 23.60



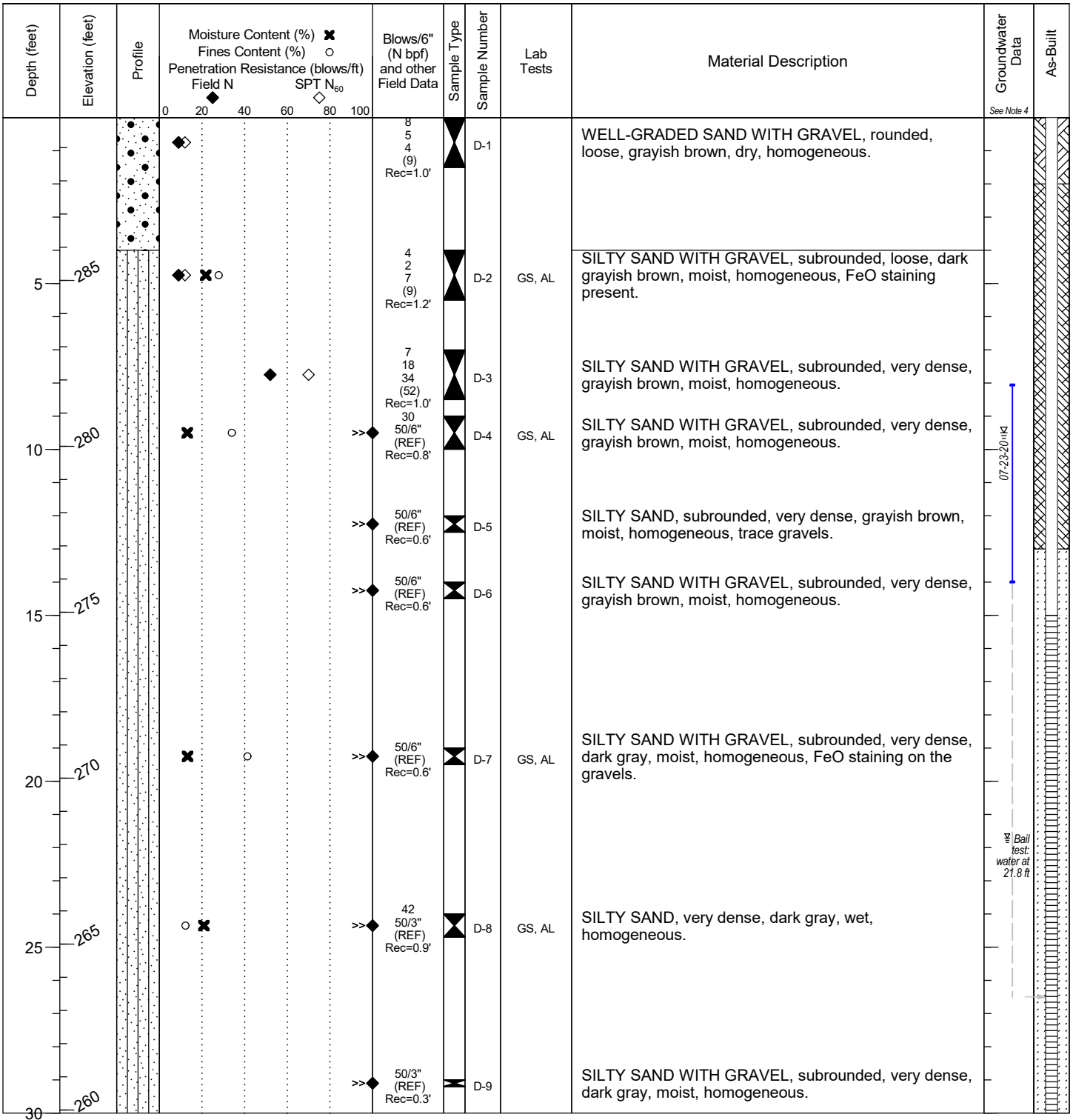
NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

WSDOT

LOG OF BORING BRICKYD-2p-20

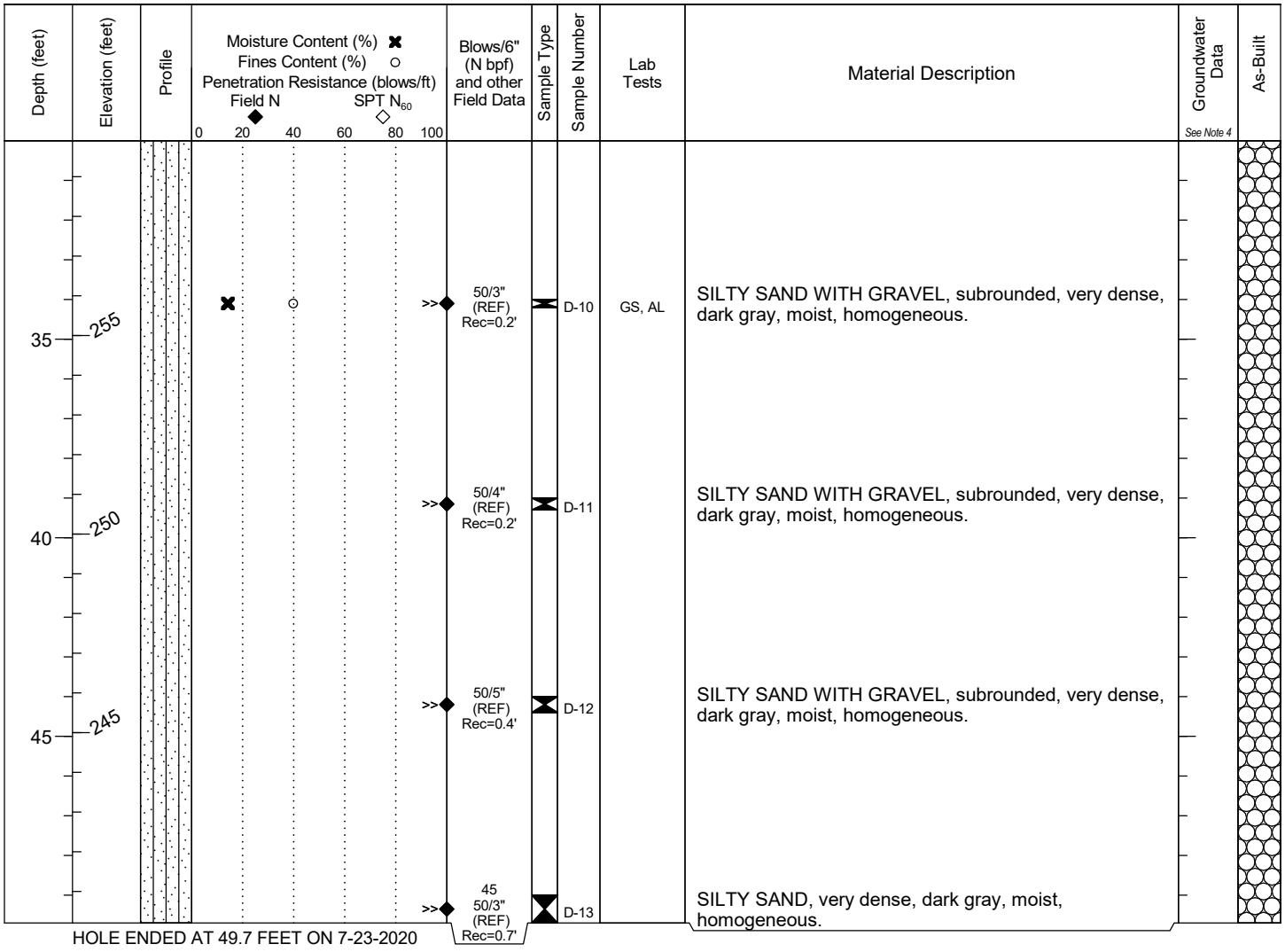
Project: Pedestrian Bridge and BRT Station
Job Number: XL6138 *Route & MP Range:* SR 405 MP 21.40 - 23.60
Northing: 273,002.7 feet *Latitude:* 47.740399 deg. *Driller/Inspector:* Peterson, Trevor (#3008) / Henderson, Danny #2742
Easting: 1,307,459.2 feet *Longitude:* -122.186614 deg. *Start Card:* RE18967 *Well Tag:* BMB-767 *Instrument:* 1" PVC
Elevation: 289.9 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-5) *Rod Type:* AWJ
Started: July 22, 2020 *Completed:* July 23, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.3%
Remark: Brickyard Pedestrian Bridge and Wall 22.35R



STANDARD BORING LOG XL6138 405 BRTBRICKYARDPK&RIDE.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: Pedestrian Bridge and BRT Station *Job Number:* XL6138 *Route & MP Range:* SR 405 MP 21.40 - 23.60



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 8/5/2020 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

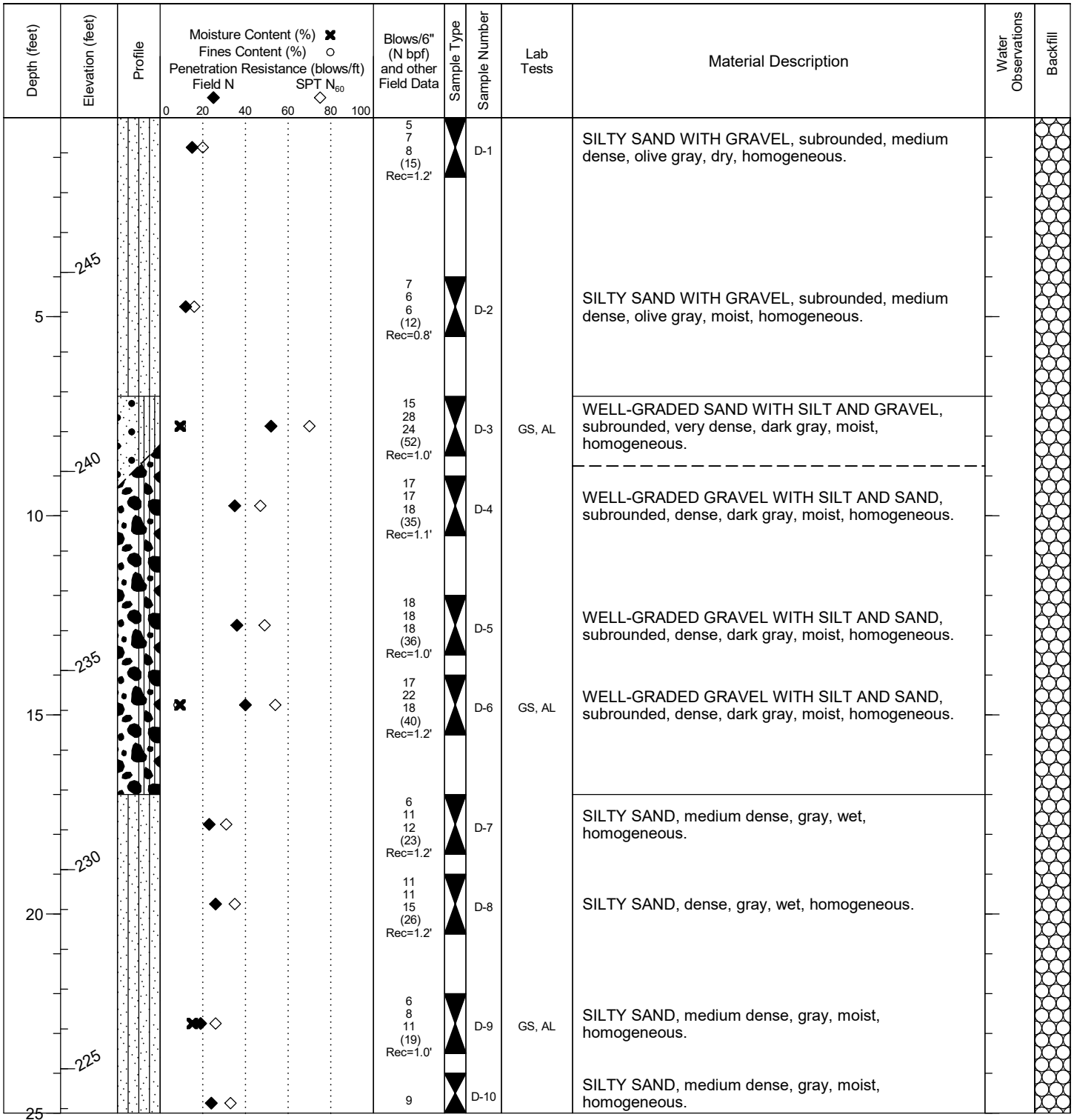
Test Date: July 23, 2020
Hole Depth / Casing Depth: 49.7 feet / 49.0 feet
Water Depth Before Bailing: 0.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	40.7
1	39.8
2	39.6
3	39.3
4	39.1
5	38.9
10	38.2
15	25.1
20	23.2
25	21.8
30	21.8

WSDOT

LOG OF BORING NE-01-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 270,284.8 feet *Latitude:* 47.732923 deg. *Driller/Inspector:* Peterson, Trevor (#3008) / Haller, Robert #2779
Easting: 1,306,922.0 feet *Longitude:* -122.188602 deg. *Start Card:* SE-69016 AE-53372 *Well Tag:* N/A *Instrument:*
Elevation: 248.9 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ
Started: May 29, 2019 *Completed:* May 29, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%
Remark: Juanita Creek at MP 21.94 (998602)



CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/30/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
				12 12 (24) Rec=0.5'		D-10				
				4 6 6 (12) Rec=1.1'		D-11		SILTY SAND, medium dense, gray, wet, homogeneous.		
	220			4 4 4 (8) Rec=0.6'		D-12		SILTY SAND, loose, gray, wet, homogeneous.		
30										
				4 3 4 (7) Rec=0.6'		D-13		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, loose, gray, wet, homogeneous.		
	215			3 2 2 (4) Rec=0.7'		D-14	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, very loose, gray, wet, homogeneous, used oversize sampler to retain a sample 2in Id 2.5in Od.	▽ Bail test: water at 34.2 ft	
35										
				3 2 3 (5) Rec=0.2'		D-15		SILTY SAND, subrounded, loose, gray, wet, homogeneous, with gravel and wood debris, used oversize sampler to retain a sample 2in Id 2.5in Od.		
	210			9 13 23 (36) Rec=0.6'		D-16		SILTY GRAVEL WITH SAND, subrounded, dense, dark gray, wet, homogeneous.		
40										
				22 27 30 (57) Rec=1.3'		D-17		POORLY GRADED SAND, very dense, olive gray, moist, homogeneous.		
	205			11 21 28 (49) Rec=1.4'		D-18		POORLY GRADED SAND, dense, olive gray, moist, homogeneous.		
45										
	200			22 36 43 (79) Rec=1.5'		D-19		SILTY SAND, very dense, gray, moist, homogeneous.		
50			>>							
	195			31 50/5" (REF) Rec=1.0'		D-20		SILTY SAND, very dense, gray, wet, homogeneous.		
55			>>							

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/30/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
			>>	30 40 50/4" (REF) Rec=1.3'		D-21		SILTY SAND, very dense, gray, moist, homogeneous.		

HOLE ENDED AT 57.4 FEET ON 5-29-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 29, 2019
Hole Depth / Casing Depth: 57.4 feet / 56.0 feet
Water Depth Before Bailing: 34.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	40.6
1	37.0
2	36.1
3	35.5
4	35.0
5	34.5
10	34.2
15	34.2
20	34.2
30	34.2

WSDOT

LOG OF BORING NE-02p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 270,335.3 feet *Latitude:* 47.733072 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Harvey, Thomas #2599

Easting: 1,307,140.5 feet *Longitude:* -122.187718 deg. *Start Card:* RE17185 *Well Tag:* BLA-724 *Instrument:* 1" PVC

Elevation: 241.0 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-4) *Rod Type:* AWJ

Started: June 3, 2019 *Completed:* June 4, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.9%

Remark: Juanita Creek at MP 21.94 (998602)

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	240	7 10 12 16 (22) Rec=1.5'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, brown, moist, homogeneous.
5	235	8 7 7 (14) Rec=0.8'		D-2		WELL-GRADED GRAVEL WITH SAND, subrounded, medium dense, brown, moist, homogeneous.
		5 6 6 (12) Rec=0.4'		D-3		WELL-GRADED GRAVEL WITH SAND, subrounded, medium dense, brown, wet, homogeneous.
10	230	4 5 5 (10) Rec=0.4'		D-4		WELL-GRADED GRAVEL WITH SAND, subrounded, loose, brown, wet, homogeneous.
		7 8 9 (17) Rec=1.5'		D-5	GS, AL	SILTY SAND WITH GRAVEL, subrounded, medium dense, grayish brown, moist, homogeneous.
15	225	11 11 9 (20) Rec=0.0'		D-6		NO RECOVERY
		1 2 2 (4) Rec=0.3'		D-7		POORLY GRADED SAND, very loose, grayish brown, wet, homogeneous.
20	220	1 1 1 (2) Rec=0.4'		D-8		SILTY SAND WITH GRAVEL, subrounded, very loose, gray, wet, homogeneous.
		3 4 3 (7) Rec=0.6'		D-9		POORLY GRADED SAND, loose, gray, wet, homogeneous.
25	215	3 4 4 (8) Rec=0.2'		D-10		POORLY GRADED SAND WITH GRAVEL, subangular, loose, gray, wet, homogeneous.
		1 2 10 (12) Rec=1.5'		D-11		POORLY GRADED SAND WITH GRAVEL, subrounded, medium dense, gray, wet.
30		11		D-12	GS, AL	SILT WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data (See Note 4): Bail test: water at 20 ft

As-Built: 2.0"

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/3/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
	210	13 15 (28) Rec=1.5'		D-12	GS, AL	
		12 18 27 (45) Rec=1.5'		D-13		SILT, dense, gray, moist, homogeneous.
35	205	13 20 26 (46) Rec=1.0'		D-14	GS, AL	SILTY SAND, dense, gray, moist, homogeneous.
		19 32 >>38 (70) Rec=1.5'		D-15		SILTY SAND, very dense, gray, moist, homogeneous.
40	200	26 34 >>35 (69) Rec=1.5'		D-16	GS, AL	SILTY SAND, very dense, gray, moist, homogeneous.
		26 37 >>42 (79) Rec=1.5'		D-17		POORLY GRADED SAND, very dense, grayish brown, moist, homogeneous.
45	195	24 40 >>39 (79) Rec=1.5'		D-18		POORLY GRADED SAND, very dense, grayish brown, moist, stratified.
		19 29 37 (66) Rec=1.5'		D-19	GS, AL	SILT, very dense, gray, moist, homogeneous.
50	190	18 27 34 (61) Rec=1.5'		D-20		SILT, very dense, gray, moist, homogeneous, laminated.
		19 31 >>48 (79) Rec=1.5'		D-21		SILT, very dense, gray, moist, homogeneous, laminated.
55	185					
		17 19 24 (43) Rec=1.5'		D-22		SILT, dense, gray, moist, homogeneous, laminated.
60	180					
		16 20 27 (47) Rec=1.5'		D-23	GS, AL	SILT, dense, gray, moist, homogeneous, laminated.
65	175					

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4

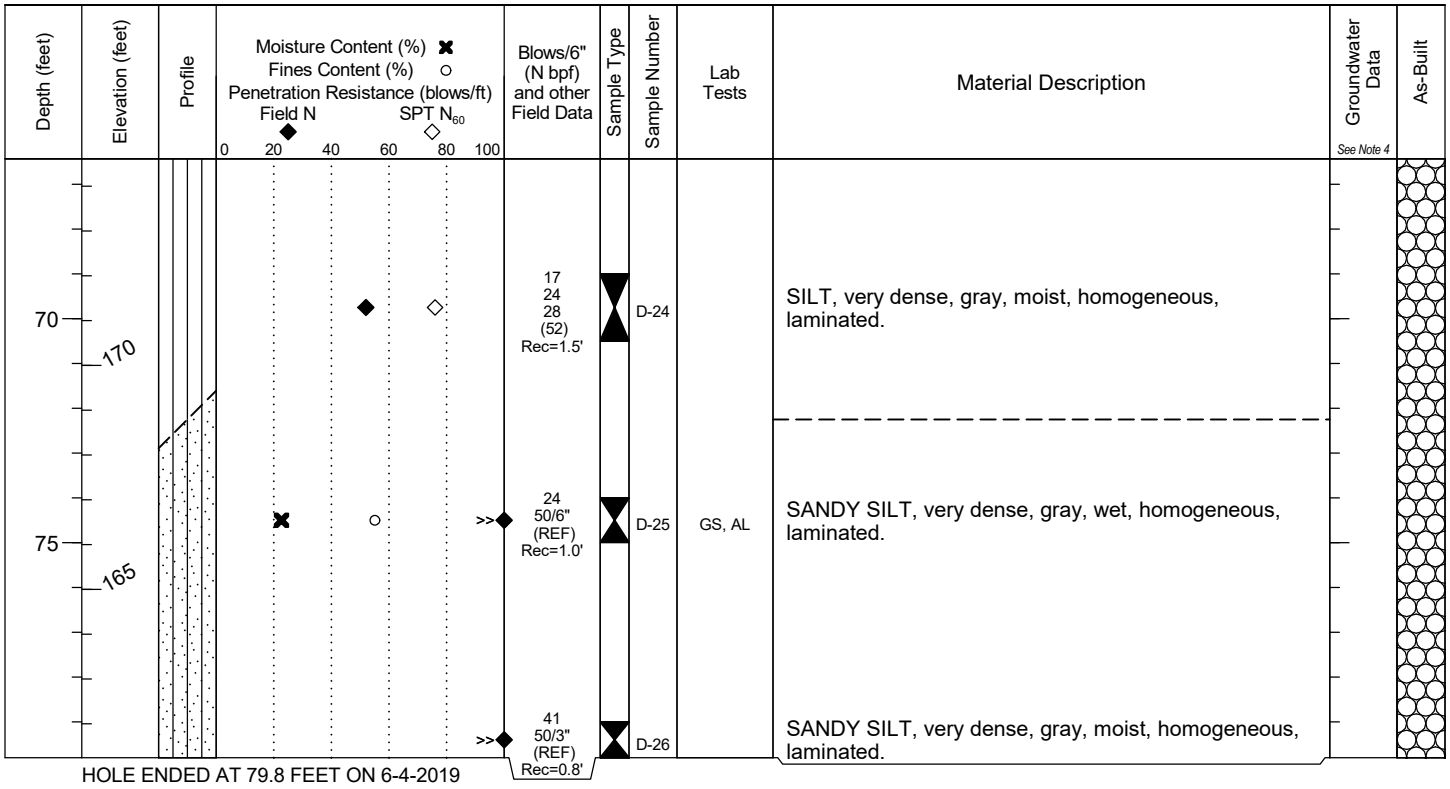
As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/3/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 7/24/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

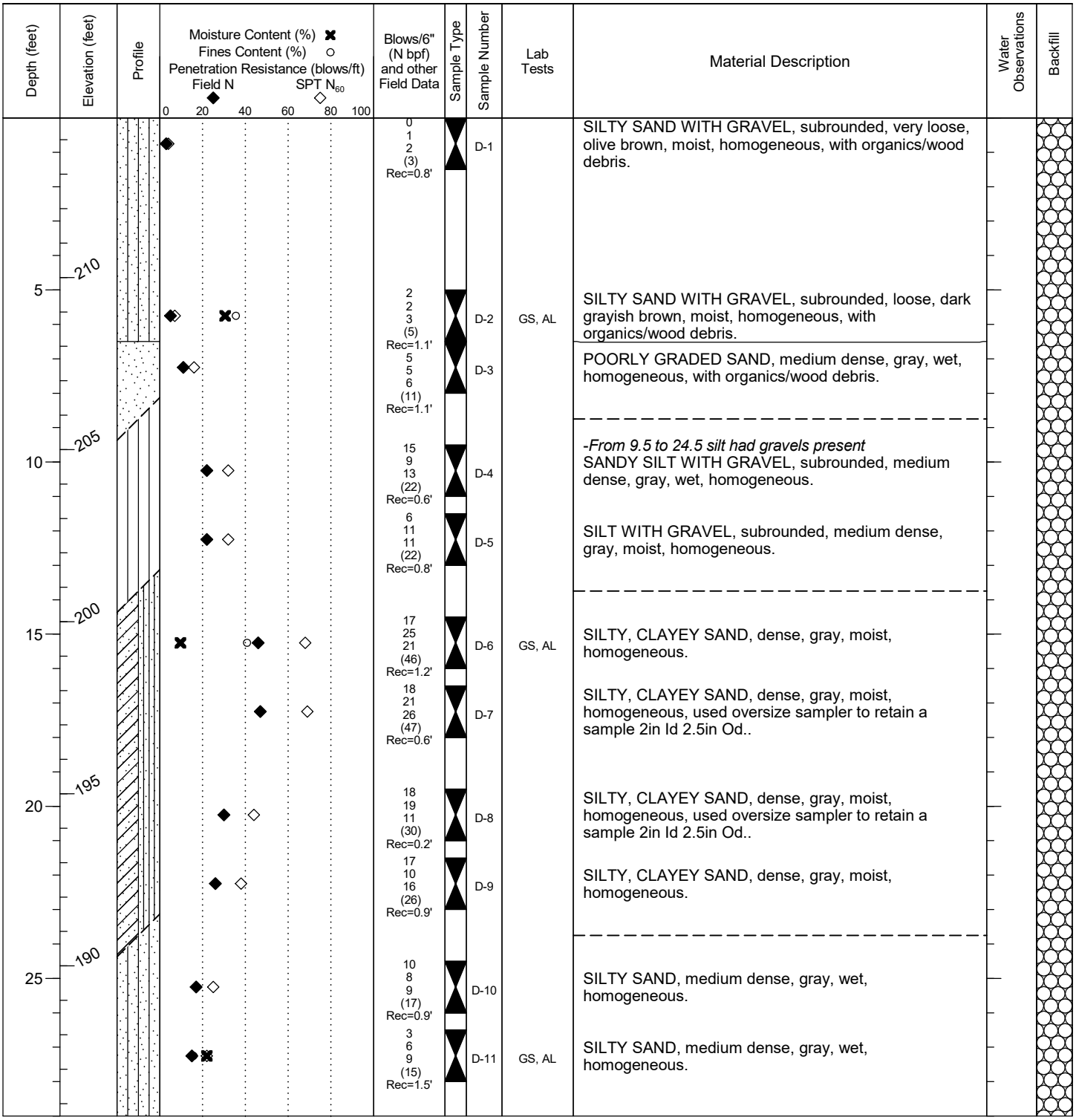
Test Date: June 4, 2019
Hole Depth / Casing Depth: 79.8 feet / 74.0 feet
Water Depth Before Bailing: 16.1 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	27.3
1	22.4
5	21.9
10	21.4
15	20.9
20	20.7
25	20.2
30	20.0
35	20.0

WSDOT

LOG OF BORING NE-03-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 275,399.1 feet *Latitude:* 47.746958 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779
Easting: 1,307,266.5 feet *Longitude:* -122.187568 deg. *Start Card:* SE-69584 AE-54207 *Well Tag:* N/A *Instrument:*
Elevation: 214.6 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ
Started: April 30, 2019 *Completed:* May 1, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%
Remark: Wall 22.82L



STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
30	185			10 16 20 (36) Rec=1.5'		D-12		*-At 29.5 ft, encountered artesian with seepage of 3 gallons per minute.* SILTY SAND, dense, gray, wet, homogeneous.		
				12 13 14 (27) Rec=1.5'		D-13	GS, AL	SILTY SAND, dense, gray, wet, homogeneous, stratified with sandy silt, sample split into 2 bags, A (silty sand) & B (sandy silt, 32.3' to 33', lab tested).		

HOLE ENDED AT 33.0 FEET ON 5-1-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

WSDOT

LOG OF BORING NE-04vw-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 277,002.3 feet *Latitude:* 47.751356 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779
Easting: 1,307,351.8 feet *Longitude:* -122.187336 deg. *Start Card:* RE-17172 *Well Tag:* BLA-714 *Instrument:* VWP
Elevation: 162.0 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ
Started: April 27, 2019 *Completed:* April 28, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%
Remark: Wall 23.15L

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				2 4 6 (10) Rec=1.0'		D-1		SILTY GRAVEL WITH SAND, subrounded, loose, very dark gray, moist, homogeneous.		2.0'
5	160			5 7 18 (25) Rec=0.9'		D-2		SILTY GRAVEL WITH SAND, subrounded, dense, very dark gray, moist, homogeneous.		
	155			2 3 6 (9) Rec=1.2'		D-3	GS, AL	SANDY SILTY CLAY, stiff, olive, moist, homogeneous, disrupted.		
10				2 3 6 (9) Rec=1.3'		D-4		SANDY SILTY CLAY, stiff, olive gray, moist, homogeneous.		
	150			4 5 8 (13) Rec=1.3'		D-5		SANDY SILTY CLAY, stiff, olive, moist, homogeneous, disrupted, with organics/wood debris, FeO staining present.		
15				5 4 6 (10) Rec=1.3'		D-6		SILTY SAND, loose, olive gray, moist, homogeneous, disrupted, with organics/wood debris, FeO staining present.		
	145			3 5 3 (8) Rec=1.4'		D-7		SILTY SAND, loose, gray, wet, homogeneous.		
20				3 3 3 (6) Rec=1.3'		D-8	GS, AL	SILTY SAND, loose, olive, moist, homogeneous.		
	140			7 6 9 (15) Rec=1.4'		D-9		SILTY SAND, medium dense, grayish brown, wet, homogeneous.		
25				6		D-10		SILTY SAND, medium dense, olive, wet, homogeneous.		

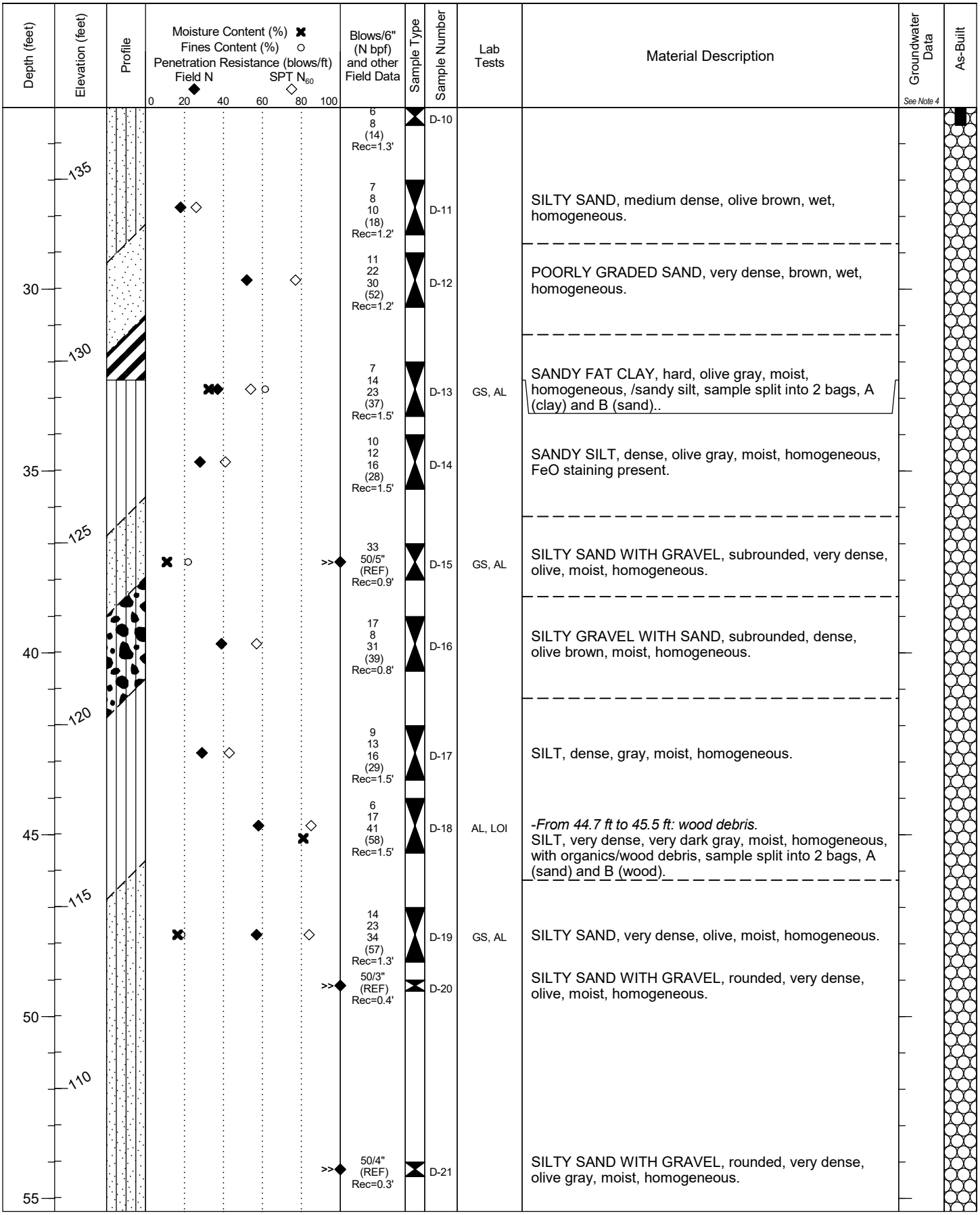
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/30/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

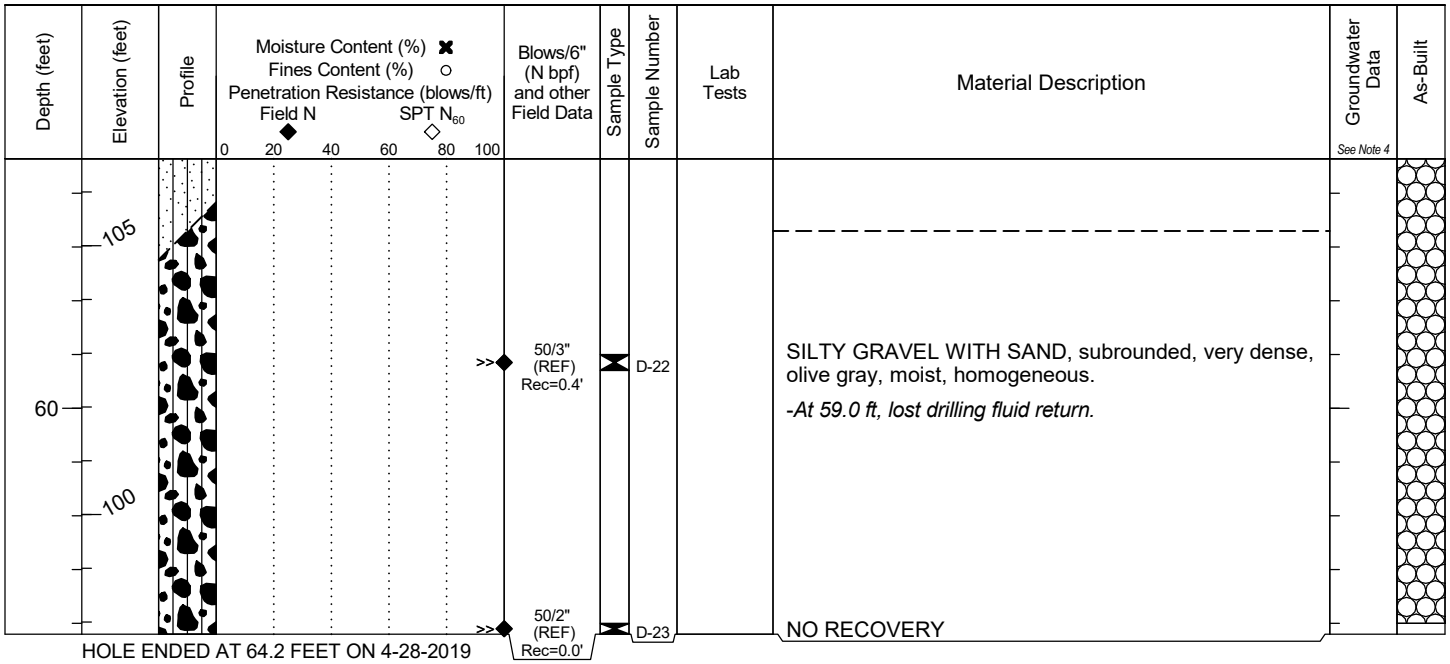
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/30/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



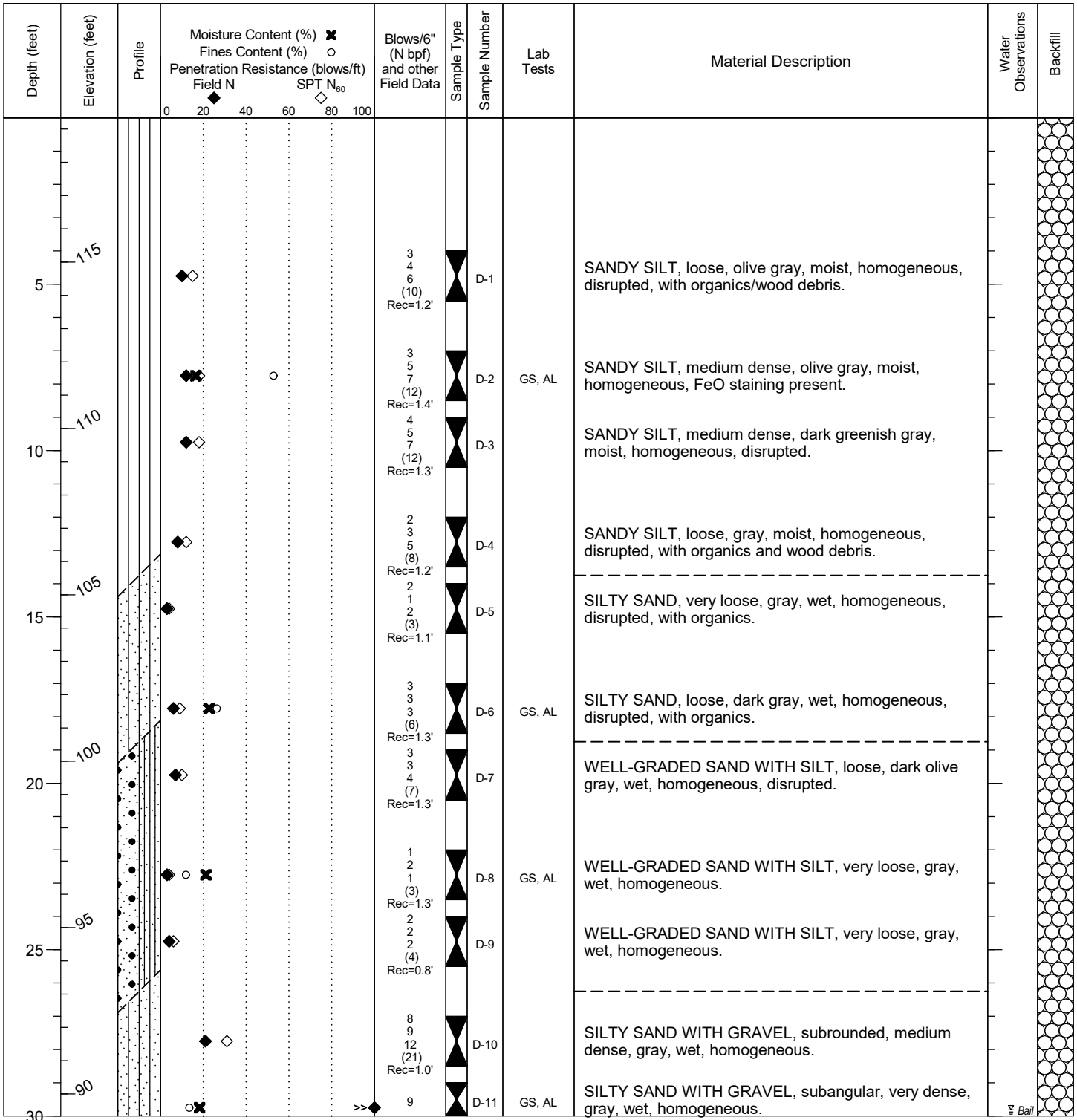
NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 10/28/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-05-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 277,131.0 feet *Latitude:* 47.751707 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779
Easting: 1,307,300.8 feet *Longitude:* -122.187552 deg. *Start Card:* SE-69003 AE-53351 *Well Tag:* N/A *Instrument:*
Elevation: 119.3 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ
Started: April 25, 2019 *Completed:* April 26, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%
Remark: Wall 23.15L



CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/30/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
		25 50/5" (REF) Rec=1.3'		D-11	GS, AL		*test: water at 29.9 ft*	
		16 24 30 (54) Rec=1.3'		D-12		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.		
35	85	8 10 16 (26) Rec=1.0'		D-13	GS, AL	SILTY SAND, dense, gray, wet, homogeneous.		
		8 16 20 (36) Rec=1.2'		D-14		SILTY SAND, dense, gray, moist, homogeneous.		
40	80	20 >> 50/5" (REF) Rec=1.0'		D-15		SILTY SAND, very dense, olive gray, moist, homogeneous.		
45	75	>> 50/3" (REF) Rec=0.2'		D-16		WELL-GRADED GRAVEL WITH SAND, subrounded, very dense, gray, wet, homogeneous.		
50	70	26 30 >> 41 (71) Rec=1.5'		D-17	GS, AL	SILTY SAND, very dense, olive gray, moist, homogeneous.		
55	65	30 36 >> 38 (74) Rec=1.2'		D-18		SILTY SAND, very dense, olive gray, moist, homogeneous.		
60	60	21 27 33 (60) Rec=1.3'		D-19		SILTY SAND, very dense, olive gray, moist, homogeneous.		
65	55	24 33 >> 49 (82) Rec=1.3'		D-20		SILTY SAND, very dense, olive gray, moist, homogeneous.		

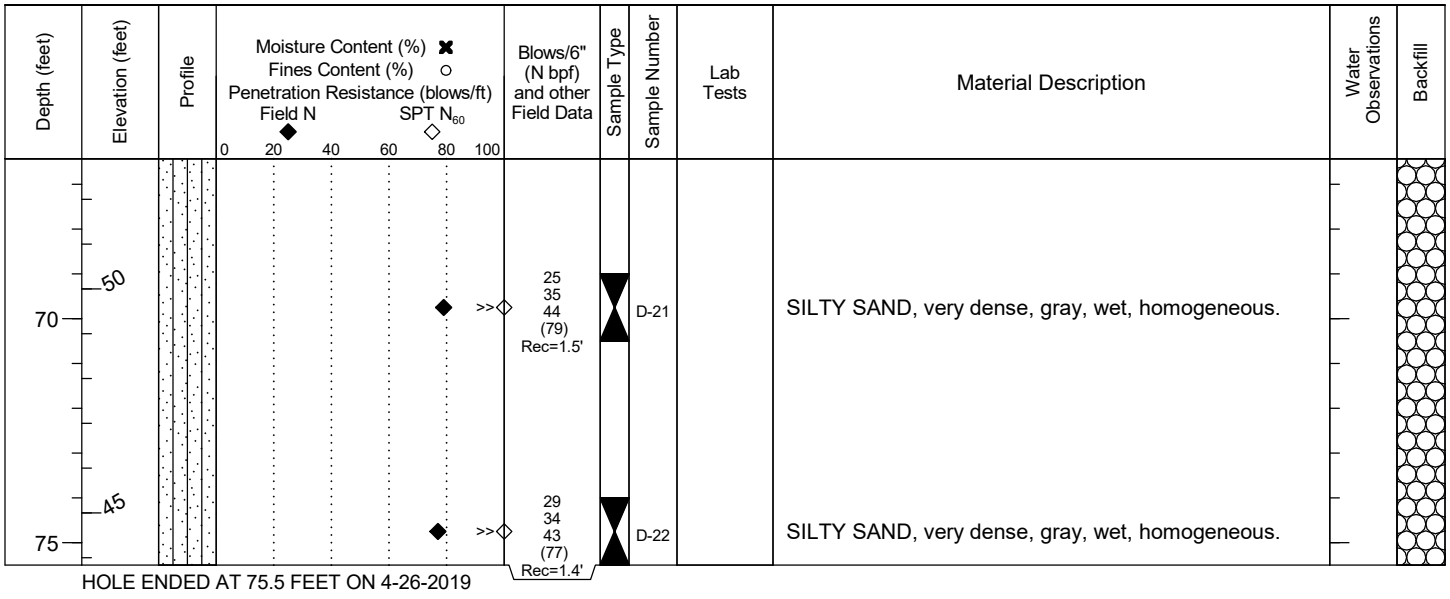
Profile

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/30/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 75.5 FEET ON 4-26-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: April 26, 2019
Hole Depth / Casing Depth: 75.5 feet / 40.0 feet
Water Depth Before Bailing: 11.5 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	30.2
1	29.9
2	29.9
3	29.9
4	29.9
5	29.9
10	29.9
15	29.9

WSDOT

LOG OF BORING NE-07si-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: ~277,450 feet *Latitude:* ~47.75261 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Fetterly, Jamie #2507

Easting: ~1,307,820 feet *Longitude:* ~-122.18546 deg. *Start Card:* RE-17452 *Well Tag:* BLA-747 *Instrument:* INC

Elevation: ~ feet *Collector:* Geotech Office GPS *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: June 26, 2019 *Completed:* June 28, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: Walls 23.20R and 23.28R

Depth (feet)	Approximate Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built (1.8")
				1 2 5 (7) Rec=0.5'		D-1		SANDY SILT, loose, brown, moist, homogeneous.		
5				5 6 7 (13) Rec=1.0'		D-2		SILTY SAND, medium dense, brown, moist, homogeneous.		
				5 6 8 (14) Rec=1.3'		D-3	GS, AL	SILTY SAND, medium dense, olive brown, moist, homogeneous, trace FeO stains present.		
10				5 7 9 (16) Rec=1.3'		D-4		*-At 8.9 ft. some gravels present* SILTY SAND, medium dense, olive, moist, homogeneous.		
				6 12 16 (28) Rec=1.1'		D-5	GS, AL	SILTY SAND, dense, brown, moist.		
15				6 15 20 (35) Rec=1.0'		D-6		SILTY SAND, dense, brown, moist, homogeneous.		
				17 22 27 (49) Rec=1.2'		D-7	GS, AL	SILTY SAND, dense, grayish brown, moist, homogeneous.		
20				15 22 28 (50) Rec=1.2'		D-8		SILTY SAND, dense, grayish brown, moist, homogeneous.		
			>>	23 50/5" (REF) Rec=0.9'		D-9		*-At 21.5 ft. drilling behavior indicated a very dense layer* SILTY, CLAYEY SAND WITH GRAVEL, subrounded, very dense, olive, moist, homogeneous.		
			>>	50/6" (REF) Rec=0.5'		D-10		SILTY, CLAYEY SAND WITH GRAVEL, subrounded, very dense, olive, moist, homogeneous, gravels present up to 1.5 inches. *-At 24.6 ft. gravels up to 1.5 inches are present*		
25			>>	21 50/6" (REF) Rec=1.0'		D-11	GS, AL	SILTY, CLAYEY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.		
			>>	50/1" (REF) Rec=0.0'		D-12		*-At 28.8 ft. drilling behavior indicated an 8-in cobble* *-Driving on an 8-in cobble*		
30										

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Approximate Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
								NO RECOVERY		
								-Drilling behavior indicated gravelly drilling.		
35				>> 50/4" (REF) Rec=0.3'		D-13		SILTY GRAVEL WITH SAND, subrounded, very dense, olive, moist, homogeneous.		
								-Drilling behavior indicated very gravelly drilling.		
				>> 50/5" (REF) Rec=0.3'		D-14		SILTY GRAVEL WITH SAND, subrounded, very dense, olive, moist, homogeneous.		
40										
				>> 50/6" (REF) Rec=0.4'		D-15		POORLY GRADED SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.		
45										
			◆ ◇	20 25 37 (62) Rec=1.5'		D-16		SANDY SILT, very dense, olive, moist, stratified with FeO-stained silty sand, sample split into 2 bags A & B.		
50										
			✖ ○	>> 19 36 50/2" (REF) Rec=1.2'		D-17	GS, AL	SANDY SILT, very dense, olive, moist, homogeneous.		
55										
			◆ ◇	22 24 28 (52) Rec=1.5'		D-18		SILTY SAND, very dense, olive, moist, homogeneous, laminated with FeO stained sandy silt.		
60										
				>> 27 38 50/2" (REF) Rec=0.9'		D-19		SILTY SAND, very dense, olive, moist, homogeneous.		
65										

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/9/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

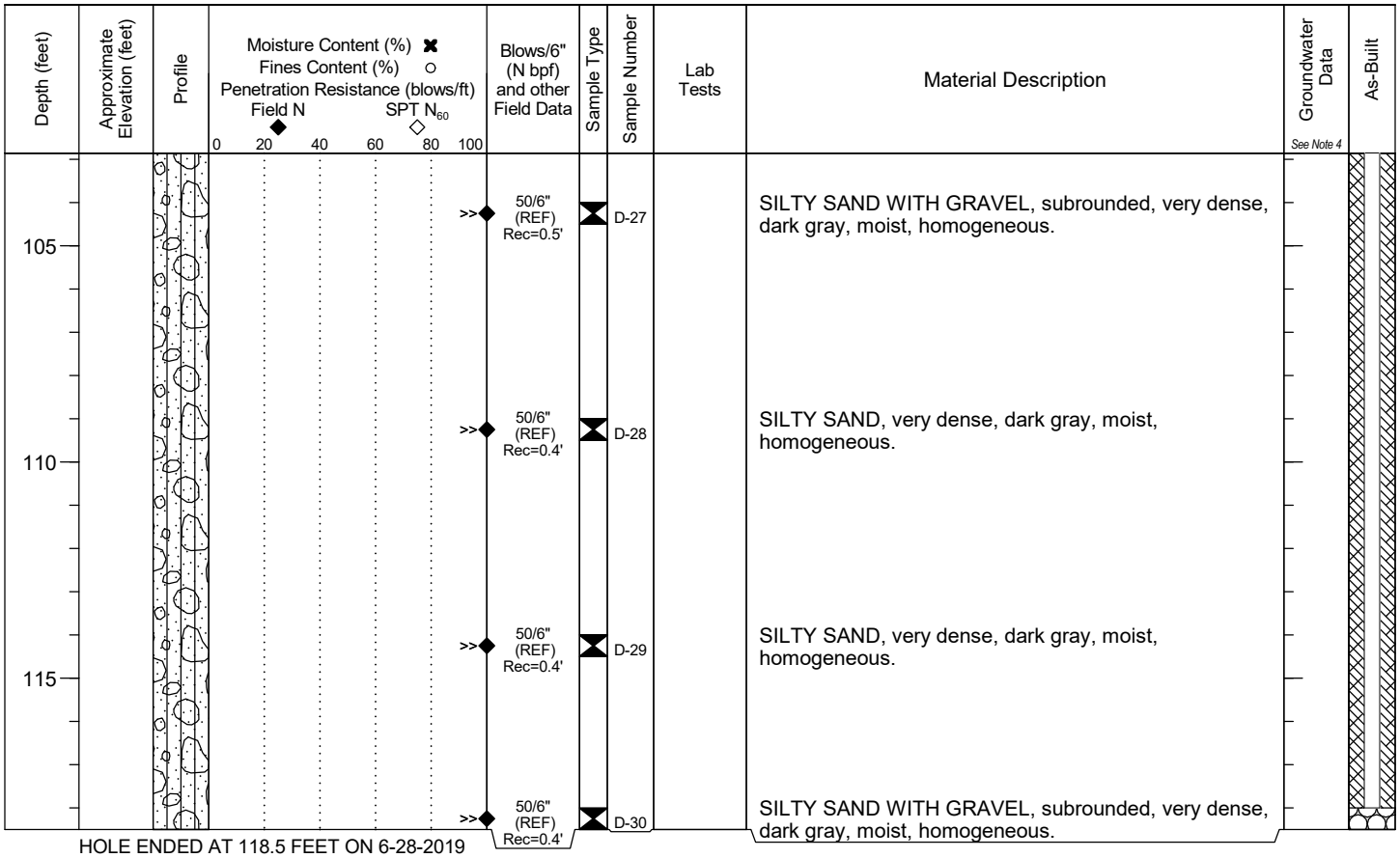
Depth (feet)	Approximate Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data	As-Built
70			✖○	>>◆ 39 50/5" (REF) Rec=0.6'		D-20	GS, AL	SILTY SAND, very dense, olive, moist, homogeneous.	See Note 4	
75			◆ >>◇	21 27 48 (75) Rec=0.9'		D-21		SILTY SAND, very dense, dark gray, moist, homogeneous.		
80			✖ ◆ ◇○	17 22 28 (50) Rec=1.5'		D-22	GS, AL	SILT WITH SAND, dense, dark gray, moist, homogeneous.		
85				>>◆ 16 50/6" (REF) Rec=1.0'		D-23		SILT WITH SAND, very dense, dark gray, moist, homogeneous.		
90			✖	>>◆ 22 36 50/4" (REF) Rec=1.2'		D-24a D-24b	LOI	SILT, very hard, black, moist, with organics (Wood), (Bag A). ORGANIC SOIL, very hard, black, moist, coal like, (Bag B).	▼ *Bail test: water at 90.5 ft*	
								-Drilling behavior indicated very dense drilling.		
95			◆ ◇	20 26 31 (57) Rec=1.5'		D-25				
100				>>◆ 50/2" (REF) Rec=0.2'		D-26		WELL-GRADED GRAVEL WITH SAND, subangular, very dense, gray, moist, homogeneous, tried to use Oversize sampler.. *-Drilling behavior indicated drilling in gravel from 99.0 ft to 106.0 ft.*		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 118.5 FEET ON 6-28-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.
5. A Slope Inclinometer with a standpipe monument was installed.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 28, 2019
Hole Depth / Casing Depth: 118.5 feet / 118.0 feet
Water Depth Before Bailing: 27.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	90.1
1	90.1
2	90.1
3	90.1
4	90.1
5	90.1
10	90.3
20	90.5

WSDOT

LOG OF BORING NE-08-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 277,850.6 feet *Latitude:* 47.753690 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

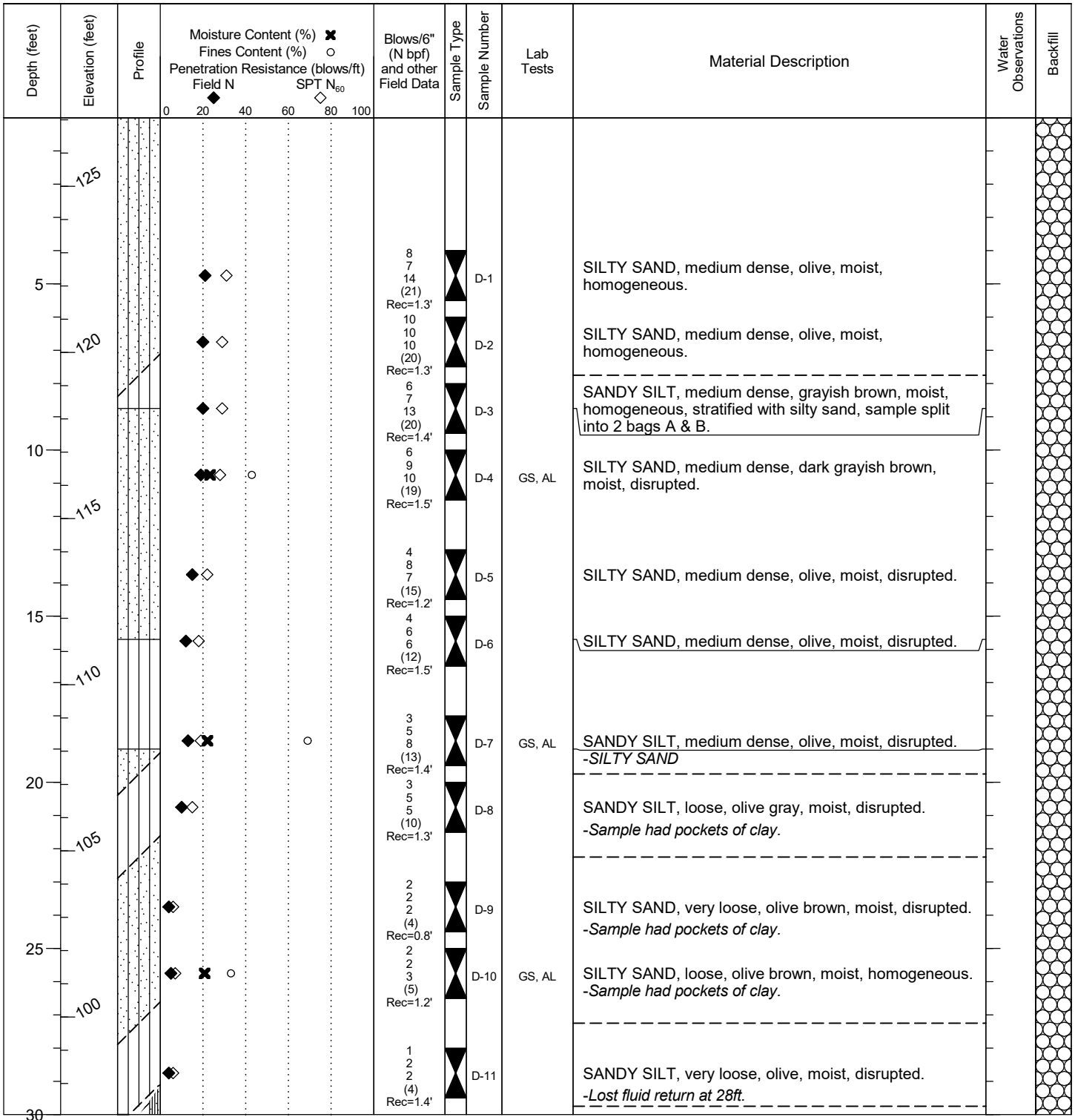
Easting: 1,307,525.8 feet *Longitude:* -122.186690 deg. *Start Card:* SE-69003 AE-53351 *Well Tag:* N/A *Instrument:*

Elevation: 127.1 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ

Started: April 23, 2019 *Completed:* April 24, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%

Remark: Wall 23.32L



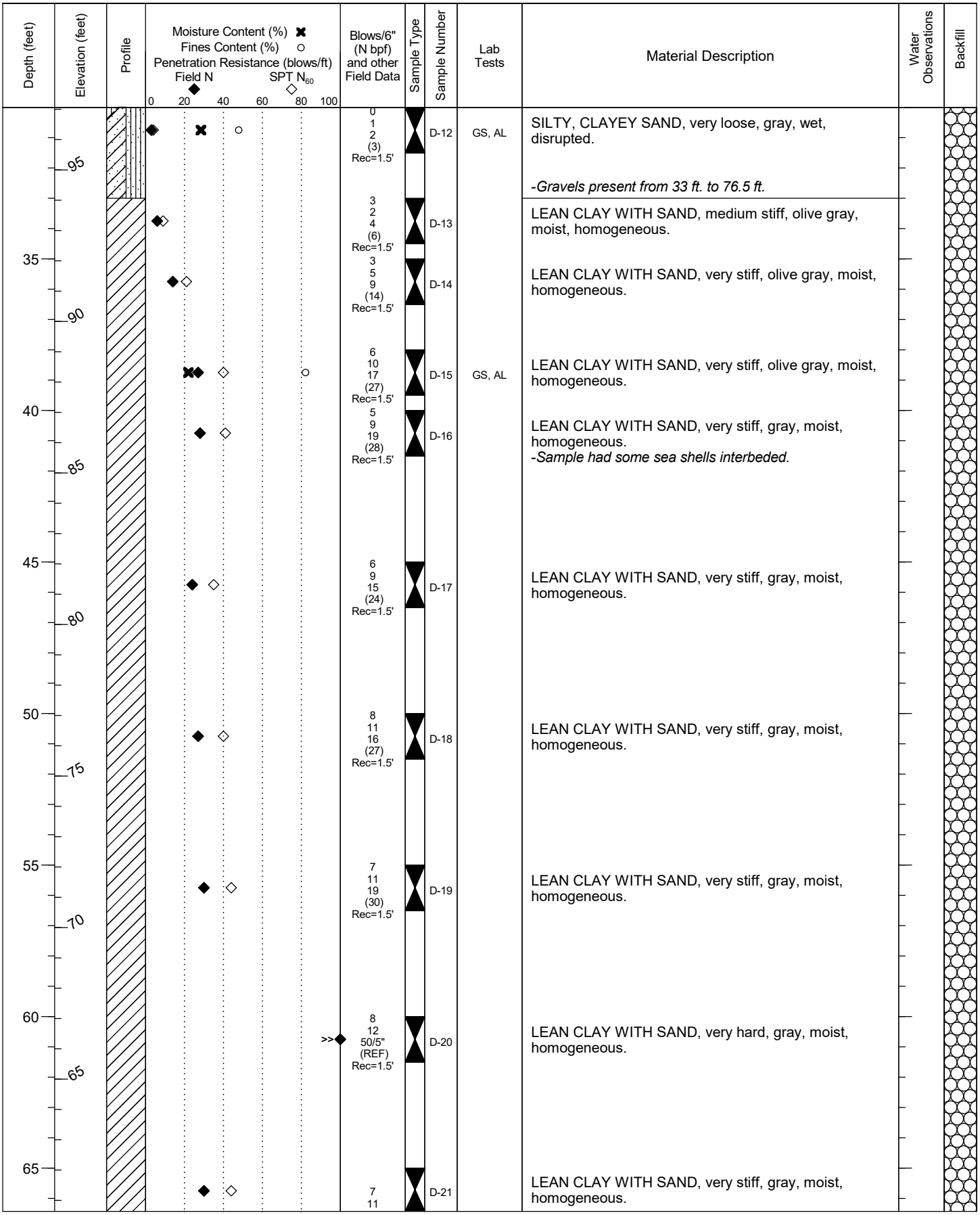
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



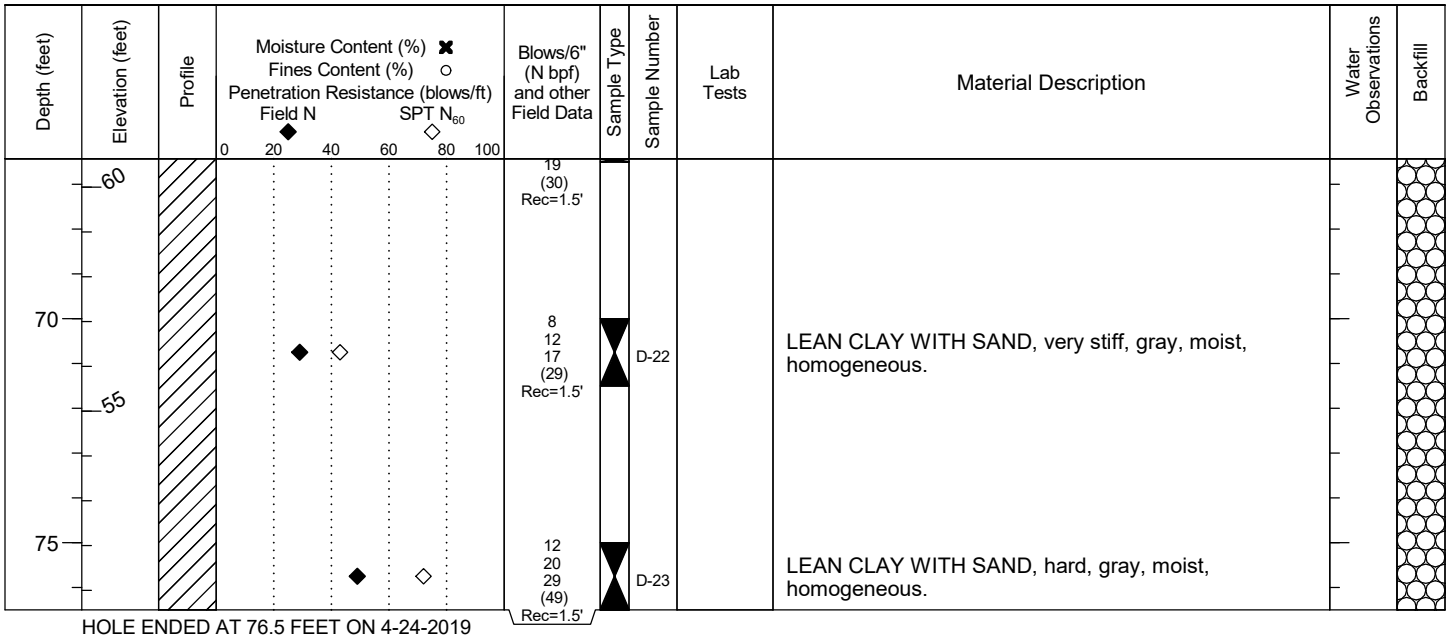
Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
		0 1 2 (3) Rec=1.5'		D-12	GS, AL	SILTY, CLAYEY SAND, very loose, gray, wet, disrupted. *-Gravels present from 33 ft. to 76.5 ft.*		
	95	3 2 4 (6) Rec=1.5'		D-13		LEAN CLAY WITH SAND, medium stiff, olive gray, moist, homogeneous.		
35		3 5 9 (14) Rec=1.5'		D-14		LEAN CLAY WITH SAND, very stiff, olive gray, moist, homogeneous.		
	90	6 10 17 (27) Rec=1.5'		D-15	GS, AL	LEAN CLAY WITH SAND, very stiff, olive gray, moist, homogeneous.		
40		5 9 19 (28) Rec=1.5'		D-16		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous. *-Sample had some sea shells interbeded.*		
	85							
45		6 9 15 (24) Rec=1.5'		D-17		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	80							
50		8 11 16 (27) Rec=1.5'		D-18		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	75							
55		7 11 19 (30) Rec=1.5'		D-19		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	70							
60		8 12 >> 50/5" (REF) Rec=1.5'		D-20		LEAN CLAY WITH SAND, very hard, gray, moist, homogeneous.		
	65							
65		7 11		D-21		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 76.5 FEET ON 4-24-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

WSDOT

LOG OF BORING NE-09si-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 277,964.9 feet *Latitude:* 47.754029 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Fetterly, Jamie #2507

Easting: 1,308,062.1 feet *Longitude:* -122.184518 deg. *Start Card:* RE-17452 *Well Tag:* BLA-748 *Instrument:* INC

Elevation: 211.6 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: June 30, 2019 *Completed:* July 3, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: Walls 23.20R and 23.28R

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)
0	210	2 1 3 (4) Rec=0.6'		D-1		SANDY SILT, very loose, brown, moist, homogeneous.	
5	205	3 3 5 (8) Rec=1.4'		D-2	GS, AL	SANDY SILT, loose, olive, moist, homogeneous, FeO staining present.	
		4 7 8 (15) Rec=1.0'		D-3	GS, AL	SILTY SAND, medium dense, olive, moist, homogeneous.	
10	200	5 5 7 (12) Rec=1.2'		D-4		SILTY SAND, subangular, medium dense, olive, moist, stratified with silty sand, sample split into 2 bags A & B.	
		9 15 20 (35) Rec=1.1'		D-5	GS, AL	SILTY SAND, dense, olive, moist, homogeneous.	
15	195	12 20 22 (42) Rec=1.2'		D-6		SILTY SAND, dense, olive, moist, homogeneous.	
		11 16 21 (37) Rec=1.2'		D-7		SILTY SAND, dense, olive, moist, homogeneous.	
20	190	13 15 13 (28) Rec=1.2'		D-8		SILTY SAND, dense, olive, moist, homogeneous.	
		16 20 24 (44) Rec=1.2'		D-9		SILTY SAND, dense, olive, moist, stratified with a 2 in. layer of silt @ 24.1'.	Bail test: water at 24.4 ft
25	185	13 18 24 (42) Rec=1.2'		D-10		SILTY SAND, dense, olive, wet, homogeneous, stratified with silt, sample split into 2 bags A & B.	
30		28 50/6" (REF) Rec=1.1'	>>	D-11		POORLY GRADED SAND WITH SILT, very dense, olive, moist, homogeneous.	

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

As-Built: 2.0'

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	180		○ ✖ ◆ ◇	23 34 40 (74) Rec=1.2'		D-12	GS, AL	POORLY GRADED SAND WITH SILT, very dense, olive, moist, homogeneous.		
35	175		◆ ◇	19 31 35 (66) Rec=1.2'		D-13		POORLY GRADED SAND WITH SILT, very dense, olive, moist, homogeneous.		
40	170		✖ ◆ ◇ ○	15 20 25 (45) Rec=1.4'		D-14	GS, AL	SILT, dense, dark gray, moist, homogeneous.		
45	165		◆ ◇	9 18 20 (38) Rec=1.5'		D-15		SILT, dense, dark gray, moist, homogeneous.		
50	160		>> ◆	50/5" (REF) Rec=1.5'		D-16		SILTY SAND WITH GRAVEL, subrounded, very dense, dark gray, moist, homogeneous.		
55	155		✖ ◆ ◇	14 19 49 (68) Rec=1.5'		D-17	GS, AL	SANDY LEAN CLAY, very hard, dark gray, moist, stratified with two 2 layers of silty sand, sample split into 2 bags A & B. *-Gravels encountered at 58 ft. to 58.5 ft.*		
60	150		◆ >> ◇	31 34 45 (79) Rec=1.5'		D-18		POORLY GRADED SAND, very dense, dark gray, moist, homogeneous.		
65			◆ ◇	7 8		D-19		SILT, medium dense, gray, moist, homogeneous.		

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	145			12 (20) Rec=1.5'						
70	140		✖ ◆ ◇ ○	8 14 24 (38) Rec=1.5'		D-20	GS, AL	SILT WITH SAND, dense, gray, moist, homogeneous.		
75	135		◆ ◇	6 9 10 (19) Rec=1.5'		D-21		LEAN CLAY, very stiff, gray, moist, homogeneous.		
80	130		◆ ◇	7 10 14 (24) Rec=1.5'		D-22		LEAN CLAY, very stiff, gray, moist, homogeneous.		
85	125		◆ ◇	8 9 11 (20) Rec=1.5'		D-23		LEAN CLAY, very stiff, gray, moist, homogeneous.		
90	120		◆ ◇	5 8 11 (19) Rec=1.5'		D-24		LEAN CLAY, very stiff, gray, moist, homogeneous.		
95	115		◆ ◇ ✖ ○	6 6 9 (15) Rec=1.5'		D-25	GS, AL	LEAN CLAY, stiff, gray, moist, homogeneous.		
100	110		◆ ◇	5 7 11 (18) Rec=1.5'		D-26		LEAN CLAY, very stiff, gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

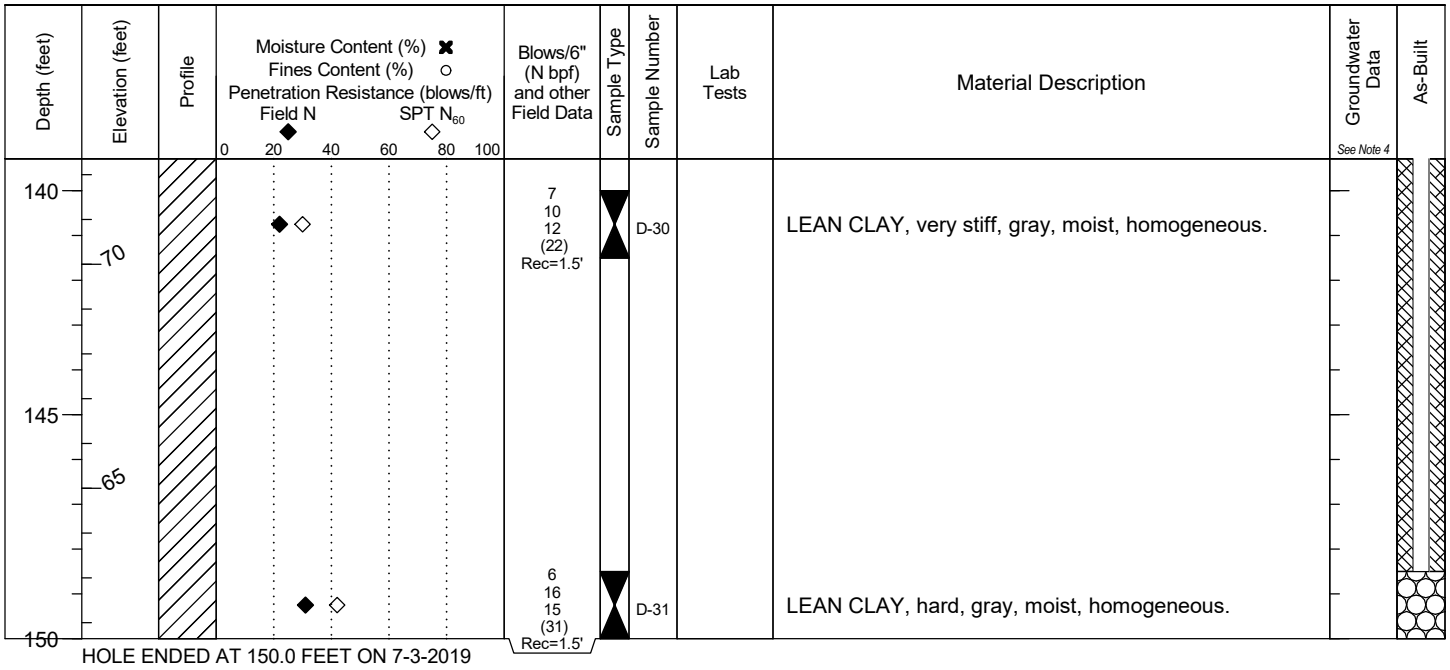
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
105	105									
110	100		◆ ◇	7 8 10 (18) Rec=1.5'		D-27		LEAN CLAY, very stiff, gray, moist, homogeneous.		
115	95									
120	90		◆ ◇	4 7 11 (18) Rec=1.5'		D-28		LEAN CLAY, very stiff, gray, moist, homogeneous.		
125	85									
130	80		◆ ◇ ✖	7 9 11 (20) Rec=1.5'		D-29	AL	LEAN CLAY, very stiff, gray, moist, homogeneous.		
135	75									

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 150.0 FEET ON 7-3-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.
5. A Slope Inclinometer with a standpipe monument was installed.

BAIL-RECHARGE TEST RESULTS:

Test Date: July 3, 2019
Hole Depth / Casing Depth: 150.0 feet / 148.5 feet
Water Depth Before Bailing: 14.9 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	45.0
1	39.7
2	35.9
3	32.7
4	30.4
5	27.8
10	23.2
15	24.5
20	24.1
25	24.4

WSDOT

LOG OF BORING NE-10p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 277,972.6 feet *Latitude:* 47.754050 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Fetterly, Jamie #2507

Easting: 1,308,063.7 feet *Longitude:* -122.184512 deg. *Start Card:* RE-17452 *Well Tag:* BLA-749 *Instrument:* 1" PVC

Elevation: 211.3 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: July 3, 2019 *Completed:* July 3, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: Walls 23.20R and 23.28R

Depth (feet)	Elevation (feet)	Profile	Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
0	210							*-NE-10p-19 drilled to install piezometer. See NE-09si-19 for soil information.*		2.0'
5	205									
10	200									
15	195									
20	190									
25										

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data	As-Built
	185								See Note 4	

HOLE ENDED AT 29.5 FEET ON 7-3-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 7/24/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-11-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 278,602.5 feet *Latitude:* 47.755777 deg. *Driller/Inspector:* Walker, Robert (#2864) / Haller, Robert #2779

Easting: 1,308,066.2 feet *Longitude:* -122.184546 deg. *Start Card:* SE-70663 AE-55887 *Well Tag:* N/A *Instrument:*

Elevation: 105.6 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: July 15, 2019 *Completed:* July 17, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Walls 23.28R and 23.20R

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
0	105		◆◇ ○	4 8 7 (15) Rec=1.0'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, dark grayish brown, dry, disrupted.		
5	100		◆◇ ✖ ○	3 3 7 (10) Rec=0.9'		D-2	GS, AL	CLAYEY SAND WITH GRAVEL, subrounded, loose, olive gray, moist, disrupted.		
			◆◇	3 3 5 (8) Rec=1.0'		D-3		SANDY LEAN CLAY, medium stiff, very dark grayish brown, moist, homogeneous, with organics.		
10	95		◆◇ ✖ ○	1 3 4 (7) Rec=1.0'		D-4	GS, AL	SANDY LEAN CLAY, medium stiff, olive brown, moist, homogeneous, with organics.		
			◆◇	1 4 5 (9) Rec=1.4'		D-5		LEAN CLAY, stiff, gray, moist, homogeneous.		
15	90		◆◇ ✖ ○	2 5 6 (11) Rec=1.4'		D-6	GS, AL	LEAN CLAY, stiff, olive gray, moist, homogeneous, FeO staining present.		
			◆◇	4 5 8 (13) Rec=1.5'		D-7		LEAN CLAY, stiff, olive gray, moist, homogeneous.		
20	85		◆◇	4 7 10 (17) Rec=1.5'		D-8		LEAN CLAY, very stiff, olive gray, moist, homogeneous.		
			◆◇	4 7 11 (18) Rec=1.5'		D-9		LEAN CLAY, very stiff, gray, moist, homogeneous.		
25	80		◆◇	5 8 11 (19) Rec=1.5'		D-10		LEAN CLAY, very stiff, gray, moist, homogeneous.		
			◆◇	4 9 13 (22) Rec=1.5'		D-11		LEAN CLAY, very stiff, gray, moist, homogeneous.		
30			◆✖◇	4		D-12	AL	LEAN CLAY, very stiff, gray, moist, slickensided, blocky.		

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
	75	10 11 (21) Rec=1.5'		D-12	AL			
35	70	4 7 11 (18) Rec=1.5'		D-13	GS, AL	LEAN CLAY, very stiff, gray, moist, slickensided, blocky.		
40	65	7 12 16 (28) Rec=1.5'		D-14	AL	LEAN CLAY, very stiff, gray, moist, slickensided, blocky. *-Scattered gravels from 42.0 ft. to 45.5 ft.*		
45	60	7 12 16 (28) Rec=1.5'		D-15	GS, AL	LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
50	55	6 13 16 (29) Rec=1.5'		D-16		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
55	50	5 8 11 (19) Rec=1.5'		D-17		LEAN CLAY, very stiff, gray, moist, homogeneous.		
60	45	5 8 9 (17) Rec=1.5'		D-18	GS, AL	LEAN CLAY, very stiff, gray, moist, homogeneous.		
65	40	5 7 10 (17) Rec=1.5'		D-19		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
70	35		◆ ◇	5 8 9 (17) Rec=0.6'		D-20		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
75	30		◆ ◇	6 9 11 (20) Rec=1.5'		D-21		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
80	25		✖ ◆ ◇ ○	7 9 13 (22) Rec=1.5'		D-22	GS, AL	SANDY SILT, medium dense, dark gray, moist, homogeneous.		
85	20		◆ ◇	8 12 13 (25) Rec=1.4'		D-23		SANDY SILT, dense, dark gray, moist, homogeneous.		
90	15		◆ ◇	7 9 11 (20) Rec=1.4'		D-24		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
95	10		◆ ◇	5 9 11 (20) Rec=1.5'		D-25		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
100	5		◆ ◇	6 10 10 (20) Rec=1.5'		D-26		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

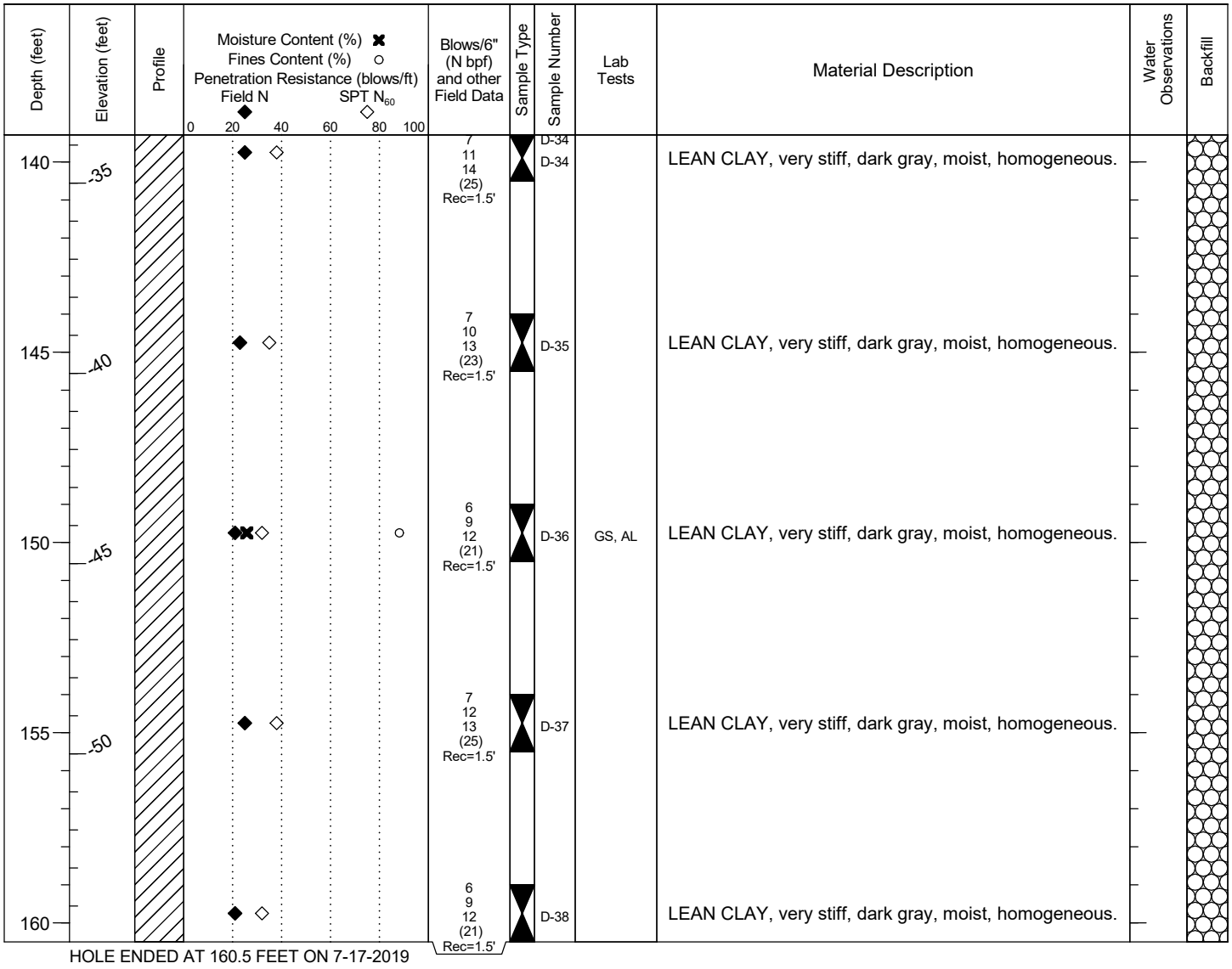
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
105	0		◆◇ ✖ ○	5 6 6 (12) Rec=1.5'		D-27	GS, AL	LEAN CLAY, stiff, dark gray, moist, homogeneous.		
110	-5		◆◇	5 7 10 (17) Rec=1.5'		D-28		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
115	-10		◆◇	6 9 10 (19) Rec=1.5'		D-29		LEAN CLAY, very stiff, dark gray, moist, homogeneous.	▽ Bail test: water at 113 ft	
120	-15		◆◇	5 8 10 (18) Rec=0.4'		D-30		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
125	-20		◆ ◇	7 11 25 (36) Rec=1.5'		D-31		LEAN CLAY, hard, dark gray, moist, homogeneous.		
130	-25		◆✖◇	7 10 13 (23) Rec=1.5'		D-32	AL	LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
135	-30		◆ ◇	7 10 13 (23) Rec=1.5'		D-33		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
								-Scattered gravels from 139.0 ft. to 150.5 ft.		

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 160.5 FEET ON 7-17-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: July 17, 2019
Hole Depth / Casing Depth: 160.5 feet / 159.0 feet
Water Depth Before Bailing: 11.5 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	113.3
1	113.1
2	113.1
3	113.1
4	113.1
5	113.1
10	113.1
15	113.0
20	113.0

WSDOT

LOG OF BORING NE-12p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 278,596.6 feet *Latitude:* 47.755765 deg. *Driller/Inspector:* Shepherd, Robert (#2710) / Shepherd, Robert #2710

Easting: 1,308,138.1 feet *Longitude:* -122.184254 deg. *Start Card:* RE-17174 *Well Tag:* BLA-716 *Instrument:* 1" PVC

Elevation: 104.5 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-5) *Rod Type:* AWJ

Started: July 16, 2019 *Completed:* July 18, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.3%

Remark: Wall 23.57R

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
		9 8 5 5 (13) Rec=1.7'		D-1		WELL-GRADED SAND WITH GRAVEL, subangular, medium dense, light gray, moist, stratified, top 0.6 foot well graded sand with gravel, bottom 1.1 feet sand..
5	100	2 3 4 (7) Rec=1.2'		D-2	GS, AL	SILT, loose, olive brown, moist, homogeneous.
		42 11 2 (13) Rec=1.4'		D-3		SILT WITH SAND, subrounded, medium dense, olive brown, wet, stratified.
10	95	1 1 1 (2) Rec=0.7'		D-4	AL	LEAN CLAY, soft, greenish gray, wet, homogeneous.
		Rec=1.9'		S-5		LEAN CLAY, greenish gray.
15	90	3 6 8 (14) Rec=1.5'		D-6		LEAN CLAY, stiff, light greenish gray, moist, slickensided.
		5 8 13 (21) Rec=1.5'		D-7	GS, AL	LEAN CLAY, very stiff, gray, moist, slickensided.
20	85	3 5 8 (13) Rec=1.5'		D-8		LEAN CLAY, stiff, gray, moist, slickensided.
		4 8 10 (18) Rec=1.5'		D-9		LEAN CLAY, very stiff, gray, moist, slickensided.
25	80	4 7 10 (17) Rec=1.5'		D-10		LEAN CLAY, very stiff, gray, moist, slickensided.
		4 6 11 (17) Rec=1.5'		D-11	AL	LEAN CLAY, very stiff, gray, moist, slickensided.
30	75	4		D-12	AL	LEAN CLAY, very stiff, gray, moist, slickensided.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4

07-17-19 DH

As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
35	70	9 14 (23) Rec=1.5'		D-12	AL	LEAN CLAY, very stiff, gray, moist, slickensided.		
		4 10 13 (23) Rec=1.5'		D-13	AL	LEAN CLAY, very stiff, gray, moist, slickensided.		
		6 12 16 (28) Rec=1.5'		D-14	GS, AL, HT, SG	LEAN CLAY, very stiff, gray, moist, slickensided.		
		3 8 9 (17) Rec=1.5'		D-15	AL	FAT CLAY, very stiff, gray, moist, slickensided.		
40	65	5 8 14 (22) Rec=1.5'		D-16		LEAN CLAY, very stiff, gray, moist, homogeneous.		
		6 11 17 (28) Rec=1.5'		D-17		LEAN CLAY, very stiff, gray, moist, homogeneous.		
45	60	6 10 13 (23) Rec=1.5'		D-18	GS, AL	LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
		5 12 18 (30) Rec=1.5'		D-19		LEAN CLAY, very stiff, gray, moist, homogeneous.		
50	55	5 8 11 (19) Rec=1.5'		D-20		LEAN CLAY, very stiff, gray, moist, homogeneous.		
55	50	5 6 9 (15) Rec=1.5'		D-21	GS, AL	LEAN CLAY, stiff, gray, moist, homogeneous.		
60	45	5 7 8 (15) Rec=1.5'		D-22		LEAN CLAY, stiff, gray, moist, homogeneous.		
65	40	5 6 8 (14) Rec=1.5'		D-23		LEAN CLAY, stiff, gray, moist, homogeneous.		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
70	35		◆ ◇	5 9 10 (19) Rec=1.5'		D-24		LEAN CLAY, very stiff, gray, moist, homogeneous.		
75	30		◆ ◆ ◇ ○	5 8 10 (18) Rec=1.5'		D-25	GS, AL	SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
80	25		◆ ◇	7 11 12 (23) Rec=1.5'		D-26		SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
85	20		◆ ◇	5 8 10 (18) Rec=1.5'		D-27		SILTY CLAY, very stiff, gray, moist, homogeneous.		
90	15		◆ ◇ ✖	4 7 7 (14) Rec=1.5'		D-28	AL	SILTY CLAY, very stiff, gray, moist, homogeneous.		
95	10		◆ ◇	5 8 10 (18) Rec=1.5'		D-29		SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
100	5		◆ ◇	6 8 10 (18) Rec=1.5'		D-30		SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

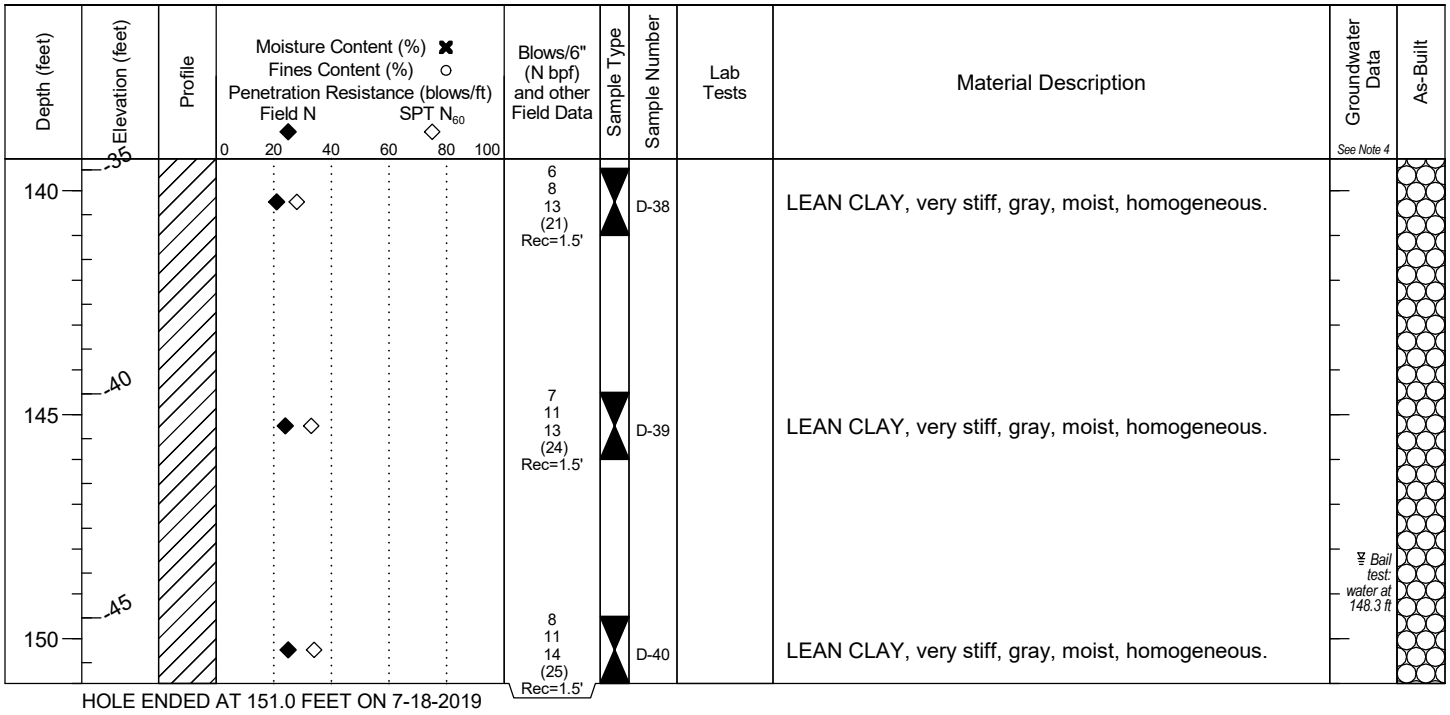
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
105	0		◆◇	6 7 10 (17) Rec=1.5'		D-31		SILTY CLAY, very stiff, gray, moist, homogeneous.		
110	-5		◆◇	4 8 8 (16) Rec=1.5'		D-32		SILTY CLAY, very stiff, gray, moist, homogeneous.		
115	-10		✖ ◆ ◇ ○	15 22 25 (47) Rec=1.5'		D-33	GS, AL	SILT, dense, gray, moist, homogeneous.		
120	-15		◆◇	7 9 10 (19) Rec=1.5'		D-34		LEAN CLAY, very stiff, gray, moist, homogeneous.		
125	-20		◆◇	6 9 11 (20) Rec=1.5'		D-35		LEAN CLAY, very stiff, gray, moist, homogeneous.		
130	-25		◆◇	6 10 11 (21) Rec=1.5'		D-36		LEAN CLAY, very stiff, gray, moist, homogeneous.		
135	-30		◆◇✖	6 7 10 (17) Rec=1.5'		D-37	AL	LEAN CLAY, very stiff, gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 151.0 FEET ON 7-18-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 7/24/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: July 18, 2019
Hole Depth / Casing Depth: 151.0 feet / 149.0 feet
Water Depth Before Bailing: 11.2 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	148.5
1	148.3
2	148.3
3	148.3
4	148.3
5	148.3

WSDOT

LOG OF BORING NE-13p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 278,807.1 feet *Latitude:* 47.756344 deg. *Driller/Inspector:* Peterson, Trevor (#3008) / Jamie Wilson

Easting: 1,308,190.5 feet *Longitude:* -122.184056 deg. *Start Card:* RE-17449 *Well Tag:* BLA-744 *Instrument:* 1" PVC

Elevation: 53.7 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: December 18, 2019 *Completed:* December 19, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: NB I-405 to SR-522 Bridge and Wall 23.56R

Depth (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
					-ASPHALT
	3 3 5 (8) Rec=1.0'		D-1		WELL-GRADED SAND WITH GRAVEL, subrounded, loose, brown, moist, homogeneous.
5	7 50/5" (REF) Rec=0.5'		D-2		WELL-GRADED SAND WITH GRAVEL, subrounded, very dense, brown, moist, homogeneous.
	2 3 5 (8) Rec=1.5'		D-3	GS, AL	LEAN CLAY WITH SAND, loose, light brown, moist, homogeneous.
10	2 3 2 (5) Rec=1.5'		D-4	AL	LEAN CLAY WITH SAND, medium stiff, light brown, moist, homogeneous.
	Rec=1.5'		S-5	GS, AL, HT, SG, DN	LEAN CLAY, light brown, moist.
	7 9 10 (19) Rec=1.5'		D-6	AL	LEAN CLAY, very stiff, light brown, moist, laminated.
15	8 9 10 (19) Rec=1.4'		D-7		LEAN CLAY, very stiff, light brown, wet, laminated.
	7 8 10 (18) Rec=1.1'		D-8		LEAN CLAY, very stiff, gray, wet, disrupted.
20	6 8 9 (17) Rec=1.5'		D-9	GS, AL, HT, SG	LEAN CLAY, very stiff, gray, wet, disrupted.
	6 8 9 (17) Rec=1.5'		D-10		LEAN CLAY, very stiff, gray, moist, laminated.
25	5 8 9 (17) Rec=1.5'		D-11	AL	LEAN CLAY, very stiff, gray, moist, laminated.
	7 8 11 (19) Rec=1.5'		D-12		LEAN CLAY, very stiff, gray, moist, laminated.
30	6 7 10		D-13	GS, AL, HT, SG	LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4

Bail test: water at 26.2 ft

As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
		(17) Rec=1.5'						
		5 8 10 (18) Rec=1.5'		D-14		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	20	5 8 9 (17) Rec=1.5'		D-15		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
35		5 7 9 (16) Rec=1.5'		D-16		LEAN CLAY, very stiff, gray, moist, homogeneous.		
	15	5 7 10 (17) Rec=1.5'		D-17	GS, AL	LEAN CLAY, very stiff, gray, moist, homogeneous.		
40		5 9 13 (22) Rec=1.5'		D-18		LEAN CLAY, very stiff, gray, moist, homogeneous.		
	10	5 8 12 (20) Rec=1.5'		D-19		LEAN CLAY, very stiff, gray, moist, homogeneous.		
45		5 8 11 (19) Rec=1.5'		D-20		LEAN CLAY, very stiff, gray, moist, homogeneous.		
	5	4 7 9 (16) Rec=1.5'		D-21		LEAN CLAY, very stiff, gray, moist, homogeneous.		
50								
	0	5 8 11 (19) Rec=1.5'		D-22		LEAN CLAY, very stiff, gray, moist, homogeneous.		
55								
	-5	8 14 13 (27) Rec=1.5'		D-23		LEAN CLAY, very stiff, gray, moist, homogeneous.		
60								
	-10	7 11 17 (28) Rec=1.4'		D-24		LEAN CLAY, very stiff, gray, moist, homogeneous, stratified.		
65								

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

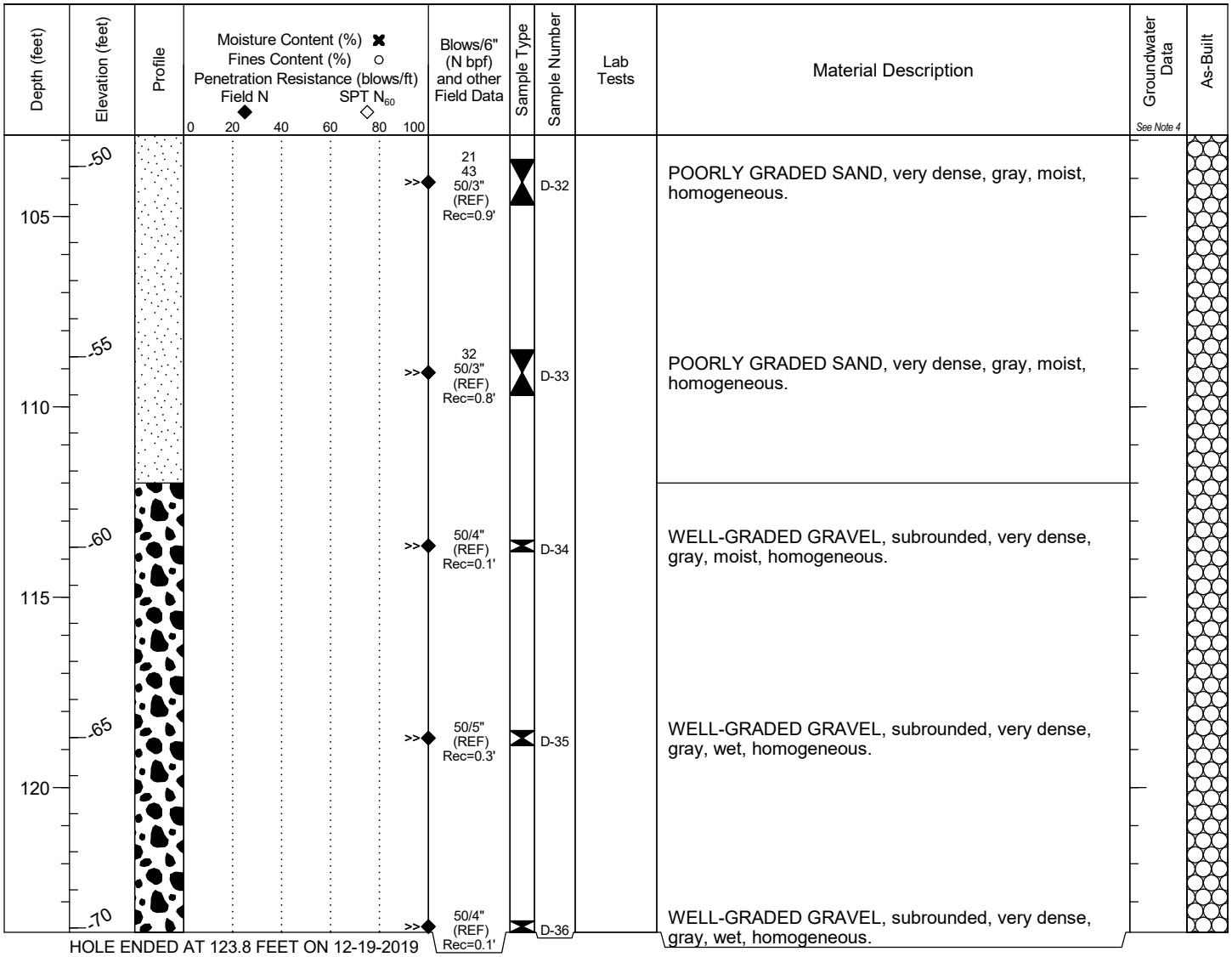
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
70	-15		✖ ◆ ◇ ○	6 9 13 (22) Rec=1.5'		D-25	GS, AL	LEAN CLAY, very stiff, gray, moist, laminated.		
75	-20		◆ ◇	6 11 13 (24) Rec=1.5'		D-26		LEAN CLAY, very stiff, gray, moist, homogeneous.		
80	-25		✖ ◆ ◇ ○	5 9 17 (26) Rec=1.5'		D-27	GS, AL	SANDY LEAN CLAY, very stiff, gray, moist, homogeneous.		
85	-30		◆ ◇	5 10 18 (28) Rec=1.4'		D-28		LEAN CLAY, very stiff, gray, moist, homogeneous.		
90	-35		✖ ◆ ◇ ○	12 13 27 (40) Rec=1.5'		D-29	GS, AL	LEAN CLAY WITH SAND, hard, gray, moist, laminated.		
95	-40		◆ ◇	7 9 12 (21) Rec=1.5'		D-30		LEAN CLAY, very stiff, gray, moist, homogeneous.		
100	-45		◆ ◇	19 15 16 (31) Rec=0.8'		D-31		SANDY SILT WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 1/6/2020 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: December 19, 2019
Hole Depth / Casing Depth: 123.8 feet / 123.5 feet
Water Depth Before Bailing: 8.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	33.9
10	26.2

WSDOT

LOG OF BORING NE-14p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 278,770.2 feet *Latitude:* 47.756240 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Cooper, Kerry #2552
Easting: 1,308,131.3 feet *Longitude:* -122.184294 deg. *Start Card:* RE17449 *Well Tag:* BLA-745 *Instrument:* 1" PVC
Elevation: 61.2 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ
Started: July 17, 2019 *Completed:* July 18, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%
Remark: Wall 23.54R and NB I-405 Mainline Bridge

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	60	3 4 4 (8) Rec=0.9'		D-1	GS, AL	SANDY SILT, loose, brown, dry, stratified, with organics.
5	55	3 4 5 (9) Rec=1.3'		D-2		SILT, loose, grayish brown, dry, homogeneous, with organics.
		4 4 7 (11) Rec=1.5'		D-3	GS, AL	LEAN CLAY, stiff, gray, moist, homogeneous.
10	50	4 5 5 (10) Rec=1.5'		D-4		LEAN CLAY, stiff, gray, moist, homogeneous.
		5 5 7 (12) Rec=1.5'		D-5		LEAN CLAY, stiff, gray, moist, homogeneous.
15	45	5 6 8 (14) Rec=1.5'		D-6		LEAN CLAY, stiff, gray, moist, homogeneous, with sand lenses.
		4 5 9 (14) Rec=1.5'		D-7		LEAN CLAY, stiff, gray, moist, homogeneous, with sand lenses.
20	40	6 7 8 (15) Rec=1.5'		D-8		LEAN CLAY, stiff, gray, moist, homogeneous.
		5 5 8 (13) Rec=1.5'		D-9	GS, AL	LEAN CLAY, stiff, gray, moist, homogeneous.
25	35	5 6 8 (14) Rec=1.5'		D-10		LEAN CLAY, stiff, gray, moist, homogeneous.
		6 6 9 (15) Rec=1.5'		D-11		LEAN CLAY, stiff, gray, moist, homogeneous.
30						

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4

As-Built — 2.0'

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				6 6 8 (14) Rec=1.5'		D-12		LEAN CLAY, medium dense, gray, moist, homogeneous.		
				8 10 13 (23) Rec=1.5'		D-13		SILTY SAND, medium dense, gray, moist, homogeneous.		
35	30			8 10 11 (21) Rec=1.5'		D-14	GS, AL	SILTY SAND, medium dense, gray, wet, homogeneous.		
	25			6 8 8 (16) Rec=1.5'		D-15		SILTY CLAY, very stiff, gray, moist, homogeneous, with sand lenses.		
40	20			5 8 9 (17) Rec=1.5'		D-16		SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
				6 7 10 (17) Rec=1.5'		D-17	GS, AL	SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
45	15			6 8 10 (18) Rec=1.5'		D-18		SILTY CLAY, very stiff, gray, moist, homogeneous.	▽ Bail test: water at 45.7 ft	
				6 8 10 (18) Rec=1.5'		D-19		SILTY CLAY, very stiff, gray, moist, homogeneous.		
50	10			6 7 11 (18) Rec=1.5'		D-20		SILTY CLAY, very stiff, gray, moist, homogeneous.		
55	5			5 8 8 (16) Rec=1.5'		D-21	GS, AL	SILT, medium dense, gray, moist, homogeneous.		
60	0			6 10 11 (21) Rec=1.5'		D-22		SILT, medium dense, gray, moist, homogeneous.		
65	-5			7 10		D-23		LEAN CLAY, very stiff, gray, moist, homogeneous.		

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

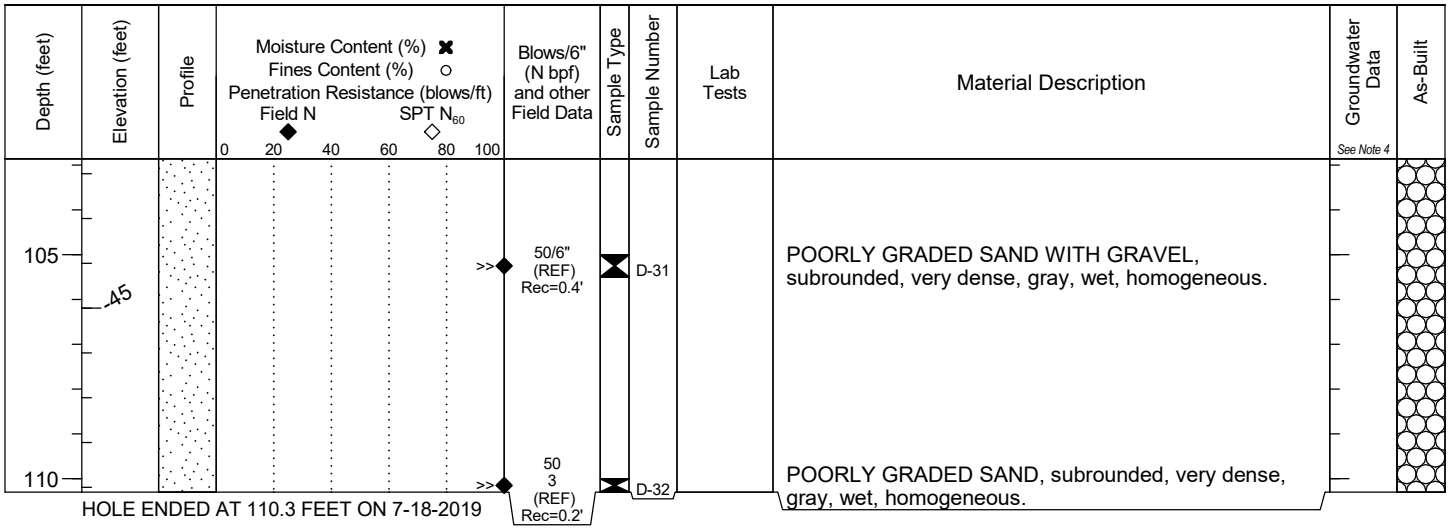
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				11 (21) Rec=1.5'						
70	-10		◆ ✖ ○	6 8 10 (18) Rec=1.5'		D-24	GS, AL	LEAN CLAY, very stiff, gray, moist, homogeneous.		
75	-15		◆	6 9 11 (20) Rec=1.5'		D-25		LEAN CLAY, very stiff, gray, moist, homogeneous.		
80	-20		✖ ○	12 14 10 (24) Rec=1.2'		D-26	GS, AL	CLAYEY GRAVEL WITH SAND, subangular, medium dense, gray, wet, homogeneous.		
85	-25		◆	17 20 32 (52) Rec=1.0'		D-27		CLAYEY GRAVEL WITH SAND, very dense, gray, wet, stratified.		
90	-30		>>◆	26 50/6" (REF) Rec=0.5'		D-28		SANDY SILT, very dense, gray, moist, homogeneous.		
95	-35		>>◆	38 42 50/2" (REF) Rec=0.7'		D-29		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.		
100	-40		>>◆	50/2" (REF) Rec=0.2'		D-30		POORLY GRADED SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 7/24/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: July 18, 2019
Hole Depth / Casing Depth: 110.3 feet / 85.0 feet
Water Depth Before Bailing: 14.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	50.1
5	47.0
10	46.2
15	45.7

WSDOT

LOG OF BORING NE-15p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 278,752.4 feet *Latitude:* 47.756184 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Henderson, Danny #2742

Easting: 1,307,972.7 feet *Longitude:* -122.184937 deg. *Start Card:* RE17175 *Well Tag:* BLA-717 *Instrument:* 1" PVC

Elevation: 57.4 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: July 25, 2019 *Completed:* July 26, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: Wall 23.53R and NB I-405 to SR-522 Bridge

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data	As-Built
				4 2 3 (5) Rec=1.5'		D-1		SANDY SILT WITH GRAVEL, subrounded, loose, light olive gray, moist, homogeneous.	See Note 4	2.0"
	55									
5				1 3 3 (6) Rec=1.2'		D-2		LEAN CLAY, medium stiff, light brown, moist, homogeneous.		
	50									
				2 3 3 (6) Rec=1.4'		D-3	GS, AL	LEAN CLAY WITH SAND, medium stiff, light brown, moist, homogeneous.		
10				1 3 2 (5) Rec=1.4'		D-4	GS, AL	LEAN CLAY, medium stiff, light greenish gray, moist, homogeneous.		
	45			Rec=0.9'		S-5		LEAN CLAY, light greenish gray, moist, 500psi lifted drill off timbers.		
				4 10 14 (24) Rec=0.7'		D-6	GS, AL	CLAYEY GRAVEL WITH SAND, subrounded, medium dense, greenish gray, moist, homogeneous.		
15										
	40			7 9 11 (20) Rec=1.0'		D-7		LEAN CLAY, very stiff, greenish gray, moist, homogeneous.		
20				6 9 12 (21) Rec=1.3'		D-8		LEAN CLAY WITH SAND, very stiff, greenish gray, moist, homogeneous.		
	35									
				4 5 11 (16) Rec=1.5'		D-9	GS, AL	LEAN CLAY WITH SAND, very stiff, greenish gray, moist, homogeneous.		
25										

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				7 11 13 (24) Rec=1.5'		D-10		LEAN CLAY WITH SAND, very stiff, greenish gray, moist, homogeneous.	07-26-19	
	30			7 10 15 (25) Rec=1.5'		D-11		LEAN CLAY WITH SAND, very stiff, greenish gray, moist, homogeneous.		
30				5 8 12 (20) Rec=1.5'		D-12		LEAN CLAY, very stiff, greenish gray, moist, homogeneous.		
	25			5 7 9 (16) Rec=1.5'		D-13	GS, AL	LEAN CLAY, very stiff, greenish gray, moist, homogeneous.		
35				5 6 7 (13) Rec=1.5'		D-14		LEAN CLAY, stiff, greenish gray, moist, homogeneous.		
	20			5 6 10 (16) Rec=1.5'		D-15		LEAN CLAY, very stiff, greenish gray, moist, homogeneous.		
40				5 7 7 (14) Rec=1.5'		D-16		LEAN CLAY, stiff, greenish gray, moist, homogeneous.		
	15									
45				5 6 8 (14) Rec=1.5'		D-17		LEAN CLAY, stiff, greenish gray, moist, homogeneous.		
	10									
50				6 6 8 (14) Rec=1.5'		D-18	GS, AL	LEAN CLAY, stiff, greenish gray, moist, homogeneous.		
	5									
55								*-Drilling behavior indicates gravel at 54.5 ft.*		

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				11 11 12 (23) Rec=1.5'		D-19 D-19		LEAN CLAY, very stiff, greenish gray, moist, homogeneous.		
60	0			5 6 26 (32) Rec=1.3'		D-20		LEAN CLAY, hard, greenish gray, moist, homogeneous.		
65	-5			5 7 9 (16) Rec=1.5'		D-21		LEAN CLAY, stiff, greenish gray, moist, homogeneous.		
70	-10		○	5 7 8 (15) Rec=1.5'		D-22	GS, AL	LEAN CLAY, stiff, greenish gray, moist, homogeneous.		
	-15							*-Drilling behavior indicates some gravels from 74 ft. to 74.5 ft.*		
75	-20			6 8 12 (20) Rec=1.5'		D-23		LEAN CLAY, very stiff, greenish gray, wet, homogeneous.		
80	-25			5 6 8 (14) Rec=1.5'		D-24		LEAN CLAY, stiff, greenish gray, moist, homogeneous.		
85				5		D-25		LEAN CLAY, stiff, greenish gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

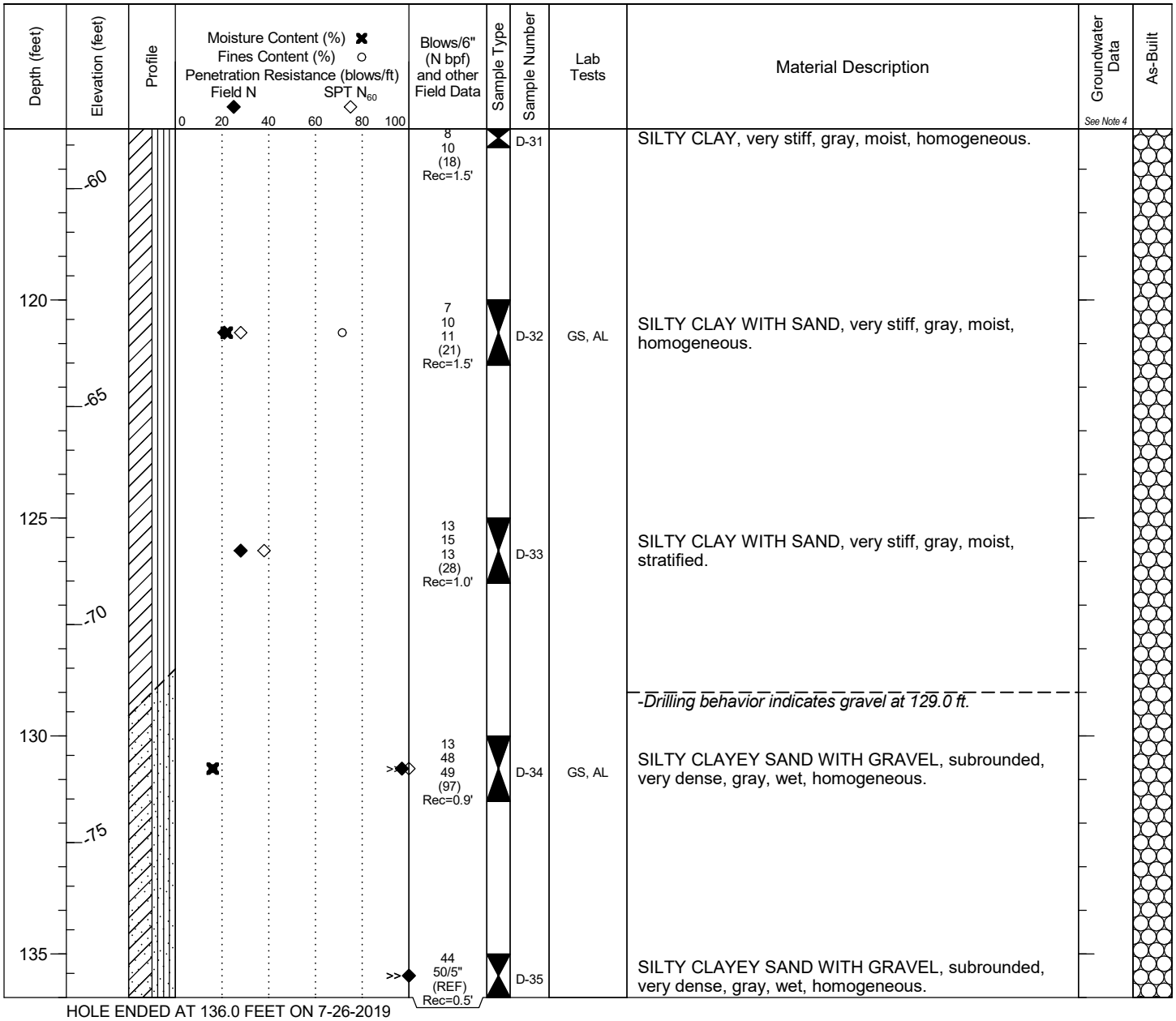
Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
		6 7 (13) Rec=1.5'		D-25		LEAN CLAY, stiff, greenish gray, moist, homogeneous.		
90	-30	12 18 21 (39) Rec=1.4'		D-26	GS, AL	SILT, dense, greenish gray, wet, homogeneous.		
	-35					*-Drilling behavior indicates gravels from 94.0 ft. to 96.5 ft.*		
95		>> 50/3" (REF) Rec=0.2'		D-27		POORLY GRADED SAND, very dense, gray, moist, homogeneous.		
	-40							
100		9 10 12 (22) Rec=1.5'		D-28		SANDY SILT, medium dense, gray, moist, homogeneous.		
	-45					*-SPT sample from 105 ft. to 106.5 ft. looks very disrupted.*		
105		6 7 10 (17) Rec=1.5'		D-29		SILT, medium dense, gray, moist, homogeneous.		
	-50					*-Drillling behavior indicates gravel at 109.0 ft.*		
110		16 15 13 (28) Rec=1.0'		D-30	GS, AL	SANDY SILT WITH GRAVEL, subrounded, dense, gray, wet, stratified.		
	-55							
115		7		D-31		SILTY CLAY, very stiff, gray, moist, homogeneous.		

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 136.0 FEET ON 7-26-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 8/20/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period. Artesian groundwater measurements were noted. See piezometer report for values.

WSDOT

LOG OF BORING NE-16p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 278,789.6 feet *Latitude:* 47.756290 deg.
Driller/Inspector: Easton, Matthew (#3299T) / Henderson, Danny #2742

Easting: 1,308,069.2 feet *Longitude:* -122.184548 deg.
Start Card: RE17175 *Well Tag:* BLA-718 *Instrument:* 1" PVC

Elevation: 54.2 feet *Collector:* Region Survey
Drilling Method: Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88
Equipment: CME 850 (ID:9C2-4) *Rod Type:* AWJ

Started: December 4, 2019 *Completed:* December 6, 2019
Hammer Type: AutoHammer *Historic Efficiency:* 87.9%

Remark: NB I-405 Mainline Bridge and Wall 23.55R

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
						-ASPHALT
		2 3 2 (5) Rec=0.9'		D-1		LEAN CLAY WITH SAND AND GRAVEL, subrounded, medium stiff, olive gray, moist, stratified.
5	50	3 3 3 (6) Rec=1.3'		D-2	AL	LEAN CLAY WITH SAND, medium stiff, olive gray, moist, homogeneous. *-100% drilling fluid loss at 5.5 ft.*
		Rec=1.8'		P-3	GS, AL, HT, SG, DN	LEAN CLAY, olive gray, moist.
10	45	5 5 8 (13) Rec=1.5'		D-4		LEAN CLAY, stiff, olive gray, moist, stratified.
		5 5 9 (14) Rec=1.5'		D-5	GS, AL, HT, SG	LEAN CLAY, stiff, dark gray, moist, homogeneous.
15	40	Rec=1.0'		P-6	GS, AL, HT, SG, DN	LEAN CLAY, dark gray, moist.
		5 7 8 (15) Rec=1.5'		D-7		LEAN CLAY, stiff, dark gray, moist, homogeneous.
20	35	4 7 8 (15) Rec=1.5'		D-8	AL	LEAN CLAY, stiff, dark gray, moist, homogeneous.
		4 7 8 (15) Rec=1.5'		D-9		LEAN CLAY, stiff, dark gray, moist, homogeneous.
25	30	Rec=0.0'		P-10		NO RECOVERY
		5 6 8 (14) Rec=1.5'		D-11		LEAN CLAY, stiff, dark gray, moist, homogeneous.
30	25	Rec=1.1'		P-12	GS, AL, HT, SG, DN	SANDY SILT, dark gray, moist.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data (See Note 4): 12-05-19 ▽, 12-06-19 ▽

As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
35	20	Rec=1.1'	P	P-12	GS, AL, HT, SG, DN	SANDY SILT, dark gray, moist.		
		6 9 11 (20) Rec=1.5'	D	D-13	GS, AL	SANDY SILT, medium dense, dark gray, moist, homogeneous.		
		5 7 10 (17) Rec=1.3'	D	D-14	AL	LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
40	15	4 8 11 (19) Rec=1.0'	D	D-15		LEAN CLAY, very stiff, dark gray, moist, slickensided.		
45	10	6 9 10 (19) Rec=1.5'	D	D-16	AL	LEAN CLAY, very stiff, dark gray, moist, slickensided.		
50	5	6 7 9 (16) Rec=1.2'	D	D-17		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
55	0	5 7 9 (16) Rec=1.1'	D	D-18	GS, AL, HT, SG	LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
60	-5	5 6 18 (24) Rec=0.9'	D	D-19		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
65	-10	10 9 9 (18) Rec=0.5'	D	D-20		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
70	-15		◆ ◇	6 9 10 (19) Rec=1.3'		D-21		LEAN CLAY, very stiff, dark gray, moist, homogeneous.		
75	-20		◆ ◇	7 14 11 (25) Rec=1.5'		D-22		SILT WITH GRAVEL, subrounded to rounded, dense, dark gray, moist, stratified.		
80	-25		>> ◆	30 50/5" (REF) Rec=0.7'		D-23		SILT WITH SAND, very dense, dark gray, wet, homogeneous.		
85	-30		>> ◆	31 44 50/5" (REF) Rec=0.9'		D-24		SILT WITH SAND, very dense, dark gray, wet, homogeneous.		
90	-35		✖ ○ >> ◆	25 37 50/5" (REF) Rec=1.2'		D-25	GS, AL	SILT WITH SAND, very dense, dark gray, wet, homogeneous.		
95	-40		>> ◆	50/4" (REF) Rec=0.1'		D-26		SILTY SAND WITH GRAVEL, subangular, very dense, dark gray, wet, homogeneous.		
100	-45		>> ◆	50/5" (REF) Rec=0.2'		D-27		SILTY SAND WITH GRAVEL, subangular, very dense, dark gray, wet, homogeneous.		

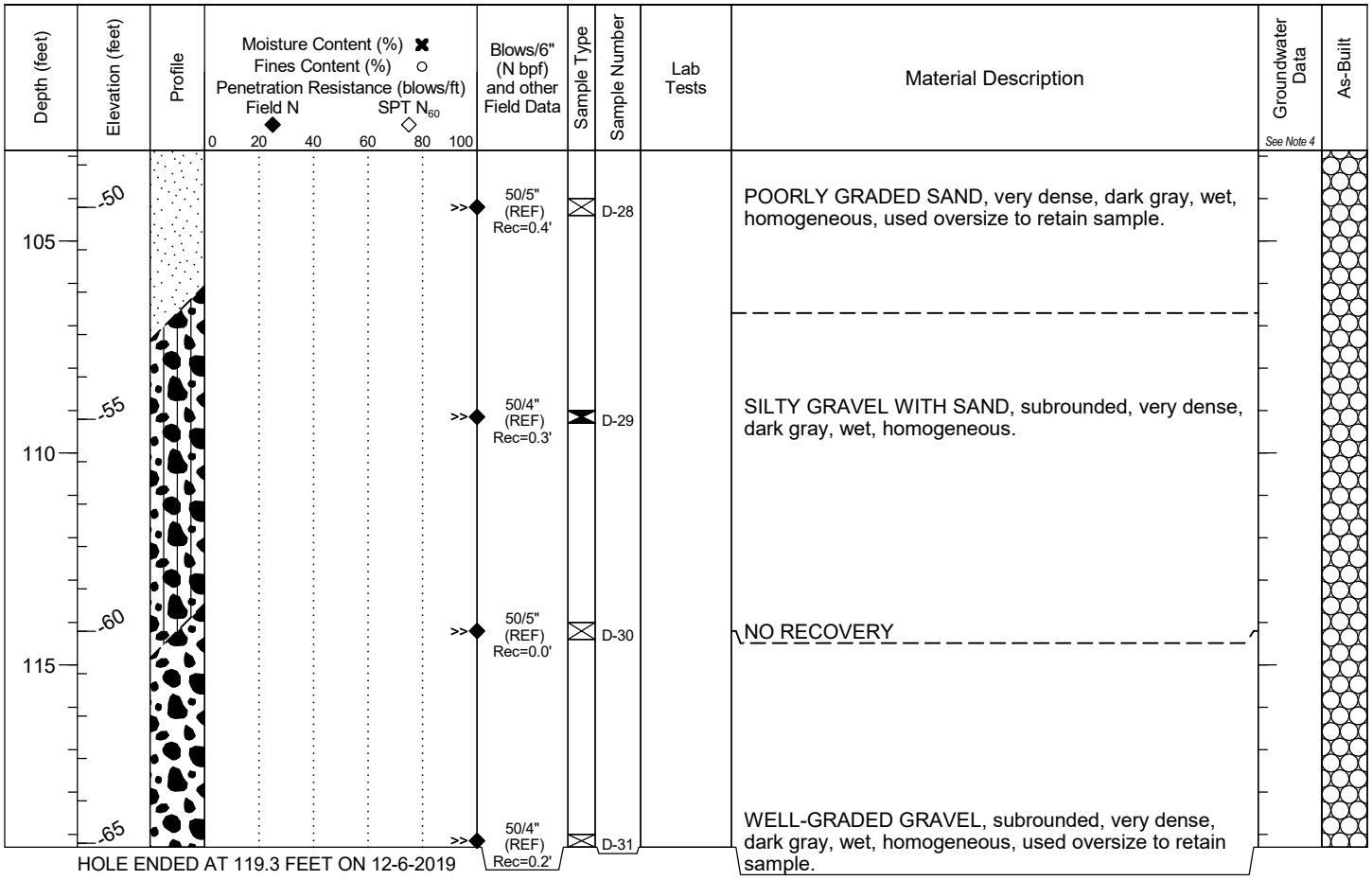
STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 1/6/2020 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-17p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 278,910.0 feet *Latitude:* 47.756630 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Harvey, Thomas #2599

Easting: 1,308,266.7 feet *Longitude:* -122.183754 deg. *Start Card:* RE17175 *Well Tag:* BLA719 *Instrument:* 1" PVC

Elevation: 39.1 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-4) *Rod Type:* AWJ

Started: June 10, 2019 *Completed:* June 12, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.9%

Remark: NB I-405 to SR 522 Bridge

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	39	11 21 27 24 (48) Rec=1.0'		D-1		SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous, and organics.
5	35	1 2 2 (4) Rec=0.0'		D-2		NO RECOVERY
		2 3 4 (7) Rec=1.0'		D-3		SILT WITH SAND, loose, brown, wet, homogeneous.
10	30	3 4 4 (8) Rec=1.5'		D-4	GS, AL	SILT WITH SAND, loose, brown, moist, homogeneous.
		4 5 7 (12) Rec=1.5'		D-5		SILT WITH SAND, medium dense, grayish brown, moist, homogeneous.
15	25	3 5 5 (10) Rec=1.0'		D-6		FAT CLAY WITH SAND, stiff, grayish brown, moist, homogeneous.
		3 4 5 (9) Rec=1.5'		D-7	GS, AL	FAT CLAY WITH SAND, stiff, grayish brown, moist, homogeneous.
20	20	Rec=2.0'		S-8	GS, AL, HT, SG, DN	LEAN CLAY, grayish brown, moist.
		3 4 5 (9) Rec=1.5'		D-9	GS, AL	SILT, loose, gray, wet, homogeneous.
25	15	2		D-10		LEAN CLAY, stiff, gray, wet, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data *See Note 4*: Bail test: water at 24.1 ft

As-Built: 2.5"

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)
30	10	4 5 (9) Rec=1.5'		D-10		LEAN CLAY, stiff, gray, wet, homogeneous.	
		3 4 7 (11) Rec=1.5'		D-11	AL	LEAN CLAY WITH SAND, stiff, gray, wet, stratified.	
		2 4 4 (8) Rec=0.0'		D-12		NO RECOVERY	
35	5	9 15 16 (31) Rec=1.5'		D-13	GS, AL	SANDY SILTY CLAY, hard, gray, moist, homogeneous.	
		7 12 11 (23) Rec=1.5'		D-14		SANDY SILTY CLAY, very stiff, gray, moist, homogeneous.	
		9 12 15 (27) Rec=1.5'		D-15		SANDY SILTY CLAY, very stiff, gray, moist, laminated.	
40	0	9 11 12 (23) Rec=1.5'		D-16		SANDY SILTY CLAY, very stiff, gray, moist, laminated.	
		7 10 9 (19) Rec=1.5'		D-17		LEAN CLAY, very stiff, gray, moist, laminated.	
45	-5	7 9 8 (17) Rec=1.5'		D-18		LEAN CLAY, very stiff, gray, moist, laminated.	
		7 9 9 (18) Rec=1.5'		D-19		LEAN CLAY, very stiff, gray, moist, laminated.	
50	-10	7 8 9 (17) Rec=1.5'		D-20		LEAN CLAY, very stiff, gray, moist, laminated.	
55	-15	7 8		D-21	GS, AL	LEAN CLAY, very stiff, gray, moist, laminated.	

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				8 (16) Rec=1.5'						
	-20									
60			◆ ◇	7 7 9 (16) Rec=1.5'		D-22		LEAN CLAY, very stiff, gray, moist, laminated.		
	-25									
65			◆ ◇	7 8 9 (17) Rec=1.5'		D-23		LEAN CLAY, very stiff, gray, moist, laminated.		
	-30									
70			◆ ◇	8 10 8 (18) Rec=1.5'		D-24		LEAN CLAY, very stiff, gray, moist, laminated.		
	-35									
75			◆ ◇	9 10 8 (18) Rec=1.5'		D-25		LEAN CLAY, very stiff, gray, moist, laminated.		
	-40									
80			◆ ◇	9 11 8 (19) Rec=1.5'		D-26		LEAN CLAY, very stiff, gray, moist, laminated.		
								-Drilling behavior indicates gravel at 82.0 ft.		
	-45									
85			◆ ◇	26 36 17 (53) Rec=1.5'		D-27		CLAYEY SAND WITH GRAVEL, subrounded, very dense, gray, moist, stratified.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	-50			9 12 12 (24) Rec=1.5'		D-28		LEAN CLAY, very stiff, gray, moist, laminated.		
90										
	-55			7 9 9 (18) Rec=1.5'		D-29	GS, AL	LEAN CLAY, very stiff, gray, moist, laminated.		
95										
	-60			8 10 9 (19) Rec=1.5'		D-30		LEAN CLAY, very stiff, gray, moist, laminated.		
100										
	-65			8 11 9 (20) Rec=1.5'		D-31		LEAN CLAY, very stiff, gray, moist, laminated.		
105										
	-70			9 11 12 (23) Rec=1.5'		D-32		LEAN CLAY, very stiff, gray, moist, laminated.		
110										
	-75			11 12 11 (23) Rec=1.5'		D-33		LEAN CLAY, very stiff, gray, moist, laminated.		
115										

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

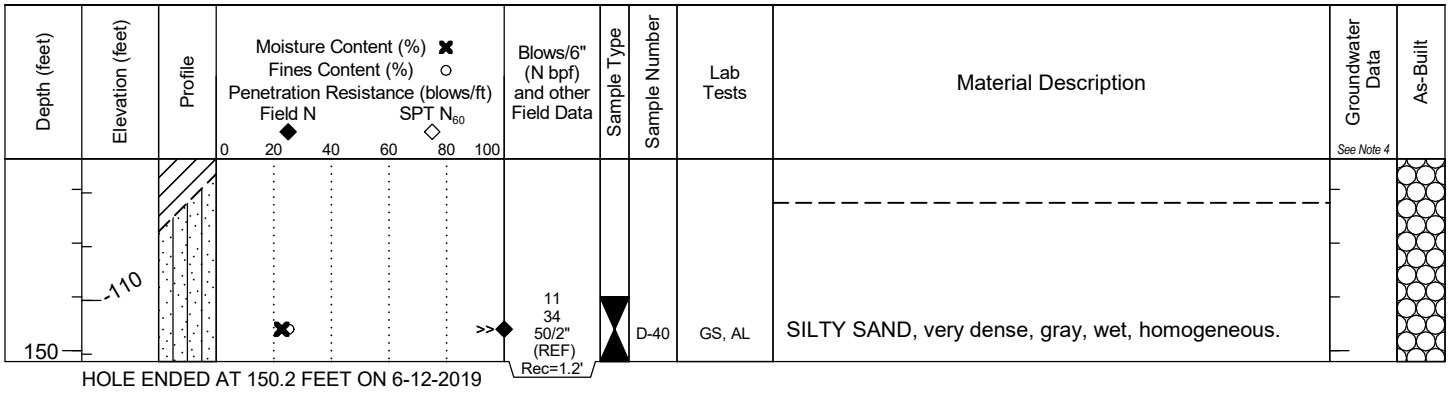
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
120	-80		◆ ◇	11 11 13 (24) Rec=1.5'		D-34		LEAN CLAY, very stiff, gray, moist, laminated.		
125	-85		◆ ◇	9 11 11 (22) Rec=1.5'		D-35		LEAN CLAY, very stiff, gray, moist, laminated.		
130	-90		>> ◆	50/6" (REF) Rec=0.6'		D-36		*-Drilling behavior indicates gravel from 128.0 f.t to 133.0 ft.* SILTY GRAVEL WITH SAND, subrounded, very dense, gray, wet, homogeneous.		
135	-95		✖ ○ ◆ ◇	15 17 18 (35) Rec=1.5'		D-37	GS, AL	SILTY SAND, dense, gray, moist, homogeneous.		
140	-100		◆ ◇	18 22 24 (46) Rec=1.5'		D-38		POORLY GRADED SAND, dense, gray, wet, stratified.		
145	-105		◆ ◇	11 14 19 (33) Rec=1.5'		D-39		LEAN CLAY, hard, gray, moist, laminated.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 150.2 FEET ON 6-12-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 6/18/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 12, 2019
Hole Depth / Casing Depth: 150.2 feet / 139.0 feet
Water Depth Before Bailing: 10.2 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	32.5
1	30.5
5	27.3
10	26.3
15	25.5
20	25.1
25	24.3
30	24.1
35	24.1
40	24.1

WSDOT

LOG OF BORING NE-18p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,198.9 feet *Latitude:* 47.757432 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,308,479.8 feet *Longitude:* -122.182908 deg. *Start Card:* RE-17177 *Well Tag:* BLA-721 *Instrument:* 1" PVC

Elevation: 55.9 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: June 18, 2019 *Completed:* June 20, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: NB I-405 to EB SR-522 Bridge

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
	55	2 3 6 (9) Rec=0.7'		D-1		SILTY SAND WITH GRAVEL, subrounded, loose, gray, moist, homogeneous, trace organics/roots.
5	50	7 14 12 (26) Rec=1.0'		D-2	GS, AL	SILTY SAND WITH GRAVEL, rounded, dense, gray, moist, homogeneous.
		5 9 13 (22) Rec=1.0'		D-3		SANDY SILT, medium dense, gray, moist, homogeneous.
10	45	4 8 9 (17) Rec=0.5'		D-4		SANDY SILT, medium dense, gray, moist, homogeneous.
		4 4 6 (10) Rec=1.1'		D-5	GS, AL	SANDY SILT, loose, gray, moist, homogeneous, trace organics/roots.
15	40	7 6 8 (14) Rec=0.9'		D-6		SANDY SILT, medium dense, gray, moist, homogeneous.
		8 10 17 (27) Rec=0.7'		D-7		SILTY SAND WITH GRAVEL, subrounded, dense, gray, wet, homogeneous.
20	35	11 11 14 (25) Rec=0.8'		D-8	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.
		14 20 24 (44) Rec=1.0'		D-9		SILTY SAND WITH GRAVEL, subrounded, dense, olive gray, moist, homogeneous.
25	30	13 23 28 (51) Rec=0.9'		D-10	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very dense, olive gray, moist, homogeneous.
		6 8 7 (15) Rec=1.2'		D-11		SILTY SAND, subrounded, medium dense, dark gray, moist, stratified.
30		5		D-12	GS, AL	SILTY SAND, subrounded, medium dense, gray, moist, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data *See Note 4*

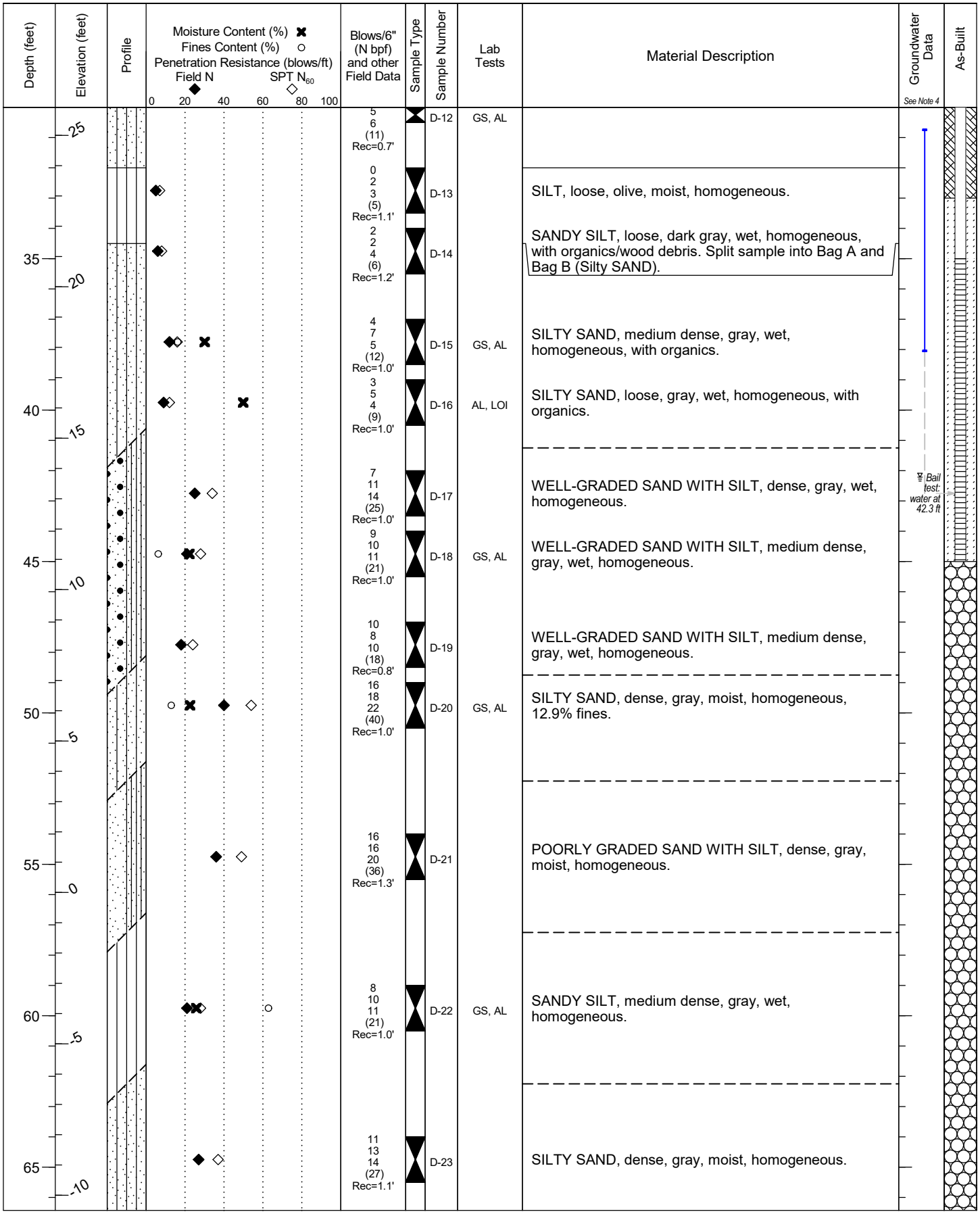
As-Built 2.0"

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



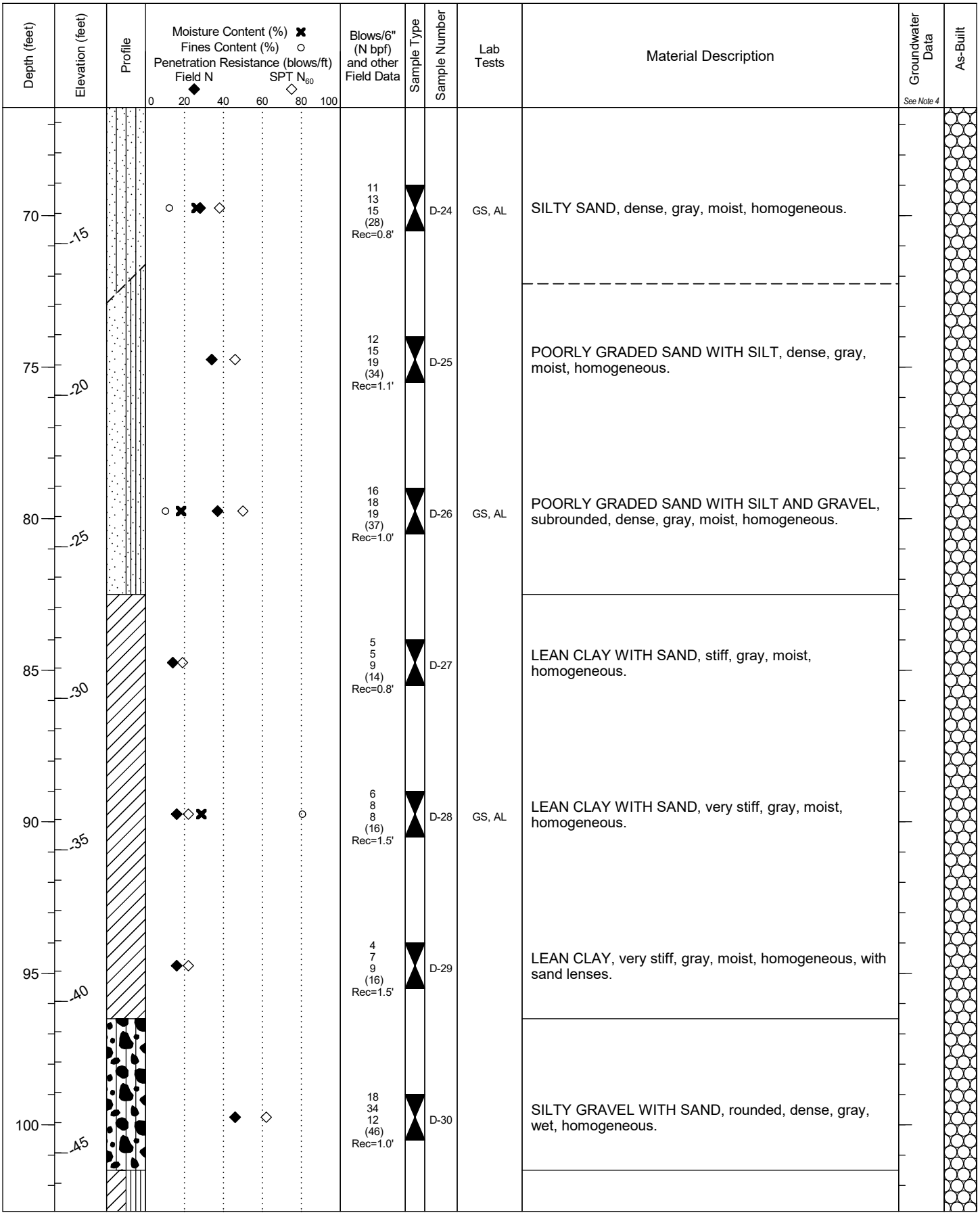
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

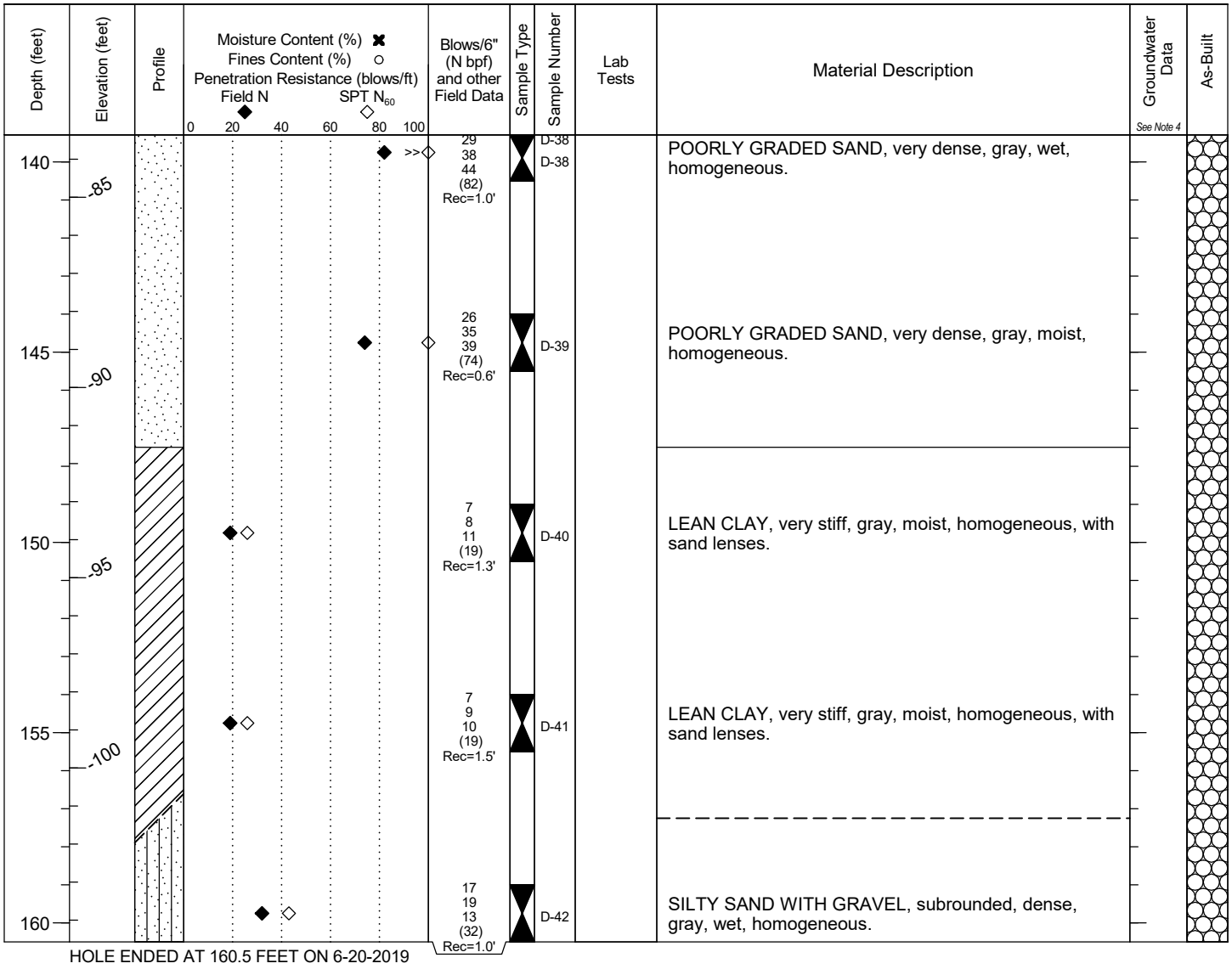
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
105	-50		✖◆ ◇ ○	8 11 13 (24) Rec=1.5'		D-31	GS, AL	SANDY SILTY CLAY, very stiff, gray, moist, homogeneous.		
110	-55		◆ ◇	9 17 24 (41) Rec=1.2'		D-32		109 to 109.4: SILTY CLAY, hard, gray, moist, homogeneous. 109.4 to 110.5: SILTY SAND, dense, gray, moist, homogeneous.		
115	-60		◆ ◇	13 13 15 (28) Rec=1.3'		D-33		GRAVELLY SILT, rounded, dense, gray, moist, homogeneous.		
120	-65		◆ ✖	6 7 10 (17) Rec=1.5'		D-34	AL	LEAN CLAY, very stiff, gray, moist, homogeneous, with sand lenses.		
125	-70		◆ ◇	6 8 9 (17) Rec=1.5'		D-35		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
130	-75		✖◆ ◇ ○	6 9 10 (19) Rec=1.5'		D-36	GS, AL	SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
135	-80		>>◆	20 50/5" (REF) Rec=0.8'		D-37		SANDY SILT, very dense, gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 7/24/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 20, 2019
Hole Depth / Casing Depth: 160.5 feet / 159.0 feet
Water Depth Before Bailing: 29.1 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	46.4
1	46.2
2	46.2
5	42.8
1000	42.3

WSDOT

LOG OF BORING NE-19p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,203.1 feet *Latitude:* 47.757435 deg. *Driller/Inspector:* Shepherd, Robert (#2710) / Shepherd, Robert #2710

Easting: 1,308,302.6 feet *Longitude:* -122.183628 deg. *Start Card:* RE-17190 *Well Tag:* BLA-730 *Instrument:* 1" PVC

Elevation: 32.6 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-5) *Rod Type:* AWJ

Started: June 3, 2019 *Completed:* June 6, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.3%

Remark: NB I-405 Mainline Bridge

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	30					
5	25	1 2 1 (3) Rec=1.3'		D-1		SILTY SAND, very loose, light olive gray, moist, homogeneous, with organics.
		3 2 2 (4) Rec=1.0'		D-2		SILTY SAND, very loose, gray, wet, homogeneous, with organics.
10	20	2 1 3 (4) Rec=1.1'		D-3	GS, AL	SILTY SAND, very loose, gray, wet, laminated, with organics.
		2 0 1 (1) Rec=1.2'		D-4	AL, LOI	POORLY GRADED SAND WITH SILT, very loose, brown, moist, stratified, with organics.
15	15	2 4 2 (6) Rec=0.5'		D-5		POORLY GRADED SAND WITH SILT, loose, light brownish gray, wet, homogeneous, with organics.
		7 12 15 (27) Rec=1.0'		D-6	GS, AL	POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.
20	10	6 14 15 (29) Rec=1.0'		D-7		POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.
		10 16 13 (29) Rec=1.2'		D-8		POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.
25	5	3 10 14 (24) Rec=1.3'		D-9		POORLY GRADED SAND WITH SILT, medium dense, gray, wet, homogeneous.
		8 12 14 (26) Rec=1.4'		D-10		POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.
30	0	9		D-11		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4

As-Built — 2.0'

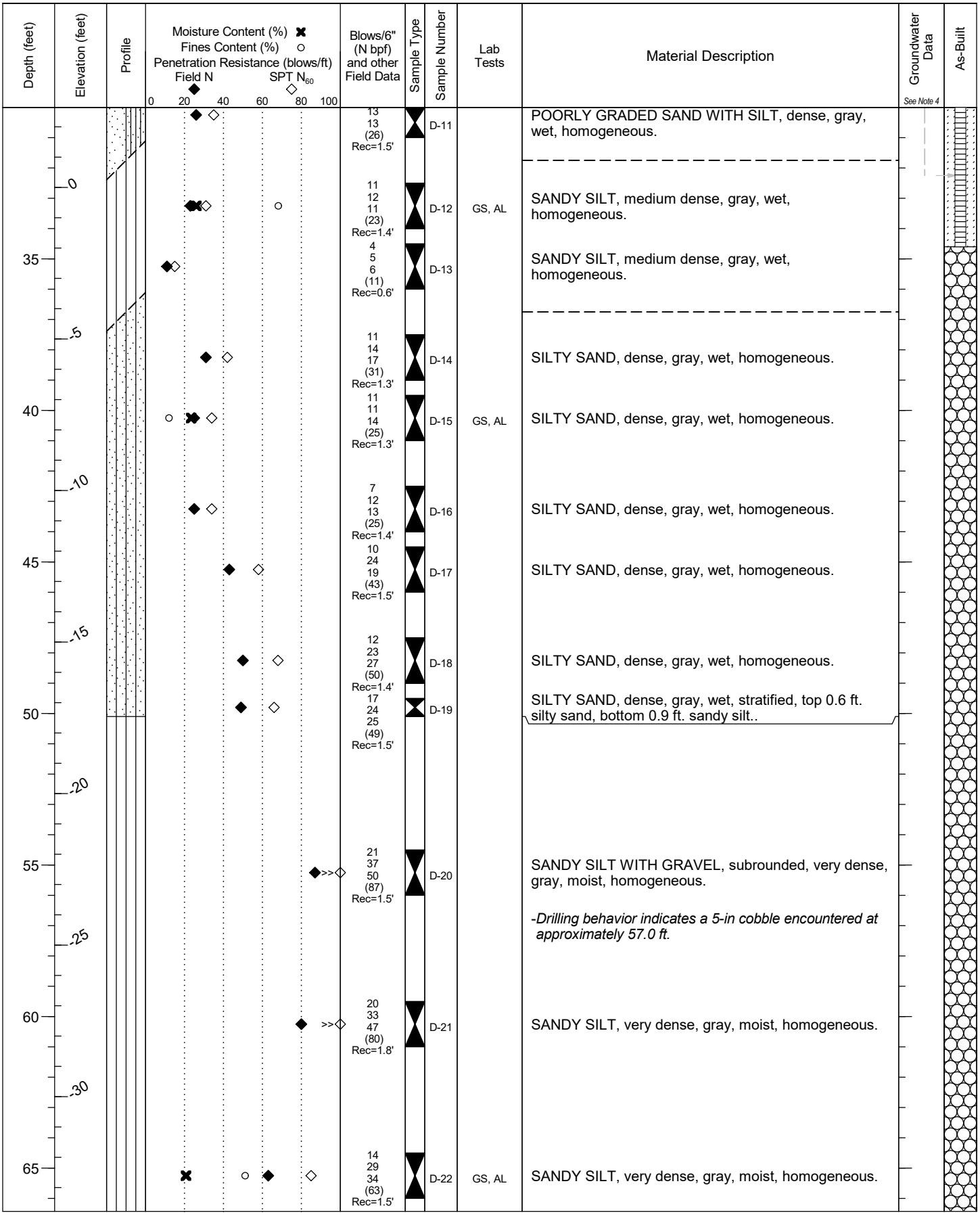
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	-35									
70			◆ ◇	5 7 9 (16) Rec=1.5'		D-23		LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	-40									
75			◆ ✖ ○	6 7 11 (18) Rec=1.5'		D-24	GS, AL	LEAN CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	-45									
80			◆ ◇	8 10 17 (27) Rec=1.5'		D-25		POORLY GRADED SAND, dense, gray, wet, homogeneous.		
	-50									
85			◆ ◇	11 12 14 (26) Rec=1.5'		D-26		POORLY GRADED SAND, dense, gray, wet, homogeneous.		
	-55									
90			◆ ◇	8 12 12 (24) Rec=1.5'		D-27		POORLY GRADED SAND, medium dense, gray, moist, homogeneous.		
	-60									
95			◆ ✖ ○	6 8 10 (18) Rec=1.5'		D-28	GS, AL	SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	-65									
100			◆ ◇	7 7 10 (17) Rec=1.5'		D-29		SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	-70									

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

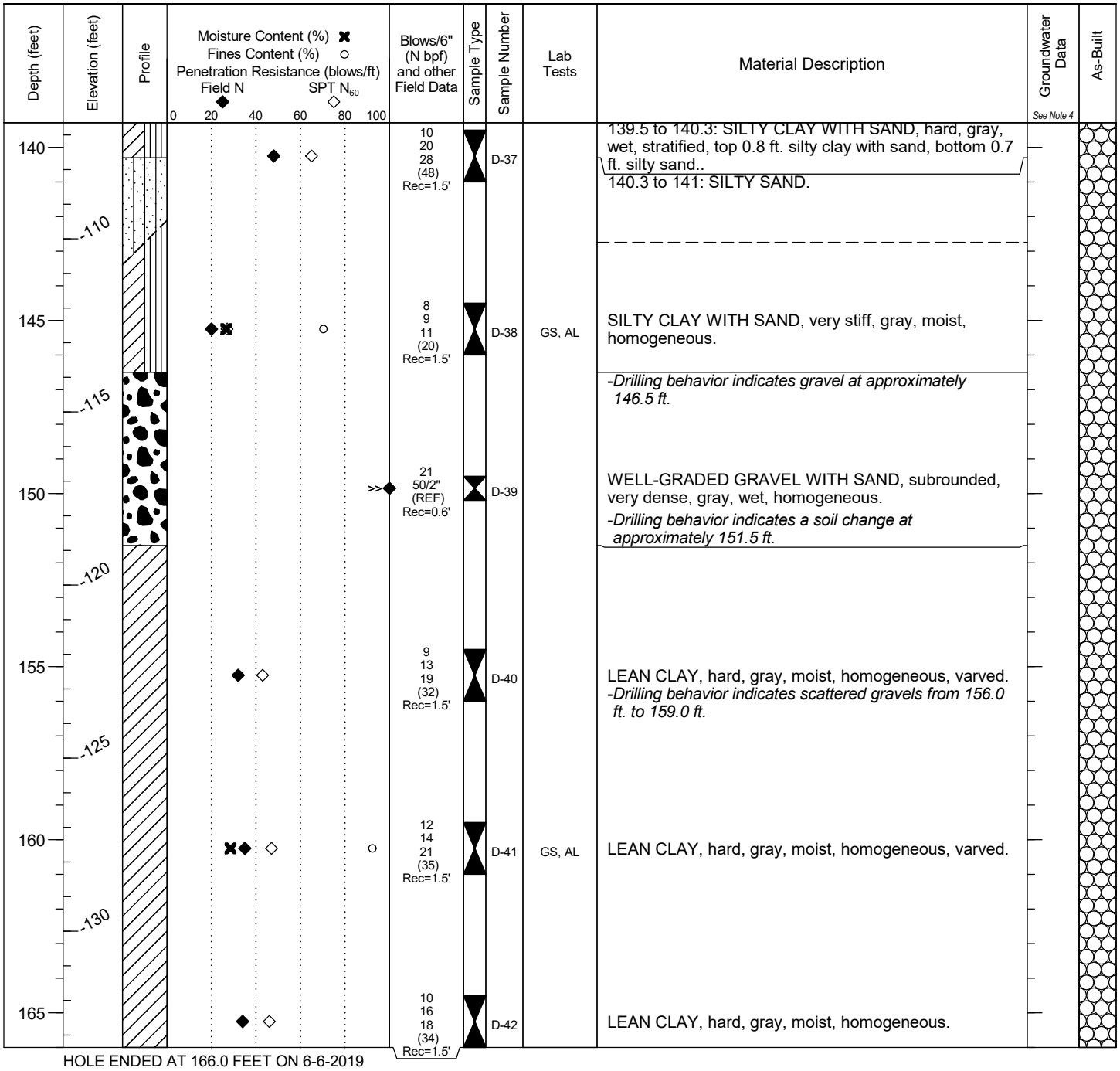
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
105			◆ ◇	7 9 10 (19) Rec=1.5'		D-30		SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	-75									
110			◆ ◇	6 8 9 (17) Rec=1.5'		D-31		SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	-80									
115			◆ ◇	35 39 21 (60) Rec=1.5'		D-32		WELL-GRADED SAND, very dense, gray, wet, stratified, top 1.0 ft. well graded sand, bottom 0.5 ft. sandy silt..		
	-85									
120			◇ >>	24 27 50 (77) Rec=1.5'		D-33		WELL-GRADED SAND, very dense, gray, wet, homogeneous.		
	-90									
125			✖ ◆ ◇ ○	13 18 24 (42) Rec=1.5'		D-34	GS, AL	SANDY LEAN CLAY, hard, gray, wet, homogeneous.		
	-95									
130			◆ >>	37 50/6" (REF) Rec=1.0'		D-35		WELL-GRADED SAND, very dense, gray, wet, homogeneous.		
	-100									
135			◆ ◇	7 11 12 (23) Rec=1.5'		D-36		SILTY CLAY WITH SAND, very stiff, gray, moist, homogeneous.		
	-105									

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 166.0 FEET ON 6-6-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 6/18/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-20vw-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,307.0 feet *Latitude:* 47.757716 deg. *Driller/Inspector:* Cooper, Richard (#2964) / Brun, Mike #1711

Easting: 1,308,233.6 feet *Longitude:* -122.183916 deg. *Start Card:* RE 17190 *Well Tag:* BLA-729 *Instrument:* VWP

Elevation: 32.6 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45C (ID:9A4-7) *Rod Type:* AWJ

Started: February 19, 2019 *Completed:* February 23, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.7%

Remark: NB I-405 to SR-522 Bridge

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
		1 10 12 6 (22) Rec=1.1'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, grayish brown, dry, homogeneous.
5	30	4 2 3 2 (5) Rec=1.3'		D-2	GS, AL	SILTY SAND WITH GRAVEL, subrounded, loose, grayish brown, dry, homogeneous.
	25	2 1 3 5 (4) Rec=1.6'		D-3		SANDY SILT, very loose, grayish brown, dry, homogeneous, with organics.
10		2 2 2 2 (4) Rec=1.8'		D-4		SANDY SILT, very loose, grayish brown, moist, stratified, with organics.
	20	3 4 3 4 (7) Rec=1.3'		D-5	GS, AL, HT, SG	SILTY SAND, loose, gray, moist, laminated.
15		2 3 3 2 (6) Rec=1.3'		D-6		SILTY SAND, loose, grayish brown, moist, stratified, with organics.
	15	4 7 10 11 (17) Rec=1.2'		D-7	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, gray, moist, homogeneous, with organics.
20		3 4 5 5 (9) Rec=1.5'		D-8		POORLY GRADED SAND WITH SILT, loose, gray, moist, stratified, with organics.
	10	3 9 12 16 (21) Rec=1.7'		D-9		POORLY GRADED SAND WITH SILT, medium dense, gray, wet, homogeneous.
25		1 2 9 11 (11) Rec=1.0'		D-10		POORLY GRADED SAND WITH SILT, medium dense, gray, wet, homogeneous. *-Encountered gravels and cobbles at 26.5 ft.* *-Encountered 2.0 ft. of heaving sands at 27.0 ft.*
	5	3 6 11 14 (17) Rec=1.6'		D-11	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, gray, moist, stratified.
30		3		D-12		POORLY GRADED SAND WITH SILT, dense, gray, moist, homogeneous.

Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)

Groundwater Data *See Note 4*

As-Built 3.0

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)
		11 14 17 (25) Rec=1.8'		D-12			
35	0	7 8 9 11 (17) Rec=1.5'		D-13	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, gray, moist, laminated, with organics.	Bail test: water at 36.6 ft
40	-5	9 14 16 17 (30) Rec=1.8'		D-14		POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.	
45	-10	12 15 17 19 (32) Rec=1.8'		D-15		POORLY GRADED SAND WITH SILT, dense, gray, wet, laminated, with sandy silt lense.	
50	-15	8 12 13 17 (25) Rec=1.8'		D-16	GS, AL	SANDY SILT, dense, gray, wet, homogeneous, with organics. *-Switched from HW advancer to HQ advancer at 49.0 ft.*	
55	-20	13 18 21 25 (39) Rec=1.5'		D-17	GS, AL	POORLY GRADED SAND WITH SILT, dense, gray, moist, homogeneous, with organics.	
60	-25	15 25 31 38 (56) Rec=1.8'		D-18		POORLY GRADED SAND WITH SILT, very dense, gray, moist, laminated.	
	-30					*-Drilling became harder from 63.0 ft. to 64.0 ft.*	
65		13 14 13 16 (27) Rec=1.5'		D-19		SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.	

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

As-Built

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/9/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

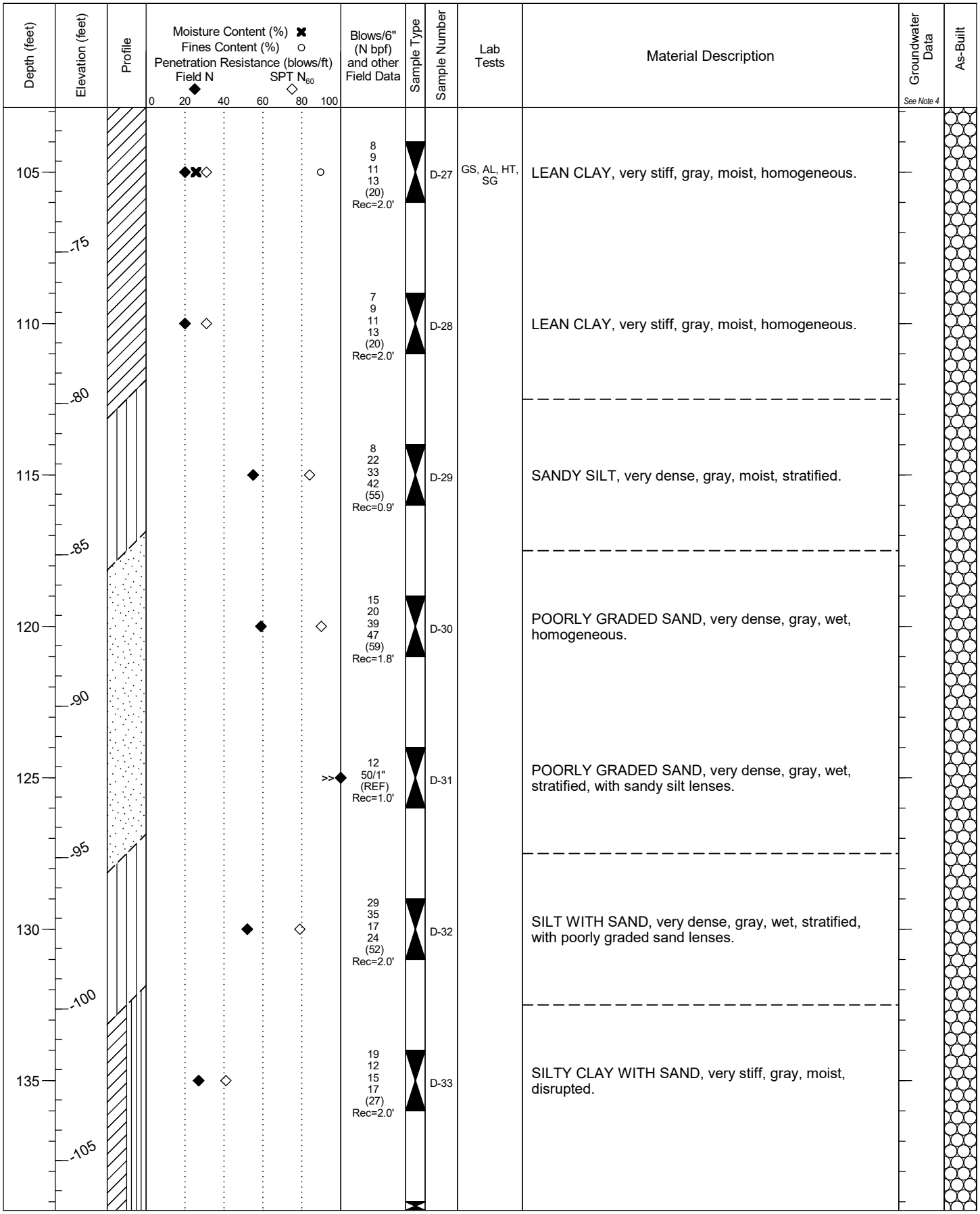
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	-35									
70			◆◆✖ ◇ ○	15 15 14 16 (29) Rec=1.5'		D-20	GS, AL	LEAN CLAY WITH SAND, very stiff, gray, dry, homogeneous.		
	-40									
75			◆ ◇	15 8 10 12 (18) Rec=1.8'		D-21		LEAN CLAY WITH SAND, very stiff, gray, dry, stratified. *-Possible volcanic ash deposits.*		
	-45									
80			◆ ◇	5 8 8 10 (16) Rec=1.8'		D-22		SANDY SILT, medium dense, gray, moist, stratified, with silt lense. *-Drilling became softer at 82.0 ft.*		
	-50									
85			◆ ◇	10 14 19 23 (33) Rec=2.0'		D-23		POORLY GRADED SAND WITH SILT, dense, gray, moist, laminated.		
	-55									
90			◆ ◇	12 15 19 18 (34) Rec=2.0'		D-24		POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.		
	-60									
95			◆✖ ◇ ○	6 10 11 14 (21) Rec=2.0'		D-25	GS, AL, HT, SG	LEAN CLAY, very stiff, gray, dry, homogeneous.		
	-65									
100			◆ ◇	10 12 16 21 (28) Rec=2.0'		D-26		LEAN CLAY, very stiff, gray, moist, homogeneous, disrupted.		
	-70									

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data	As-Built
140	-110		✖ ◇ ○	7 11 11 15 (22) Rec=2.0'		D-34 D-34	GS, AL GS, AL	SILTY CLAY WITH SAND, very stiff, gray, moist, disrupted.	See Note 4	
145	-115		◆ ◇	2 4 7 11 (11) Rec=2.0'		D-35		SILTY CLAY WITH SAND, stiff, gray, moist, laminated.		
150			◆ ◇	3 6 50 (56) Rec=1.5'		D-36		SILTY CLAY WITH SAND, hard, gray, moist, laminated.		

HOLE ENDED AT 150.5 FEET ON 2-23-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: February 23, 2019
Hole Depth / Casing Depth: 150.5 feet / 145.0 feet
Water Depth Before Bailing: 1.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	48.0
1	46.2
2	45.8
3	44.6
4	43.3
5	42.5
10	40.2
20	38.2
30	36.6

WSDOT

LOG OF BORING NE-21p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,788.8 feet *Latitude:* 47.759047 deg. *Driller/Inspector:* Cooper, Richard (#2964) / Brun, Mike #1711

Easting: 1,308,450.1 feet *Longitude:* -122.183071 deg. *Start Card:* RE17189 *Well Tag:* BLA-728 *Instrument:* 1" PVC

Elevation: 36.9 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9A2-523) *Rod Type:* AWJ

Started: March 11, 2019 *Completed:* March 15, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 89.4%

Remark: NB I-405 Mainline Bridge

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				2 4 12 34 (16) Rec=1.2'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, grayish brown, moist, stratified.	03-12-19 ▽	
5	35			14 12 15 27 (27) Rec=1.2'		D-2	GS, AL	SILTY SAND WITH GRAVEL, subangular, dense, gray, moist, homogeneous.		
	30			5 7 8 8 (15) Rec=1.0'		D-3	GS, AL	SANDY SILTY CLAY, stiff, gray, moist, homogeneous.		
10				5 4 4 5 (8) Rec=0.2'		D-4		SANDY SILTY CLAY, medium stiff, gray, moist, homogeneous.		
	25			2 4 6 7 (10) Rec=1.0'		D-5		POORLY GRADED SAND WITH SILT, loose, gray, wet, homogeneous.	03-14-19 ▽	
15				2 5 7 8 (12) Rec=1.5'		D-6		POORLY GRADED SAND WITH SILT, medium dense, gray to light brown, wet, stratified.		
	20			5 12 14 19 (26) Rec=1.5'		D-7		POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.	03-13-19 ▽	
20				6 13 15 17 (28) Rec=1.2'		D-8	GS, AL	POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.		
	15			10 10 6 5 (16) Rec=1.1'		D-9		POORLY GRADED SAND, medium dense, gray, wet, laminated, with silt lenses.		
25				0		D-10		SILT, loose, gray, wet, stratified, with sand lenses.		

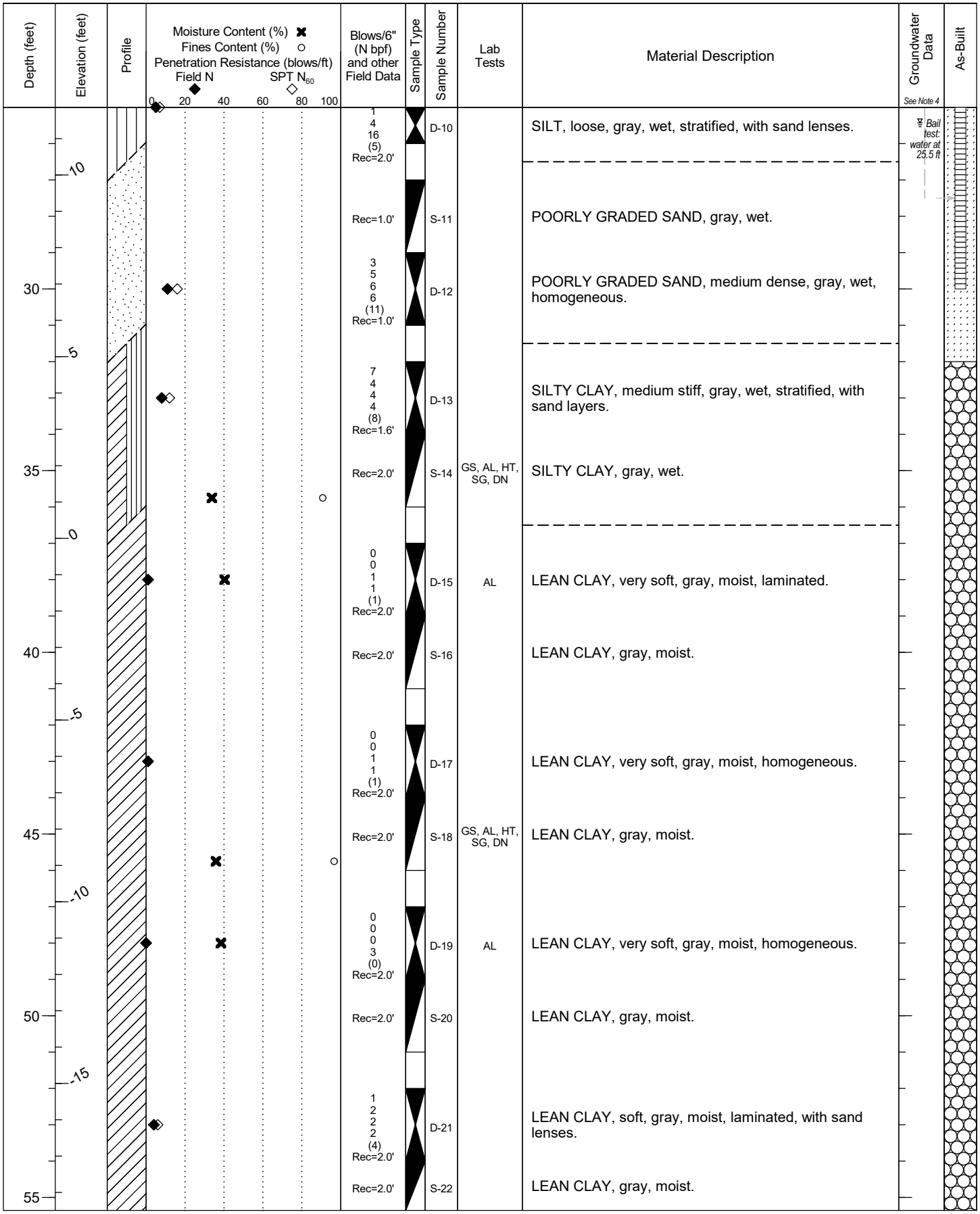
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



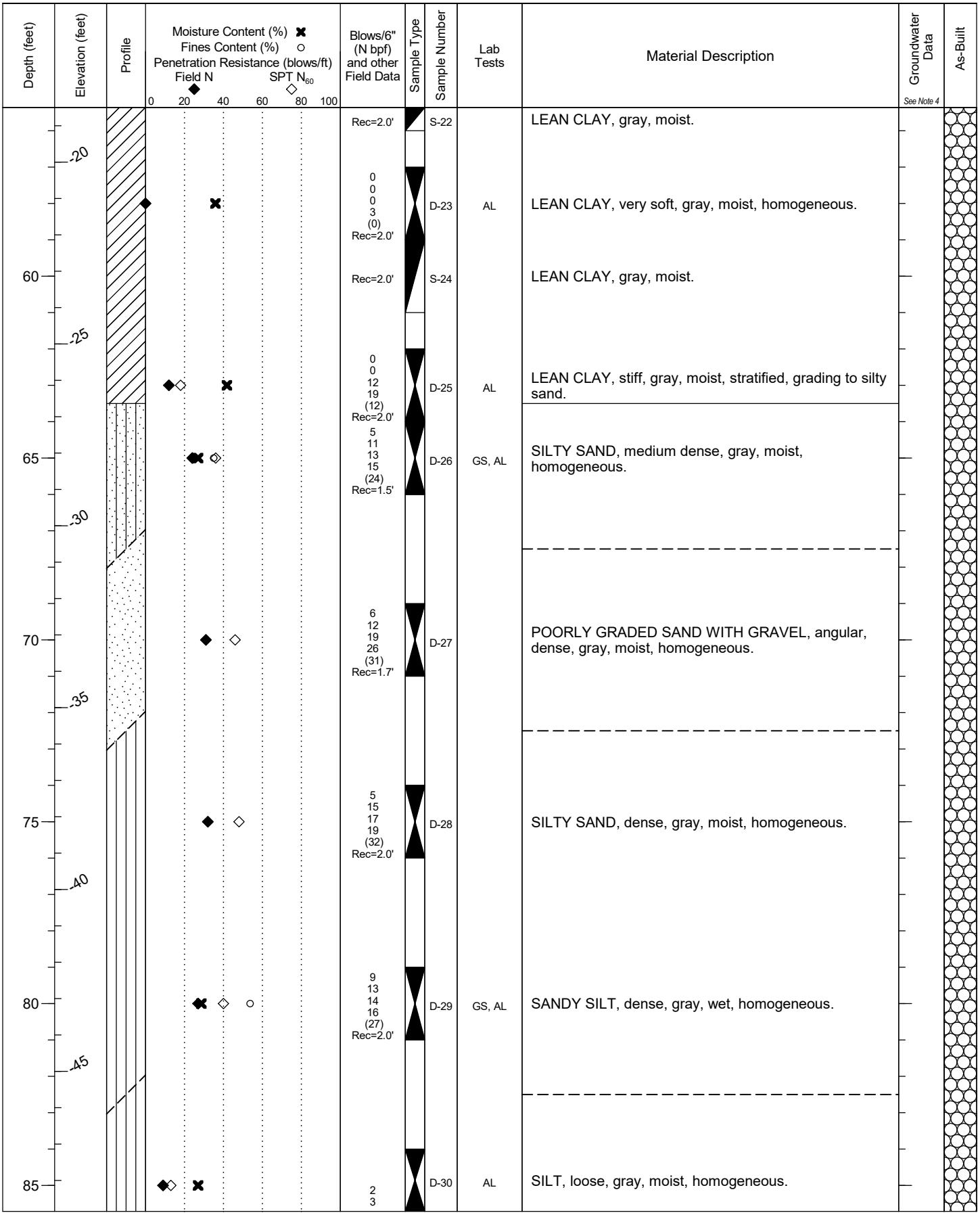
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	-50			6 8 (9) Rec=1.5'						
				Rec=2.0'		S-31		SILT, gray, moist.		
90			◆ ◇	3 10 16 13 (26) Rec=2.0'		D-32		SILT, dense, gray, moist, laminated, with sand layers.		
	-55									
95			◆ ◇	1 2 4 5 (6) Rec=2.0'		D-33		SILT, medium stiff, gray, moist, homogeneous.		
	-60									
100			✖ ○	Rec=2.0'		S-34	GS, AL, HT, SG, DN	LEAN CLAY, gray, moist.		
	-65									
			◆	0 2 3 4 (5) Rec=2.0'		D-35		LEAN CLAY, medium stiff, gray, wet, stratified.		
105			✖ ○	Rec=2.0'		S-36	GS, AL, HT, SG, DN	LEAN CLAY, gray, moist.		
	-70									
			◆ ✖	0 2 3 5 (5) Rec=2.0'		D-37	AL	LEAN CLAY, medium stiff, gray, moist, homogeneous.		
110				Rec=2.0'		S-38		LEAN CLAY, gray, moist.		
	-75									
			◆ ✖	2 4 5 6 (9) Rec=2.0'		D-39	AL	LEAN CLAY, stiff, gray, moist, homogeneous.		
115				Rec=2.0'		S-40		LEAN CLAY, gray, moist.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

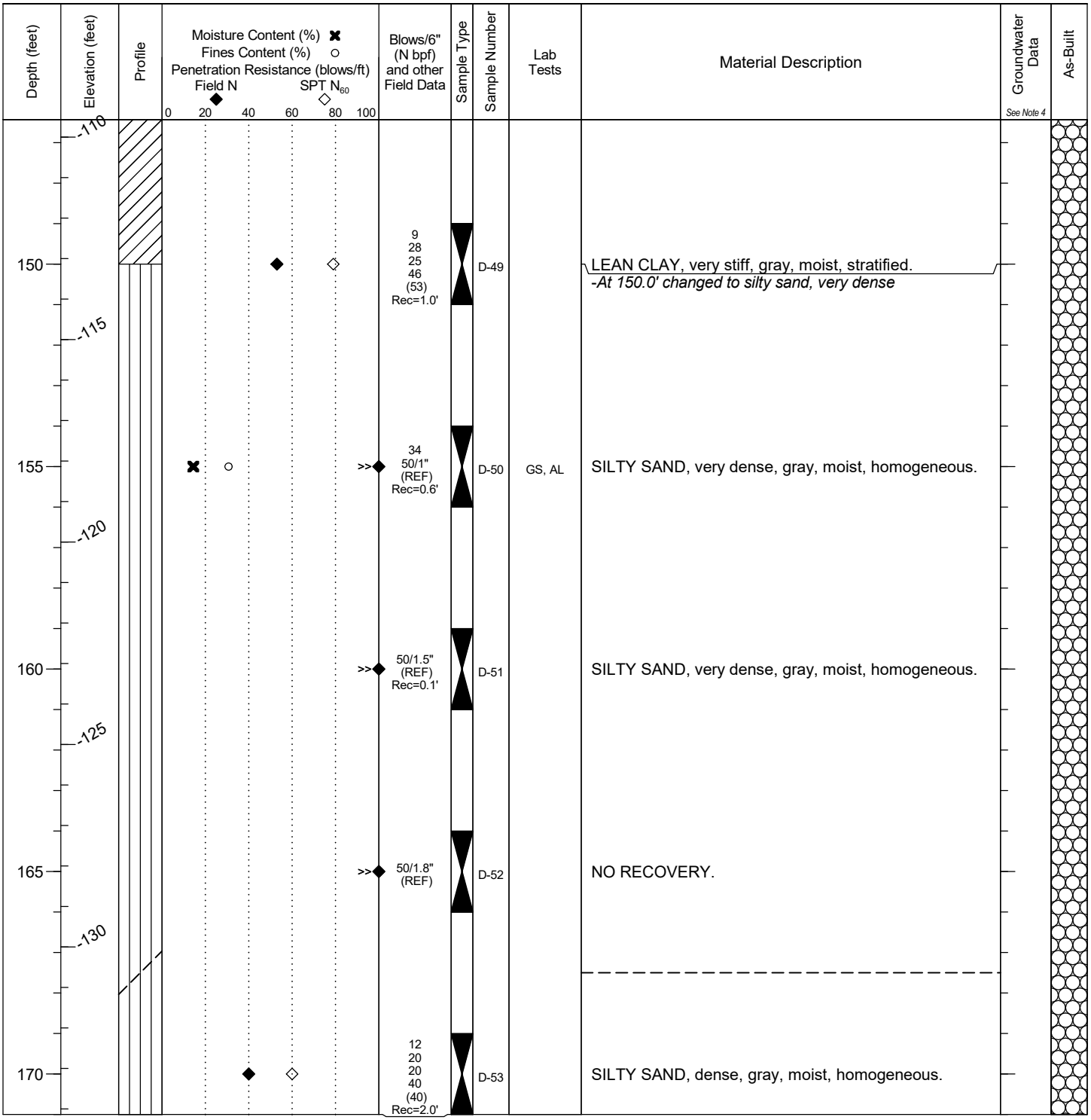
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	-80		◆◇ ✖ ○	0 2 4 5 (6) Rec=2.0'		D-41	GS, AL	LEAN CLAY, medium stiff, gray, moist, homogeneous.		
120				Rec=2.0'		S-42		LEAN CLAY, gray, moist.		
	-85		◆◇	2 3 3 4 (6) Rec=1.8'		D-43		LEAN CLAY, medium stiff, gray, moist, homogeneous.		
125				Rec=2.0'		S-44		LEAN CLAY, gray, moist.		
	-90		◆	0 0 3 5 (3) Rec=2.0'		D-45		LEAN CLAY, soft, gray, moist, homogeneous.		
130										
	-95									
135			◆	0 0 4 6 (4) Rec=2.0'		D-46		LEAN CLAY, soft, gray, moist, homogeneous.		
	-100									
140			◆◇	0 2 4 5 (6) Rec=2.0'		D-47		LEAN CLAY, medium stiff, gray, moist, homogeneous.		
	-105									
145			◆◇	0 2 4 5 (6) Rec=2.0'		D-48		LEAN CLAY, medium stiff, gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 171.0 FEET ON 3-15-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the

BAIL-RECHARGE TEST RESULTS:

Test Date: March 15, 2017
Hole Depth / Casing Depth: 171.0 feet / 169.0 feet
Water Depth Before Bailing: 11.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	25.5

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 1/31/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data See Note 4	As-Built

Region survey crew.

3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

5	25.5
10	25.5
15	25.5
30	25.5
60	25.5

WSDOT

LOG OF BORING NE-22p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,516.1 feet *Latitude:* 47.758331 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Harvey, Thomas #2599

Easting: 1,309,098.3 feet *Longitude:* -122.180416 deg. *Start Card:* RE17192 *Well Tag:* BLA-732 *Instrument:* 1" PVC

Elevation: 31.6 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-4) *Rod Type:* AWJ

Started: June 5, 2019 *Completed:* June 5, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.9%

Remark: Par Creek at SR-522

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	30	4 6 4 4 (10) Rec=2.0'		D-1		SILTY SAND WITH GRAVEL, subrounded, loose, grayish brown, moist, homogeneous, with organics.
5	25	6 7 8 (15) Rec=1.5'		D-2		POORLY GRADED SAND WITH GRAVEL, subrounded, medium dense, light brown, moist, homogeneous.
		2 4 4 (8) Rec=1.5'		D-3	GS, AL	SANDY ELASTIC SILT, medium stiff, brown, moist, stratified, with organics.
10	20	1 2 2 (4) Rec=1.5'		D-4	AL, LOI	SANDY SILT, loose, grayish brown, wet, homogeneous, with organics.
		1 2 1 (3) Rec=1.5'		D-5	AL, LOI	ORGANIC SOIL, soft, dark brown, wet, homogeneous.
		113>>✖				
		Rec=0.0'		S-6		NO RECOVERY
15	15	1 1 1 (2) Rec=1.5'		D-7		ORGANIC SOIL, soft, dark brown, wet, homogeneous.
		2 6 6 (12) Rec=1.0'		D-8		POORLY GRADED SAND, medium dense, grayish brown, wet, homogeneous.
20	10	7 10 11 (21) Rec=1.0'		D-9		POORLY GRADED SAND, medium dense, gray, wet, homogeneous.
		7 13 21 (34) Rec=1.5'		D-10	GS, AL	SILTY SAND, dense, gray, wet, homogeneous.
25	5	7 11 17 (28) Rec=1.5'		D-11		SILTY SAND, dense, gray, wet, homogeneous.
		3 5 7 (12) Rec=1.5'		D-12		SILTY SAND, medium dense, gray, wet, homogeneous.
30		1		D-13		NO RECOVERY

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data (See Note 4): Bail test: water at 22.2 ft

As-Built

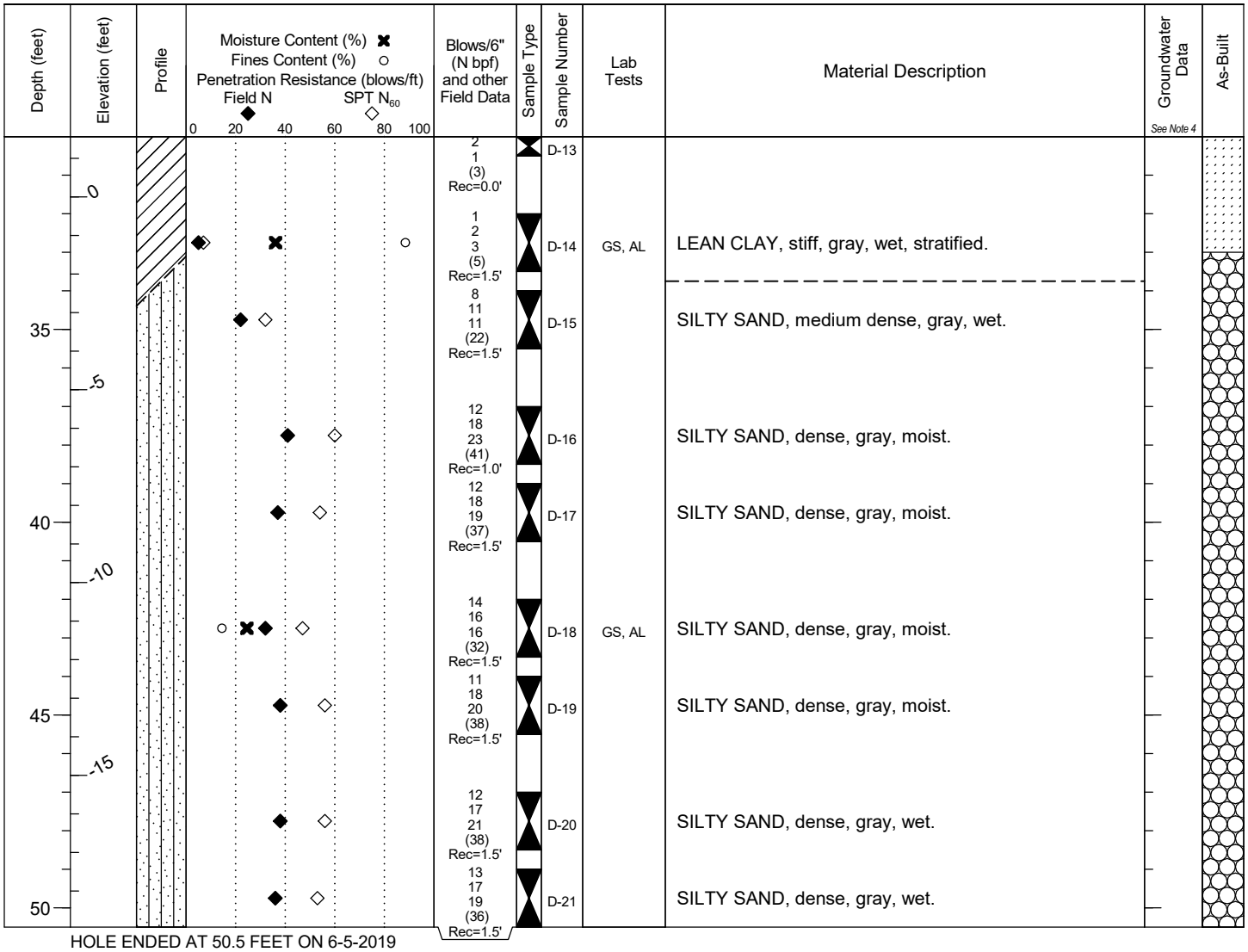
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 50.5 FEET ON 6-5-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 6/18/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 5, 2019
Hole Depth / Casing Depth: 50.5 feet / 44.0 feet
Water Depth Before Bailing: 4.7 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	21.6
1	22.1
5	22.1
10	22.2
15	22.2
20	22.2
30	22.2

WSDOT

LOG OF BORING NE-23-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,741.7 feet *Latitude:* 47.758948 deg. *Driller/Inspector:* Cooper, Richard (#2964) / Brun, Mike #1711

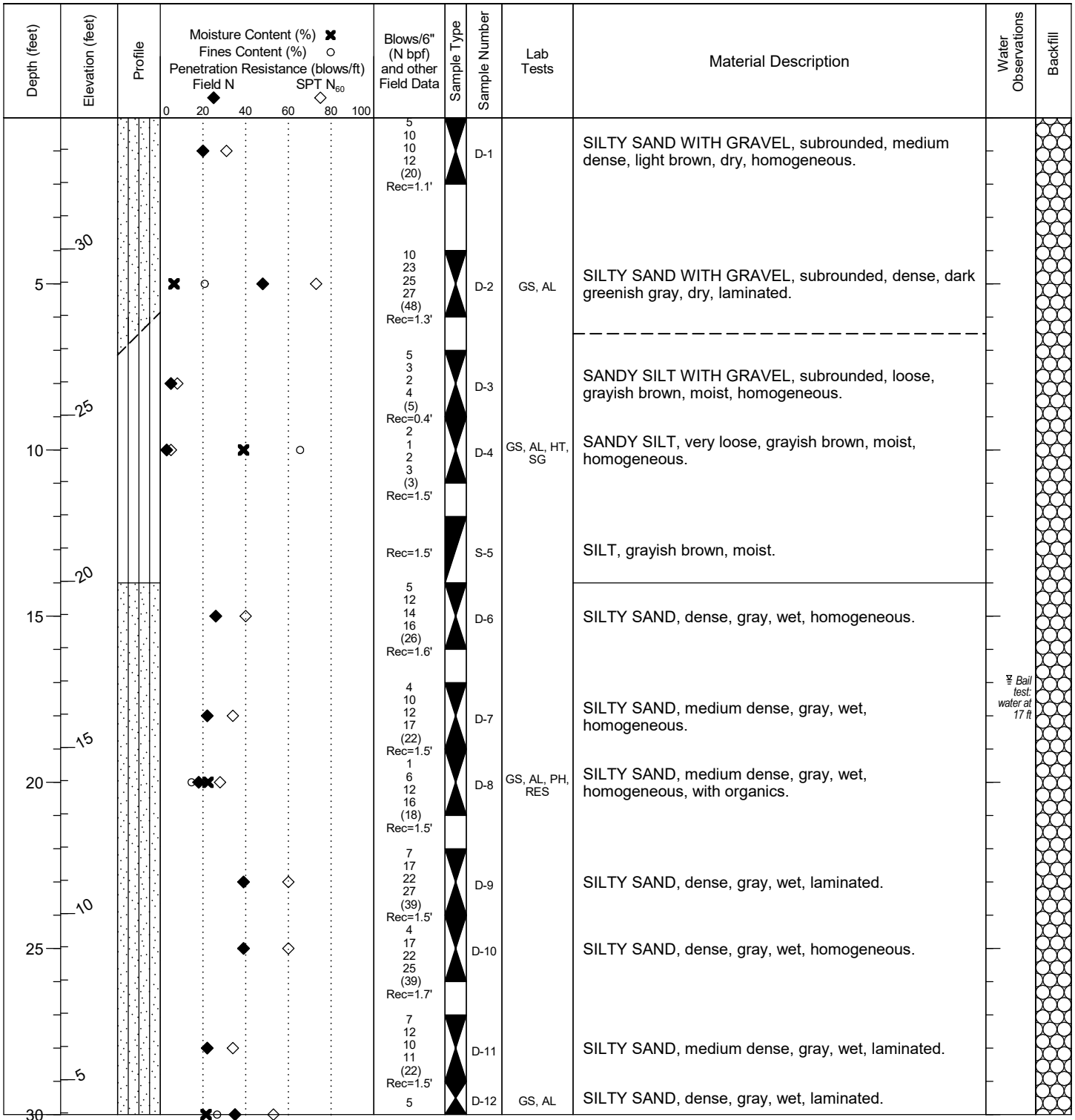
Easting: 1,309,078.7 feet *Longitude:* -122.180512 deg. *Start Card:* SE69023 AE53382 *Well Tag:* N/A *Instrument:*

Elevation: 33.9 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45C (ID:9A4-7) *Rod Type:* AWJ

Started: March 5, 2019 *Completed:* March 5, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.7%

Remark: Par Creek at SR-522



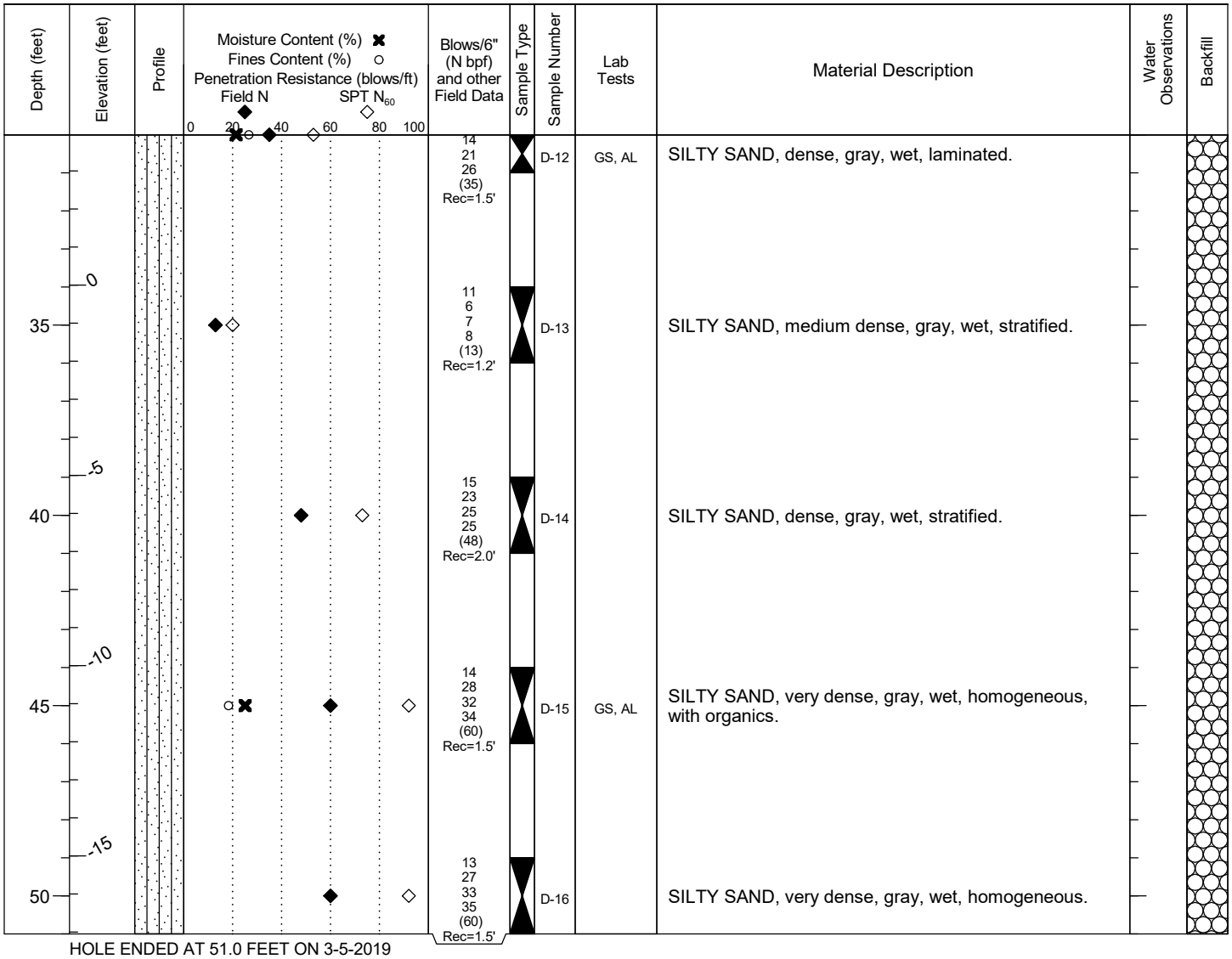
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 51.0 FEET ON 3-5-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: March 5, 2019
Hole Depth / Casing Depth: 51.0 feet / 49.0 feet
Water Depth Before Bailing: 7.5 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	18.2
5	17.6
10	17.4
15	17.0

WSDOT

LOG OF BORING NE-24-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 279,293.5 feet *Latitude:* 47.757788 deg. *Driller/Inspector:* Cooper, Richard (#2964) / Brun, Mike #1711
Easting: 1,310,511.1 feet *Longitude:* -122.174657 deg. *Start Card:* SE69026 AE53385 *Well Tag:* N/A *Instrument:*
Elevation: 33.1 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45C (ID:9A4-7) *Rod Type:* AWJ
Started: April 9, 2019 *Completed:* April 9, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.7%
Remark: UNT to Sammamish River (996910)

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	30	2 9 8 8 (17) Rec=1.6'		D-1		SILTY SAND, medium dense, grayish brown, moist, homogeneous.
5		3 2 2 2 (4) Rec=1.5'		D-2	GS, AL	SILTY SAND, very loose, grayish brown, wet, homogeneous.
	25	1 1 2 2 (3) Rec=0.1'		D-3		SILTY SAND WITH GRAVEL, subrounded, very loose, gray, wet, homogeneous.
10		0 0 0 0 (0) Rec=1.6'		D-4		PEAT, very soft, dark brown, wet, homogeneous.
	20	Rec=2.0'		S-5		PEAT, dark brown, wet.
15		0 1 5 6 (6) Rec=1.5'		D-6		PEAT, medium stiff, dark brown, wet.
	15	10 12 12 12 (24) Rec=1.5'		D-7		POORLY GRADED SAND WITH SILT, medium dense, gray, wet, homogeneous.
20		3 5 5 7 (10) Rec=1.4'		D-8	GS, AL	POORLY GRADED SAND WITH SILT, loose, gray, wet, homogeneous.
	10	6 8 11 12 (19) Rec=1.6'		D-9		SANDY SILT, medium dense, gray, wet, homogeneous.
25		4 10 11 14 (21) Rec=1.7'		D-10		SANDY SILT, medium dense, gray, wet, homogeneous.
	5	6 11 14 17 (25) Rec=1.8'		D-11	GS, AL	SANDY SILT, dense, gray, wet, homogeneous.
30		7		D-12	GS, AL	SILT WITH SAND, medium dense, gray, wet, stratified.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Water Observations: 04-09-19 PM

Backfill

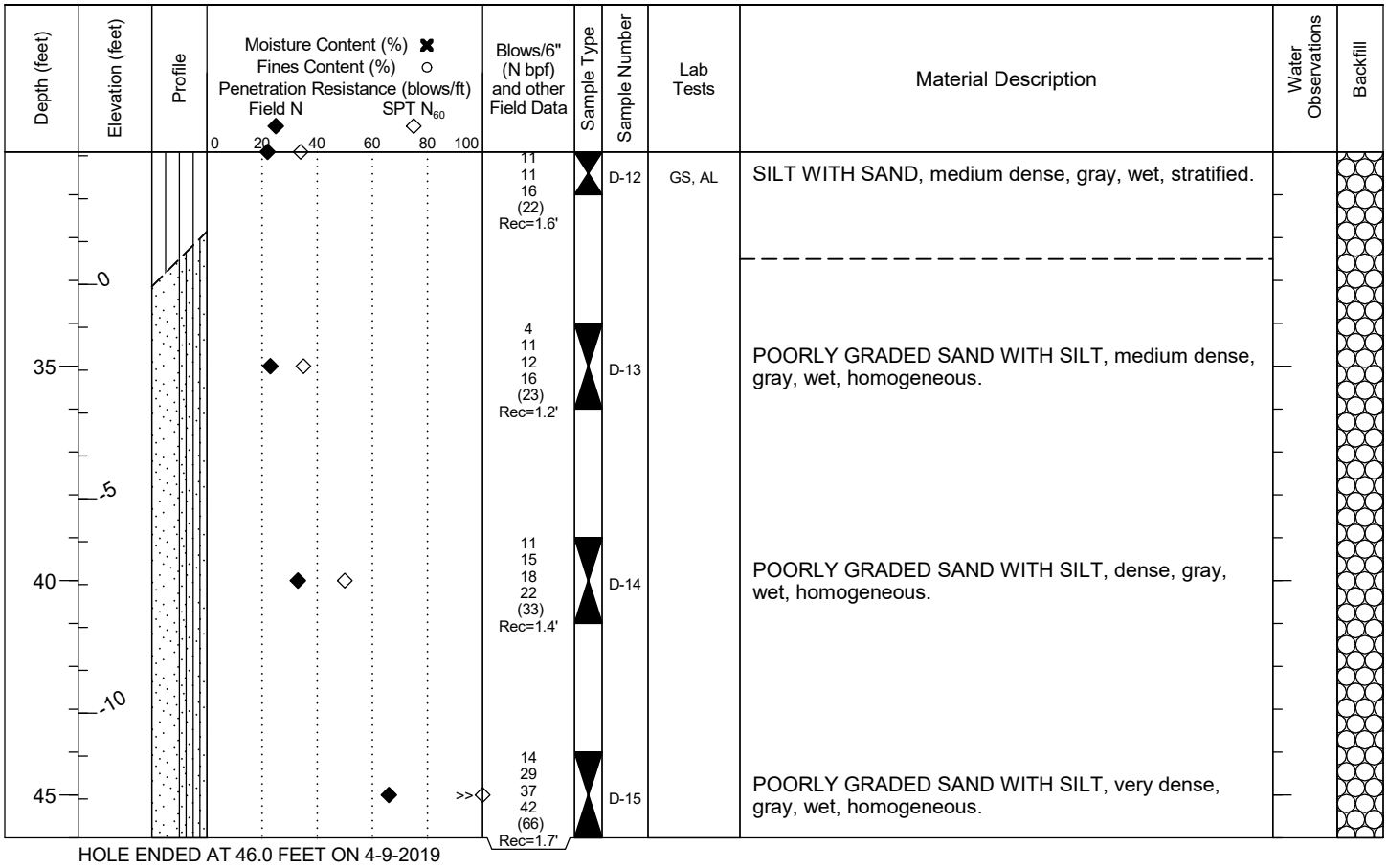
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 46.0 FEET ON 4-9-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: April 9, 2019
Hole Depth / Casing Depth: 46.0 feet / 44.0 feet
Water Depth Before Bailing: 1.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	21.5
15	16.5
30	14.3

WSDOT

LOG OF BORING NE-25p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,463.5 feet *Latitude:* 47.758253 deg. *Driller/Inspector:* Cooper, Richard (#2964) / Brun, Mike #1711

Easting: 1,310,494.1 feet *Longitude:* -122.174738 deg. *Start Card:* RE17195 *Well Tag:* BLA-733 *Instrument:* 1" PVC

Elevation: 35.3 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45C (ID:9A4-7) *Rod Type:* AWJ

Started: March 6, 2019 *Completed:* March 6, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.7%

Remark: UNT to Sammamish River (996910)

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
	35	11 15 16 14 (31) Rec=1.5'		D-1		-ASPHALT. POORLY GRADED SAND WITH GRAVEL, subrounded, dense, light brown, dry, homogeneous.
5	30	4 3 3 4 (6) Rec=0.9'		D-2	GS, AL	SILTY SAND WITH GRAVEL, subrounded, loose, light brown, wet, homogeneous.
		1 1 1 2 (2) Rec=1.5'		D-3	AL, LOI	SILT, soft, grayish brown, moist, homogeneous, with organics.
10	25	Rec=2.0'		S-4	GS, AL, DN	SILT, grayish brown, moist.
		2 3 3 3 (6) Rec=1.7'		D-5		SILT, medium stiff, grayish brown, moist, stratified, with organics, grading to poorly graded sand.
15	20	0 1 1 1 (2) Rec=1.0'		D-6	AL, PH, RES	POORLY GRADED SAND WITH SILT, very loose, gray, wet, laminated, with organic silt lenses.
		Rec=2.0'		S-7		SILTY SAND, gray, wet.
20	15	0 0 1 1 (1) Rec=0.8'		D-8	GS, AL	POORLY GRADED SAND WITH SILT, very loose, gray, wet, homogeneous.
		4 5 7 9 (12) Rec=1.5'		D-9		POORLY GRADED SAND WITH SILT, medium dense, gray, wet, homogeneous.
25	10	2 6 6 7 (12) Rec=1.3'		D-10	GS, AL	SILTY SAND, medium dense, gray, wet, homogeneous.
		3 6 7 13 (13) Rec=1.5'		D-11	GS, AL	SANDY SILT, medium dense, gray, wet, homogeneous.
30		3		D-12		SILTY SAND, medium dense, gray, wet, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data (See Note 4): Bail test: water at 15.5 ft; DRY

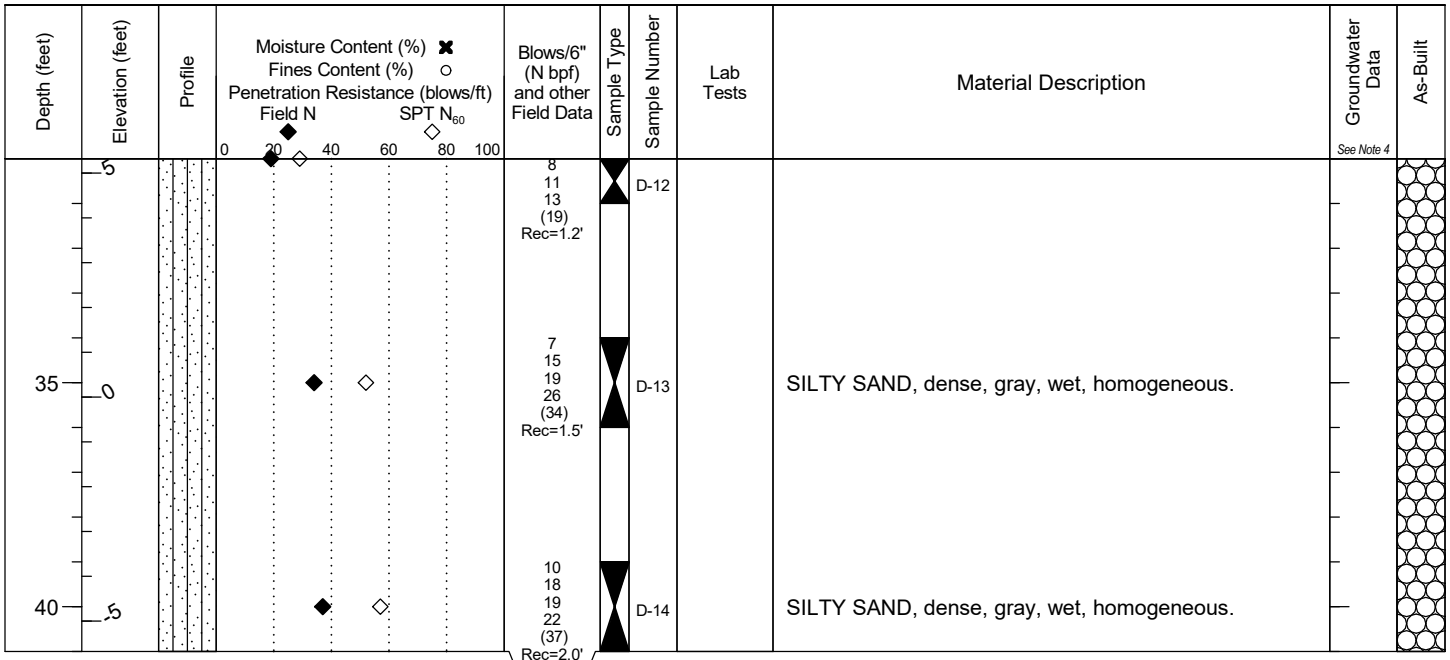
As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 41.0 FEET ON 3-6-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 9/14/2020. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: March 6, 2019
Hole Depth / Casing Depth: 41.0 feet / 39.0 feet
Water Depth Before Bailing: 2.5 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	16.5
5	16.2
10	16.0
15	15.8
25	15.5

WSDOT

LOG OF BORING NE-26-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,217.8 feet *Latitude:* 47.757599 deg. *Driller/Inspector:* Cooper, Richard (#2964) / Brun, Mike #1711

Easting: 1,310,899.5 feet *Longitude:* -122.173073 deg. *Start Card:* SE69026 AE53385 *Well Tag:* N/A *Instrument:*

Elevation: 33.0 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45C (ID:9A4-7) *Rod Type:* AWJ

Started: April 10, 2019 *Completed:* April 10, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.7%

Remark: UNT to Sammamish River (996911)

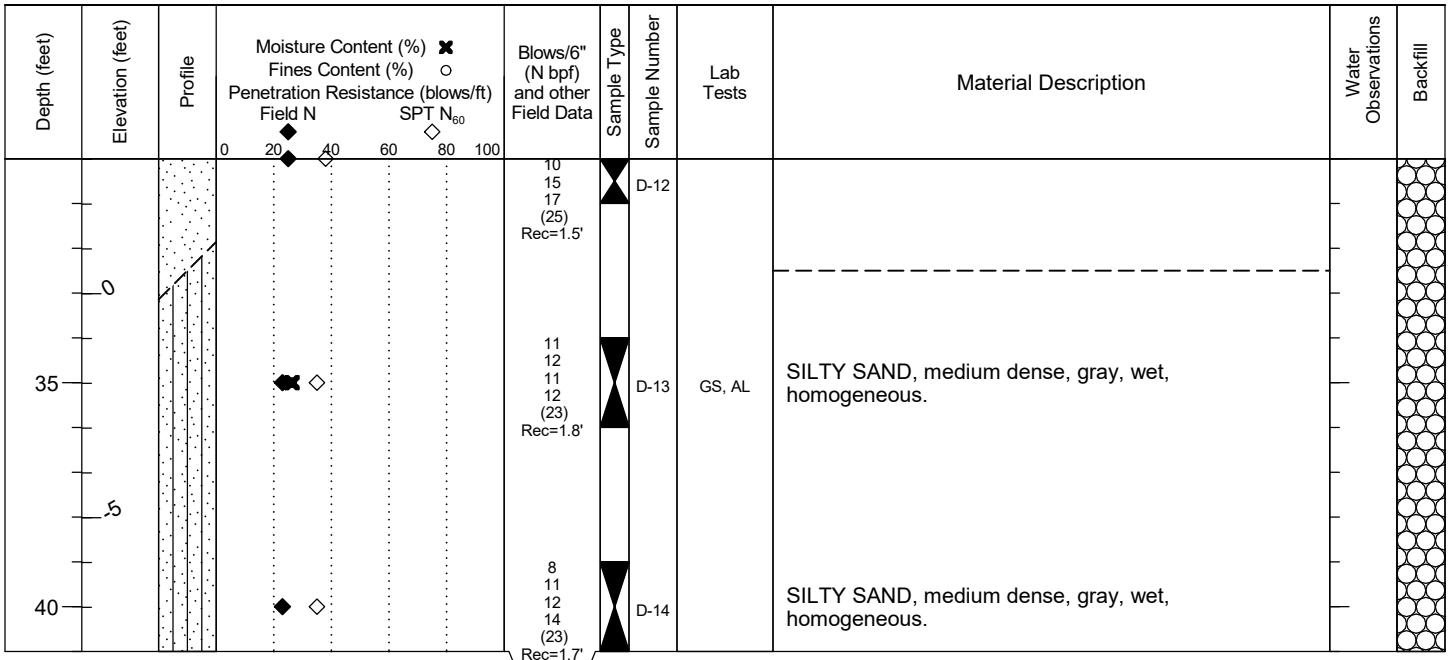
Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
	30	3 3 5 6 (8) Rec=1.2'		D-1		SILTY SAND WITH GRAVEL, subrounded, loose, light brown, moist, homogeneous.		
5		3 2 2 3 (4) Rec=1.5'		D-2	GS, AL	SILTY SAND, very loose, light brown, moist, homogeneous.		
	25	1 2 2 2 (4) Rec=0.8'		D-3		SILTY SAND, very loose, dark brown, wet, homogeneous.		
10		0 0 0 0 (0) Rec=2.0'		D-4		PEAT, very soft, dark brown, wet, homogeneous.		
	20	Rec=1.5'		S-5		PEAT, dark brown, wet.		
15		6 7 7 5 (14) Rec=1.1'		D-6		POORLY GRADED SAND, subrounded, medium dense, gray, wet, homogeneous.		
	15	9 12 15 16 (27) Rec=2.0'		D-7		POORLY GRADED SAND, dense, gray, wet, homogeneous.		
20		3 11 15 17 (26) Rec=1.0'		D-8		POORLY GRADED SAND, dense, gray, wet, homogeneous.	▼ Bail test: water at 18.8 ft	
	10	7 11 14 15 (25) Rec=1.3'		D-9	GS, AL	POORLY GRADED SAND, dense, gray, wet, homogeneous.		
25		7 11 13 13 (24) Rec=1.0'		D-10		POORLY GRADED SAND, medium dense, gray, wet, homogeneous.		
	5	7 11 12 16 (23) Rec=1.5'		D-11		POORLY GRADED SAND, medium dense, gray, wet, homogeneous.		
30		3		D-12		POORLY GRADED SAND, dense, gray, wet, homogeneous.		

Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 41.0 FEET ON 4-10-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: April 10, 2019
Hole Depth / Casing Depth: 41.0 feet / 39.0 feet
Water Depth Before Bailing: 7.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	20.5
5	19.2
10	19.0
15	19.0
30	18.8

WSDOT

LOG OF BORING NE-28p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,438.6 feet *Latitude:* 47.758032 deg. *Driller/Inspector:* Fetterly, Jamie (#2507) / Fetterly, Jamie #2507

Easting: 1,307,292.2 feet *Longitude:* -122.187753 deg. *Start Card:* RE-17191 *Well Tag:* BLA-731 *Instrument:* 1" PVC

Elevation: 38.7 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: September 28, 2019 *Completed:* September 28, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
								-*ASPHALT*		
	35		✖ ○ ◆ ◇	20 31 33 (64) Rec=1.5'		D-1	GS, AL	SILTY SAND WITH GRAVEL, rounded, very dense, olive, moist, homogeneous.		
5			>> ◆ ◇	21 50/6" (REF) Rec=1.0'		D-2		SILTY SAND WITH GRAVEL, rounded, very dense, olive, moist, homogeneous. -*Cobble encountered at 5.5 ft.*		
	30		◆ >> ◇	18 31 48 (79) Rec=1.5'		D-3		SILTY SAND WITH GRAVEL, rounded, very dense, olive, moist, homogeneous.		
10			◆ >> ◇	36 36 48 (84) Rec=0.9'		D-4		SILTY SAND WITH GRAVEL, rounded, very dense, olive, moist, homogeneous.		
	25		◆ ◇	9 12 10 (22) Rec=1.1'		D-5		SILTY SAND, medium dense, gray, wet, stratified with sandy silt, sample split into 2 bags A & B.	09-28-19 ▽	
15			✖ ○ ◆ ◇	7 20 17 (37) Rec=1.2'		D-6	GS, AL	SILTY SAND WITH GRAVEL, rounded, dense, olive gray, wet, homogeneous.		
	20		◆ ◇	1 2 4 (6) Rec=1.5'		D-7		ELASTIC SILT, medium stiff, olive, moist, homogeneous. -*Scattered gravels encountered at 18.5 ft.*		
20			◆ ○ ✖	1 2 1 (3) Rec=1.2'		D-8	GS, AL, HT, SG	ELASTIC SILT, soft, olive, moist, homogeneous.	DRY	
	15		◆ ✖ ○	1 2 1 (3) Rec=1.5'		D-9	GS, AL	SILTY CLAY WITH SAND, soft, gray, wet, homogeneous, stratified with silty sand, sample split into 2 bags A & B.		
25			◆ ✖ ○	0 1 1 (2) Rec=1.5'		D-10	GS, AL	LEAN CLAY, soft, gray, wet, homogeneous.		
				Rec=0.0'	P	P-11		NO RECOVERY -*inferred wet sand*		
	10			Rec=0.0'		S-12		NO RECOVERY		
30										

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data	As-Built
			◆ ○ ✖	0 0 0 (0) Rec=0.8'		D-13	GS, AL	*-inferred wet sand* SILTY SAND, very loose, gray, wet, homogeneous.	*See Note 4*	

HOLE ENDED AT 31.5 FEET ON 9-28-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 10/15/2019 and 9/14/2020. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-29-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 280,015.0 feet *Latitude:* 47.759660 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,308,292.0 feet *Longitude:* -122.183729 deg. *Start Card:* SE-69020 AE-53378 *Well Tag:* N/A *Instrument:*

Elevation: 60.8 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: May 9, 2019 *Completed:* May 13, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: Wall 23.74R

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
0	60	18 50/5" (REF) Rec=0.9'		D-1		SILTY SAND WITH GRAVEL, subrounded, very dense, olive gray, dry, homogeneous, with asphalt debris.		
5	55	11 14 16 (30) Rec=1.0'		D-2		SILTY SAND, dense, olive gray, moist, homogeneous.		
		16 16 16 (32) Rec=0.7'		D-3		SILTY SAND WITH GRAVEL, subrounded, dense, olive gray, moist, homogeneous.		
10	50	11 15 35 (50) Rec=0.9'		D-4		SILTY SAND WITH GRAVEL, subrounded, dense, dark olive gray, moist, homogeneous.		
		14 23 19 (42) Rec=1.0'		D-5		SILTY SAND WITH GRAVEL, subrounded, dense, olive gray, moist, homogeneous.		
15	45	12 15 22 (37) Rec=0.9'		D-6	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, dark olive gray, moist, homogeneous.		
		13 21 30 (51) Rec=0.6'		D-7		SILTY SAND WITH GRAVEL, subrounded, very dense, olive gray, moist, homogeneous.		
20	40	16 21 26 (47) Rec=0.8'		D-8		SILTY SAND WITH GRAVEL, subrounded, dense, dark olive gray, moist, homogeneous.		
		16 27 28 (55) Rec=1.0'		D-9		SILTY SAND WITH GRAVEL, subrounded, very dense, olive gray, moist, homogeneous.		
25								

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

05-13-19 HK

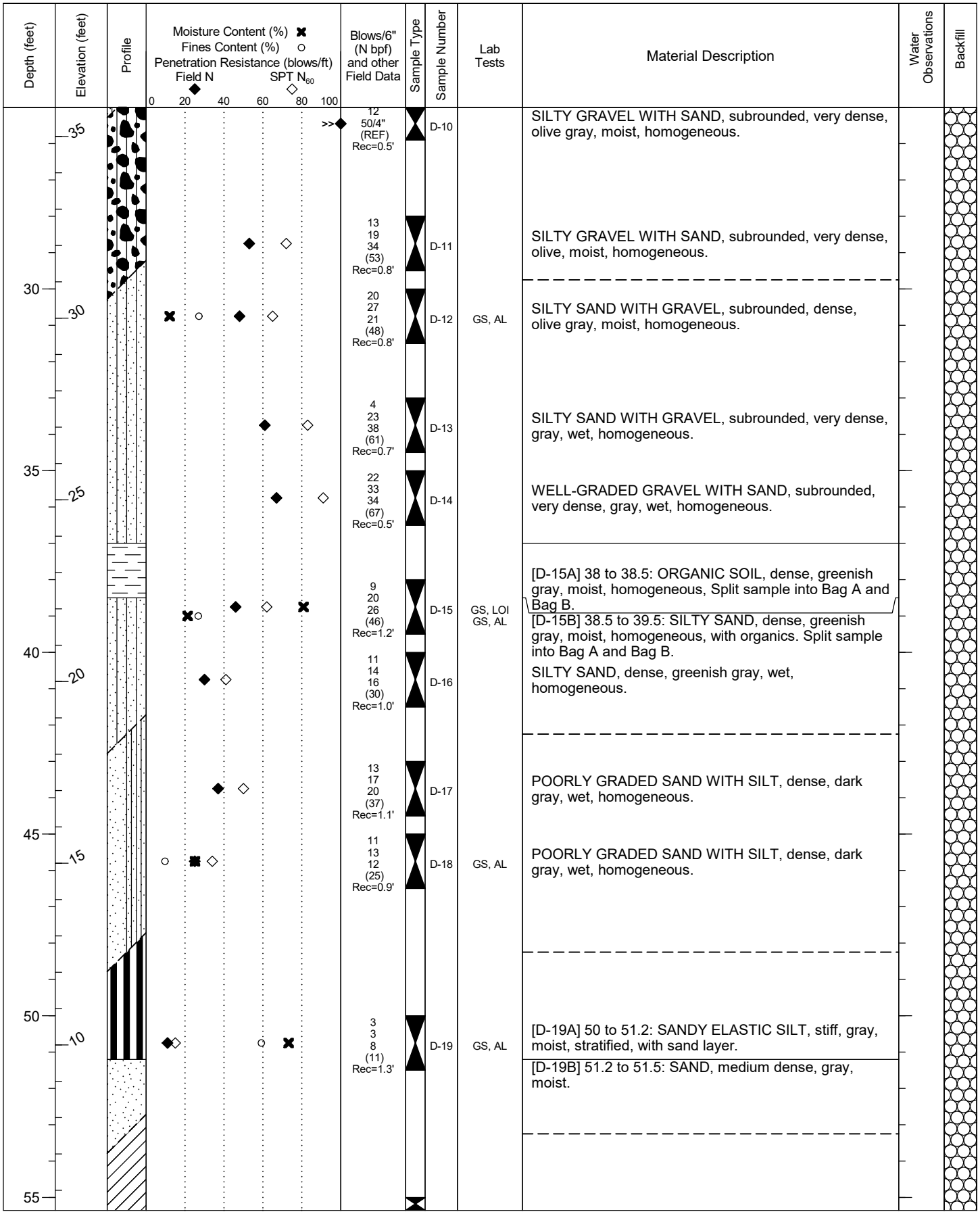
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/9/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
35	35	>> 12 50/4" (REF) Rec=0.5'		D-10		SILTY GRAVEL WITH SAND, subrounded, very dense, olive gray, moist, homogeneous.		
		13 19 34 (53) Rec=0.8'		D-11		SILTY GRAVEL WITH SAND, subrounded, very dense, olive, moist, homogeneous.		
30	30	20 27 21 (48) Rec=0.8'		D-12	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, olive gray, moist, homogeneous.		
		4 23 38 (61) Rec=0.7'		D-13		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.		
35	25	22 33 34 (67) Rec=0.5'		D-14		WELL-GRADED GRAVEL WITH SAND, subrounded, very dense, gray, wet, homogeneous.		
		9 20 26 (46) Rec=1.2'		D-15	GS, LOI GS, AL	[D-15A] 38 to 38.5: ORGANIC SOIL, dense, greenish gray, moist, homogeneous, Split sample into Bag A and Bag B. [D-15B] 38.5 to 39.5: SILTY SAND, dense, greenish gray, moist, homogeneous, with organics. Split sample into Bag A and Bag B.		
40	20	11 14 16 (30) Rec=1.0'		D-16		SILTY SAND, dense, greenish gray, wet, homogeneous.		
		13 17 20 (37) Rec=1.1'		D-17		POORLY GRADED SAND WITH SILT, dense, dark gray, wet, homogeneous.		
45	15	11 13 12 (25) Rec=0.9'		D-18	GS, AL	POORLY GRADED SAND WITH SILT, dense, dark gray, wet, homogeneous.		
50	10	3 3 8 (11) Rec=1.3'		D-19	GS, AL	[D-19A] 50 to 51.2: SANDY ELASTIC SILT, stiff, gray, moist, stratified, with sand layer. [D-19B] 51.2 to 51.5: SAND, medium dense, gray, moist.		
55								

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
	5		◆ ◇	3 3 5 (8) Rec=1.5'		D-20 D-20		LEAN CLAY, medium stiff, gray, wet, homogeneous, with sand lenses.		
60	0		◆	1 2 3 (5) Rec=1.5'		D-21		LEAN CLAY, medium stiff, gray, wet, homogeneous, with sand lenses.		
65	-5		◆	0 2 2 (4) Rec=1.5'		D-22		LEAN CLAY, soft, gray, moist, homogeneous.		
70	-10		◆ ✖ ○	0 2 3 (5) Rec=1.5'		D-23	GS, AL	LEAN CLAY, medium stiff, gray, moist, laminated.		
75	-15		◆	0 2 3 (5) Rec=1.5'		D-24		LEAN CLAY, medium stiff, gray, moist, laminated.		
80	-20									
85				0		D-25		LEAN CLAY, soft, gray, moist, homogeneous.		

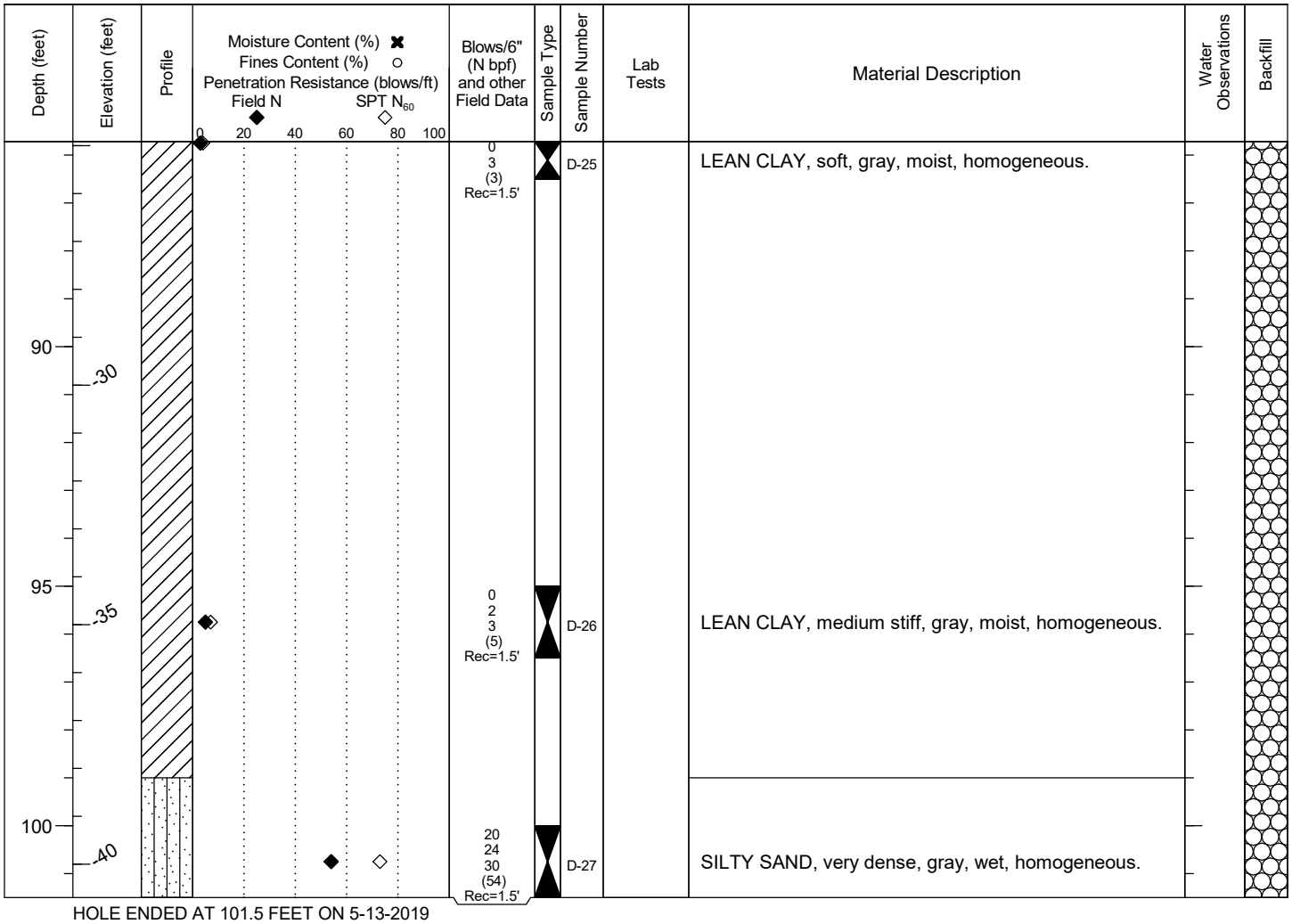
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 101.5 FEET ON 5-13-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

WSDOT

LOG OF BORING NE-30vw-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 280,218.0 feet *Latitude:* 47.760224 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779
Easting: 1,308,455.4 feet *Longitude:* -122.183080 deg. *Start Card:* RE-17187 *Well Tag:* BLA-725 *Instrument:* VWP
Elevation: 36.1 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ
Started: May 7, 2019 *Completed:* May 8, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%
Remark: Wall 23.80R

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	35	2 6 9 (15) Rec=0.8'		D-1		SILTY SAND, medium dense, olive gray, dry, homogeneous, with organics/wood debris.
5	30	8 10 14 (24) Rec=0.7'		D-2		SILTY SAND WITH GRAVEL, subrounded, medium dense, dark olive gray, moist, homogeneous.
		5 8 14 (22) Rec=0.7'		D-3		SILTY SAND WITH GRAVEL, subrounded, medium dense, olive, moist, homogeneous.
10	25	10 13 17 (30) Rec=0.6'		D-4		SILTY SAND, dense, grayish brown, wet, homogeneous.
		2 4 5 (9) Rec=1.0'		D-5	GS, AL	[D-5A] 13 to 13.5: SANDY SILT, loose, gray, wet, homogeneous. [D-5B] 13.5 to 14.5: SAND, loose, gray, wet, homogeneous.
15	20	4 6 9 (15) Rec=0.9'		D-6		POORLY GRADED SAND, medium dense, gray, wet, homogeneous.
		1 2 9 (11) Rec=1.1'		D-7		SILTY SAND, medium dense, dark olive gray, wet, homogeneous.
20	15	3 4 7 (11) Rec=0.9'		D-8		SILTY SAND, medium dense, gray, wet, homogeneous.
		2 2 1 (3) Rec=1.5'		D-9	GS, AL	SANDY ELASTIC SILT, soft, very dark gray, moist, homogeneous.
25	10	Rec=0.0'		S-10		NO RECOVERY
		0 0 0 (0) Rec=1.5'		D-11		SILTY CLAY, very soft, gray, wet, homogeneous.
30						

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4

As-Built — 2.0'

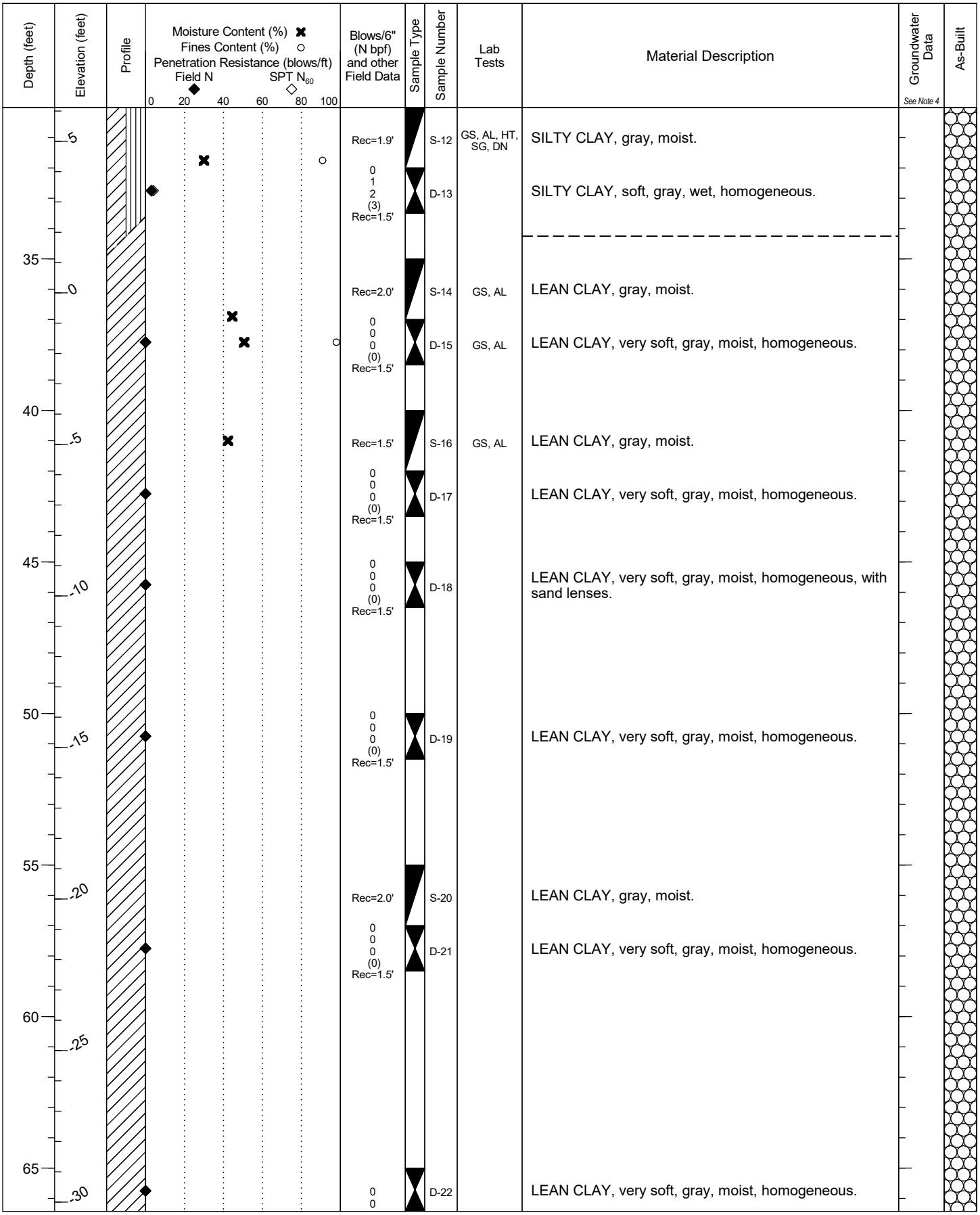
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/1/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



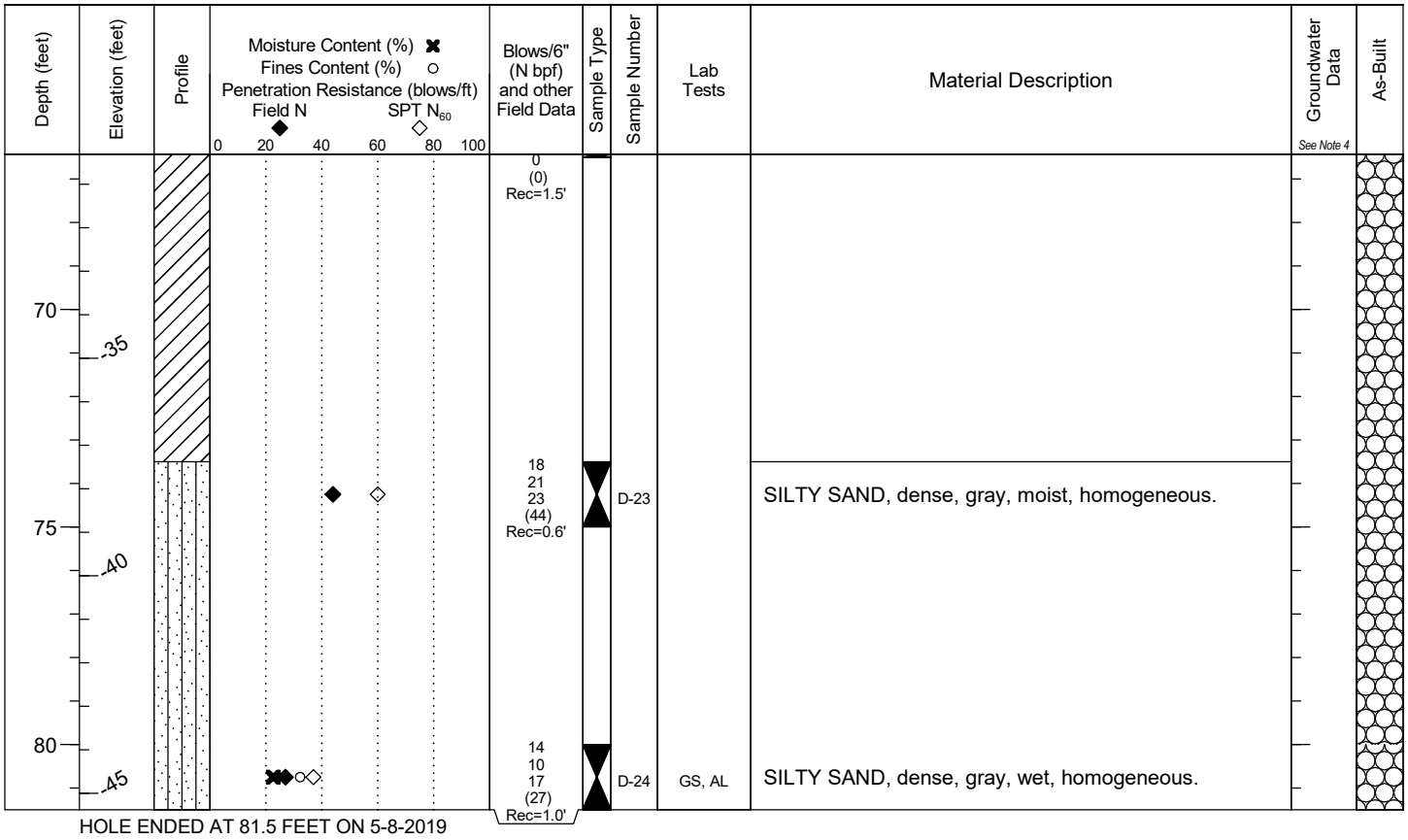
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/1/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-31p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 280,432.0 feet *Latitude:* 47.760805 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Fetterly, Jamie #2507

Easting: 1,308,335.5 feet *Longitude:* -122.183582 deg. *Start Card:* RE-17187 *Well Tag:* BLA-726 *Instrument:* 1" PVC

Elevation: 39.5 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: September 23, 2019 *Completed:* September 24, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Walls 23.72R and 23.80R

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
						-ASPHALT
		22 35 47 (82) Rec=1.3'		D-1		SILTY SAND WITH GRAVEL, subrounded, very dense, olive, dry, homogeneous.
5	35	21 23 19 (42) Rec=1.4'		D-2		SILTY SAND, dense, olive, moist, homogeneous.
		11 18 27 (45) Rec=1.3'		D-3	GS, AL	SILTY SAND, dense, olive, moist, homogeneous.
10	30	34 28 20 (48) Rec=1.0'		D-4		SILTY SAND WITH GRAVEL, rounded, dense, olive, moist, homogeneous.
		12 15 28 (43) Rec=1.2'		D-5	GS, AL	WELL-GRADED SAND WITH SILT, dense, gray, wet, homogeneous.
15	25	22 29 23 (52) Rec=0.9'		D-6		WELL-GRADED SAND WITH SILT, very dense, olive, moist, homogeneous.
						-A 4 inch cobble encountered at 16 ft.
		2 3 4 (7) Rec=1.2'		D-7	AL, LOI	LEAN CLAY WITH SAND, stiff, gray, moist, homogeneous, with organics.
20	20	1 2 3 (5) Rec=1.3'		D-8	GS, AL	LEAN CLAY WITH SAND, medium stiff, greenish gray, moist, homogeneous, with organics.
		7 10 5 (15) Rec=0.9'		D-9	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, gray, moist, homogeneous, sample is very wet @ 23'.
25	15	1 1 1 (2) Rec=1.5'		D-10	GS, AL, LOI	SANDY ELASTIC SILT, soft, olive, wet, homogeneous, with organics.
		1 0 1 (1) Rec=1.3'		D-11		LEAN CLAY, very soft, dark gray, wet, homogeneous.
30	10					

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data *See Note 4*

As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

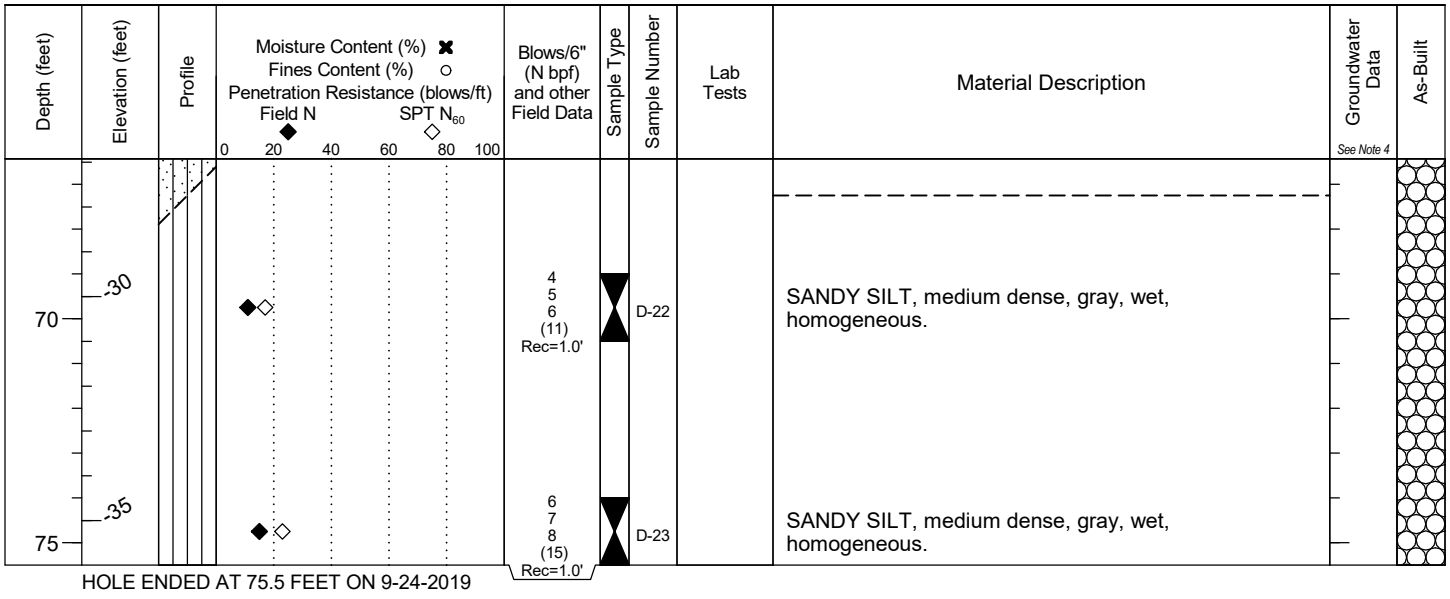
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				Rec=2.0'		S-12		LEAN CLAY, gray, wet.		
			WOH ◆ ✖ ○	0 0 0 (0) Rec=1.5'		D-13	GS, AL	LEAN CLAY, very soft, gray, wet, homogeneous.		
35	-5		WOH ◆	0 0 1 (1) Rec=1.5'		D-14		LEAN CLAY, very soft, gray, wet, homogeneous.		
40	-0		WOH ◆	0 0 0 (0) Rec=1.1'		D-15		LEAN CLAY, very soft, gray, wet, homogeneous.		
45	-5		WOH ◆	0 0 1 (1) Rec=1.0'		D-16		LEAN CLAY, very soft, gray, wet, homogeneous.		
50	-10			Rec=0.0'		S-17		NO RECOVERY *-Sample pulled out upon retrieval*		
			WOH ◆	0 0 0 (0) Rec=1.0'		D-18		LEAN CLAY, very soft, gray, wet, homogeneous.		
55	-15		WOH ◆	0 0 0 (0) Rec=0.0'		D-19		NO RECOVERY *-Drilling became more dense at 56 ft.*		
60	-20		◆ ✖ ◇	4 6 14 (20) Rec=1.0'		D-20	AL	SILT, medium dense, gray, moist, homogeneous. *-Drilling became much harder at 61 ft.*		
65	-25		◆ ◇ ✖ ○	7 8 9 (17) Rec=0.8'		D-21	GS, AL	SILTY SAND, medium dense, gray, wet, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 10/15/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-32p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 280,583.1 feet *Latitude:* 47.761216 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779
Easting: 1,308,278.5 feet *Longitude:* -122.183825 deg. *Start Card:* RE-17187 *Well Tag:* BLA-727 *Instrument:* 1" PVC
Elevation: 35.5 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ
Started: June 10, 2019 *Completed:* June 11, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%
Remark: Walls 23.72R and 23.80R

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	35	2 4 7 (11) Rec=0.6'		D-1		WELL-GRADED GRAVEL WITH SAND, rounded, medium dense, olive gray, dry, homogeneous, with organics/grass/sticks.
5	30	5 5 6 (11) Rec=1.1'		D-2	GS, AL	SILTY GRAVEL WITH SAND, subrounded, medium dense, olive, wet, homogeneous.
		4 9 16 (25) Rec=0.9'		D-3		POORLY GRADED SAND, dense, gray, moist, homogeneous.
10	25	8 12 18 (30) Rec=0.8'		D-4		POORLY GRADED SAND, dense, gray, wet, homogeneous.
		1 5 4 (9) Rec=1.1'		D-5	AL	SILT, loose, dark olive gray, moist, homogeneous.
15	20	0 1 2 (3) Rec=1.2'		D-6	AL	LEAN CLAY, soft, gray, wet, homogeneous, with organics/wood debris.
		Rec=2.0'		S-7	AL, DN	ELASTIC SILT, gray, wet.
20	15	3 2 2 (4) Rec=0.0'		D-8		NO RECOVERY *-Used oversize sampler 2 in. ID 2.5 in. OD.*
		0 0 0 (0) Rec=0.5'		D-9		LEAN CLAY, very soft, gray, wet, homogeneous.
25	10	Rec=2.0'		S-10	GS, AL, HT, SG, DN	LEAN CLAY, gray, wet.
		0 0 0 (0) Rec=1.5'		D-11	GS, AL, HT, SG	LEAN CLAY, very soft, gray, wet, homogeneous.
30		Rec=2.0'		S-12		LEAN CLAY, gray, wet.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data: See Note 4; Bail test: water at 19 ft

As-Built: 2.0"

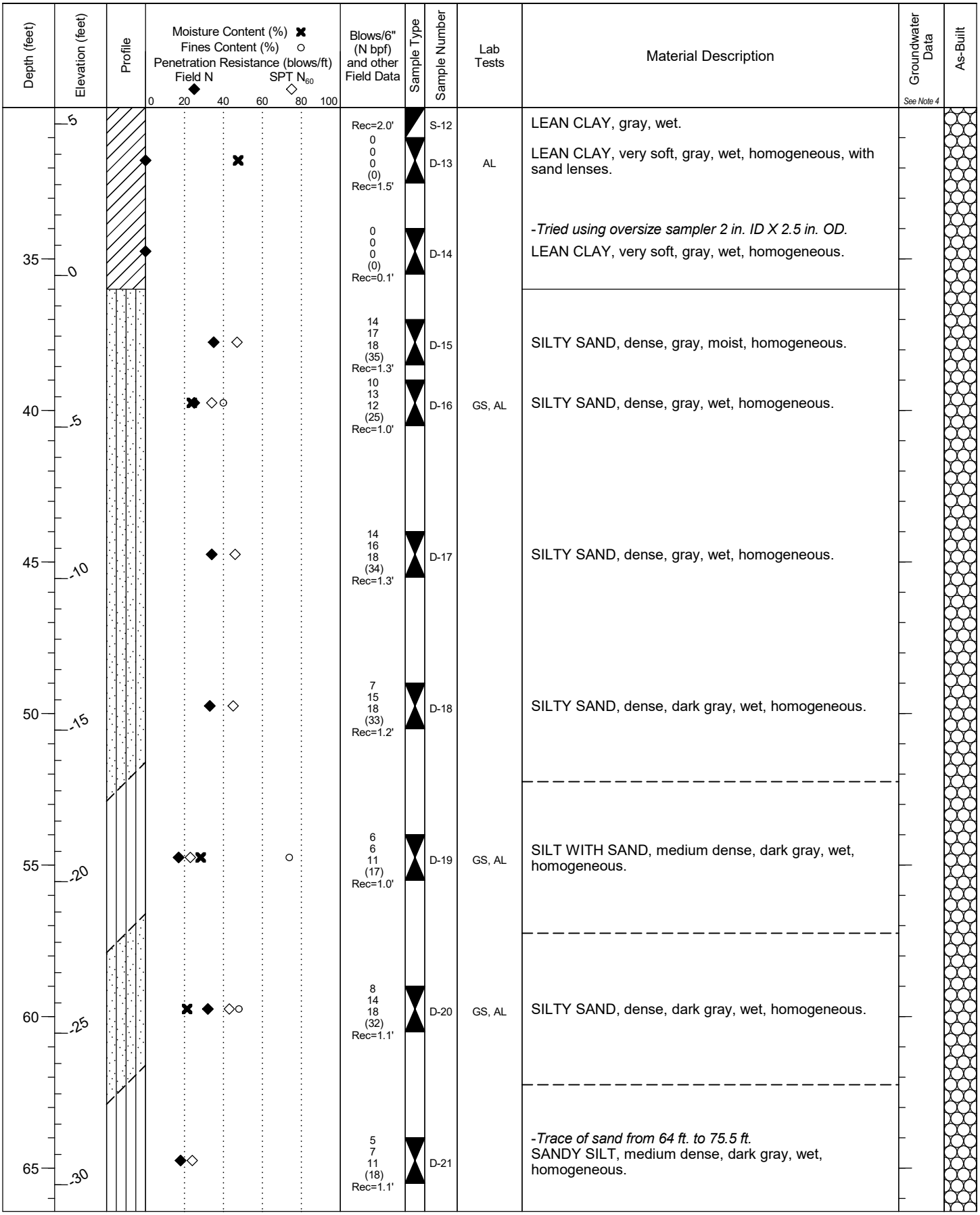
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

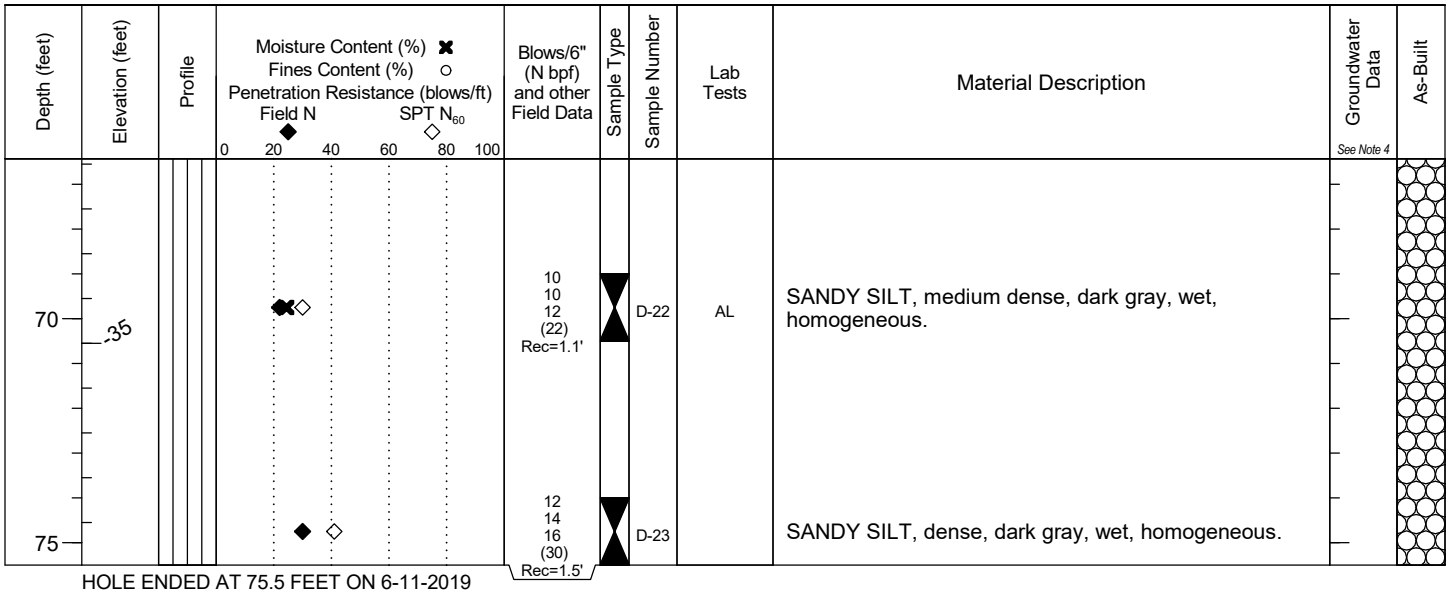


STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/9/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 75.5 FEET ON 6-11-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 6/18/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 11, 2019
Hole Depth / Casing Depth: 75.5 feet / 54.0 feet
Water Depth Before Bailing: 6.9 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	27.0
1	20.7
2	20.3
3	19.9
4	19.4
5	19.2
10	19.0
15	19.0

WSDOT

LOG OF BORING NE-33-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 280,901.9 feet *Latitude:* 47.762083 deg.

Driller/Inspector: Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,308,128.8 feet *Longitude:* -122.184456 deg.

Start Card: SE-69019 AE-53377 *Well Tag:* N/A *Instrument:*

Elevation: 28.4 feet *Collector:* Region Survey

Drilling Method: Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88

Equipment: CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: June 12, 2019 *Completed:* June 12, 2019

Hammer Type: AutoHammer *Historic Efficiency:* 81.29%

Remark: Wall 23.80R

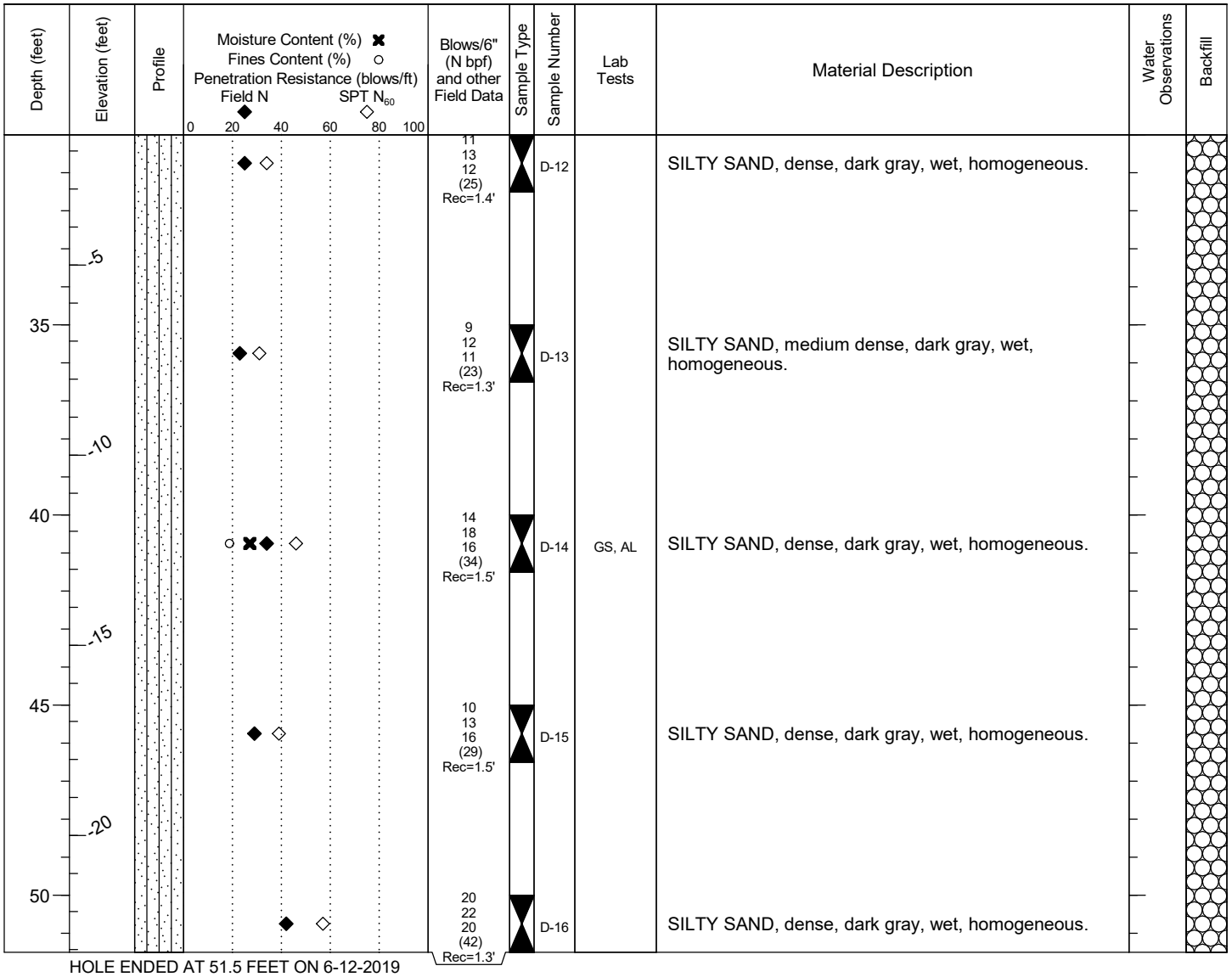
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
				1 6 9 (15) Rec=1.0'		D-1		SILTY SAND, medium dense, olive gray, dry, homogeneous, trace gravel/organics/roots/wood debris.		
5	25			3 3 3 (6) Rec=1.0'		D-2		SILTY SAND, loose, olive, wet, homogeneous, trace organics/wood debris.		
	20		106 >> ✖	1 1 2 (3) Rec=1.4'		D-3	AL	PEAT, soft, gray, moist, homogeneous, with roots.		
10				Rec=2.0'		S-4	AL, LOI, DN	PEAT, brown, moist, with roots.		
			239 >> ✖	0					▽ Bail test: water at 12.1 ft	
	15		101 >> ✖	0 1 (1) Rec=1.5'		D-5	AL	PEAT, very soft, gray, wet, homogeneous, with peat and wood debris.		
15				Rec=2.0'		S-6	AL, DN	LEAN CLAY, gray, wet.		
	10		✖	1 2 11 (13) Rec=1.5'		D-7		[D-7A] 17 to 17.7: LEAN CLAY, stiff, gray, wet, homogeneous. [D-7B] 17.7 to 18.5: SILTY SAND.		
20			◆ ◇ ○	9 13 14 (27) Rec=1.2'		D-8	GS, AL	SANDY SILT, dense, dark gray, wet, homogeneous.		
	5		◆ ◇	9 12 15 (27) Rec=1.3'		D-9		SILTY SAND, dense, dark gray, wet, homogeneous.		
25			◆ ◇	13 14 17 (31) Rec=1.3'		D-10		SILTY SAND, dense, dark gray, moist, homogeneous.		
	0		✖ ◇ ○	11 13 16 (29) Rec=1.4'		D-11	GS, AL	SILTY SAND, dense, dark gray, wet, homogeneous.		
30										

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 51.5 FEET ON 6-12-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 12, 2019
Hole Depth / Casing Depth: 51.5 feet / 29.0 feet
Water Depth Before Bailing: 5.1 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	24.1
1	14.8
2	14.2
3	13.8
4	13.5
10	12.9
15	12.5
20	12.2
25	12.1

WSDOT

LOG OF BORING NE-34p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 283,517.6 feet *Latitude:* 47.769186 deg. *Driller/Inspector:* Henderson, Danny (#2742) / Cooper, Kerry #2552

Easting: 1,306,750.7 feet *Longitude:* -122.190246 deg. *Start Card:* RE17176 *Well Tag:* BLA-720 *Instrument:* 1" PVC

Elevation: 46.7 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-4) *Rod Type:* AWJ

Started: April 22, 2019 *Completed:* April 22, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.9%

Remark: Pond at NE 195th St.

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	45	7 9 9 (18) Rec=1.2'		D-1		SILTY SAND, medium dense, grayish brown, moist, homogeneous.
5	40	5 6 7 (13) Rec=1.1'		D-2	GS, AL	SILTY SAND, medium dense, gray, moist, homogeneous.
		7 7 8 (15) Rec=1.3'		D-3		SILTY SAND, medium dense, gray, moist, homogeneous.
10	35	6 9 10 (19) Rec=1.0'		D-4		WELL-GRADED SAND WITH SILT, medium dense, gray, wet, homogeneous.
		5 7 11 (18) Rec=1.1'		D-5	GS, AL, HT, SG	WELL-GRADED SAND WITH SILT, medium dense, gray, wet, homogeneous.
15	30	10 13 15 (28) Rec=1.0'		D-6		WELL-GRADED SAND WITH SILT, dense, gray, wet, homogeneous.
		9 12 15 (27) Rec=0.9'		D-7		WELL-GRADED SAND WITH SILT, dense, gray, wet, homogeneous.
20	25	7 11 12 (23) Rec=1.0'		D-8	GS, AL	WELL-GRADED SAND WITH SILT, dense, gray, wet, homogeneous.
		9 12 15 (27) Rec=1.2'		D-9		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, gray, wet, homogeneous.
25	20	6 11 13 (24) Rec=1.1'		D-10	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, gray, moist, homogeneous.
		8 10 12 (22) Rec=1.0'		D-11		POORLY GRADED SAND WITH SILT, medium dense, gray, moist, homogeneous.
30		11		D-12	GS, AL	POORLY GRADED SAND WITH SILT, subrounded, dense, gray, wet, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data (See Note 4): Bail test: water at 14.8 ft

As-Built: 1.7

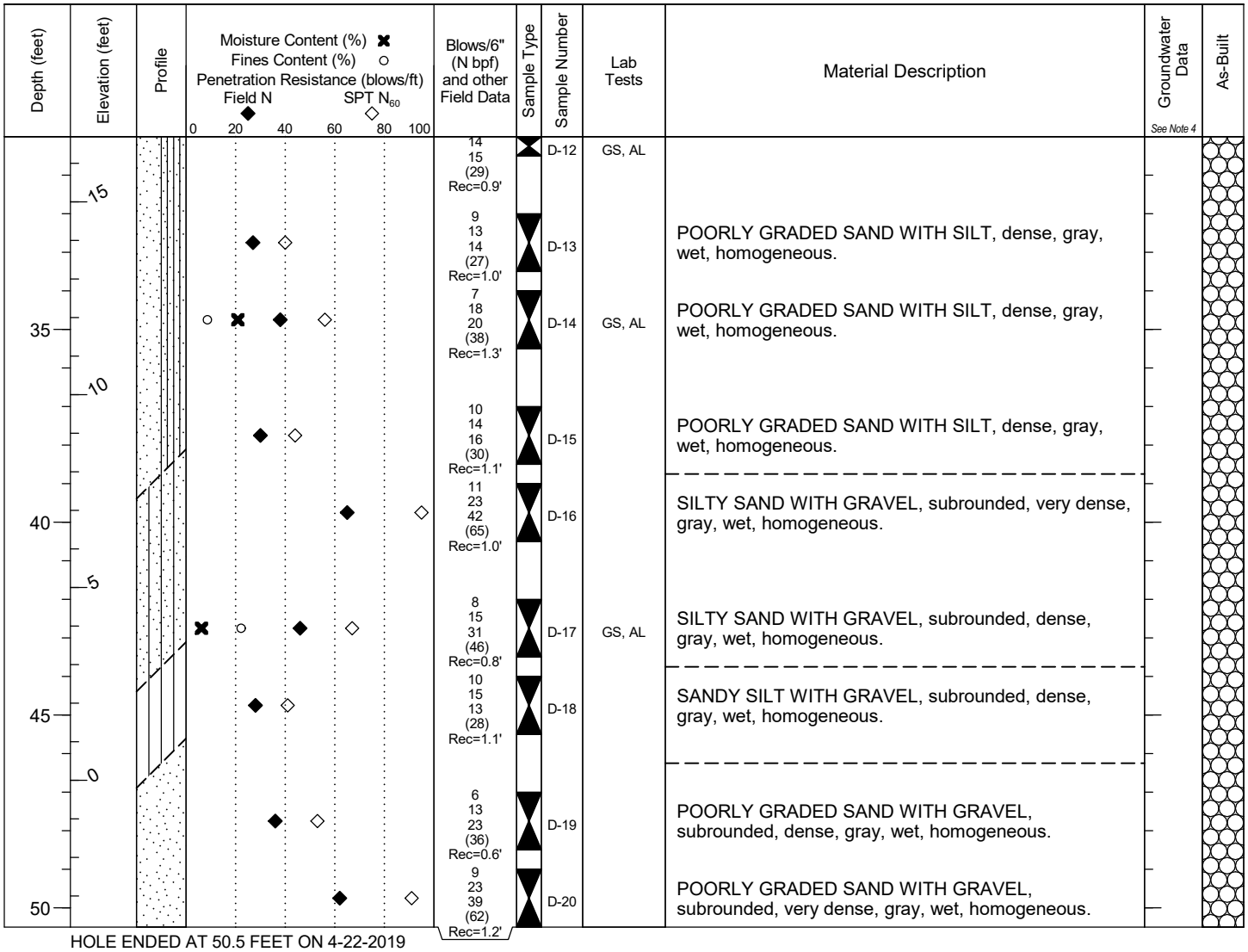
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/1/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 50.5 FEET ON 4-22-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: April 22, 2019
Hole Depth / Casing Depth: 50.5 feet / 49.0 feet
Water Depth Before Bailing: 8.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	30.0
5	19.0
10	16.2
15	14.8

WSDOT

LOG OF BORING NE-35p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

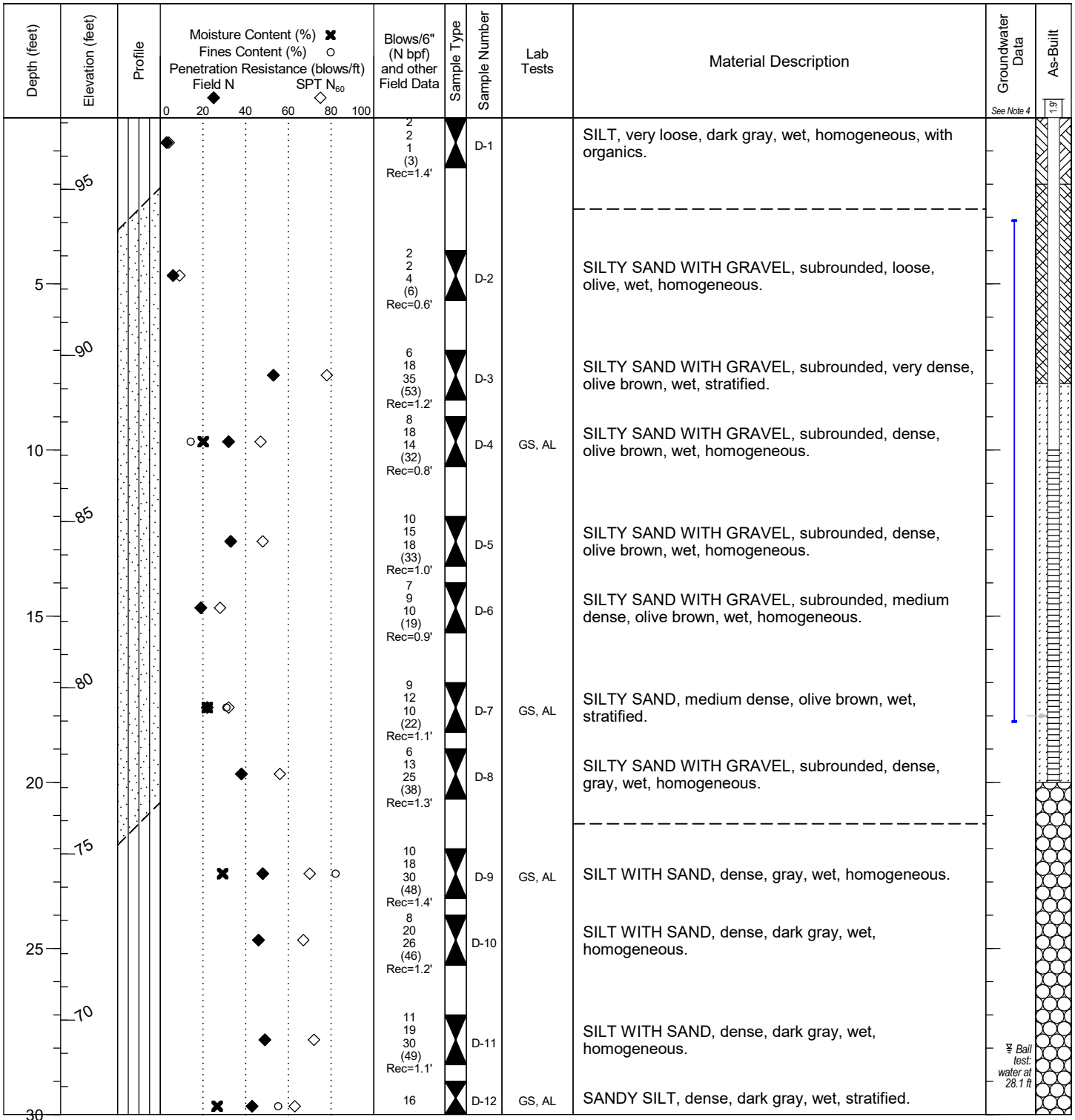
Northing: 286,428.1 feet *Latitude:* 47.777145 deg. *Driller/Inspector:* Henderson, Danny (#2742) / Cooper, Kerry #2552

Easting: 1,306,350.4 feet *Longitude:* -122.192083 deg. *Start Card:* RE-17184 *Well Tag:* BLA-723 *Instrument:* 1" PVC

Elevation: 97.2 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-4) *Rod Type:* AWJ

Started: April 23, 2019 *Completed:* April 23, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.9%



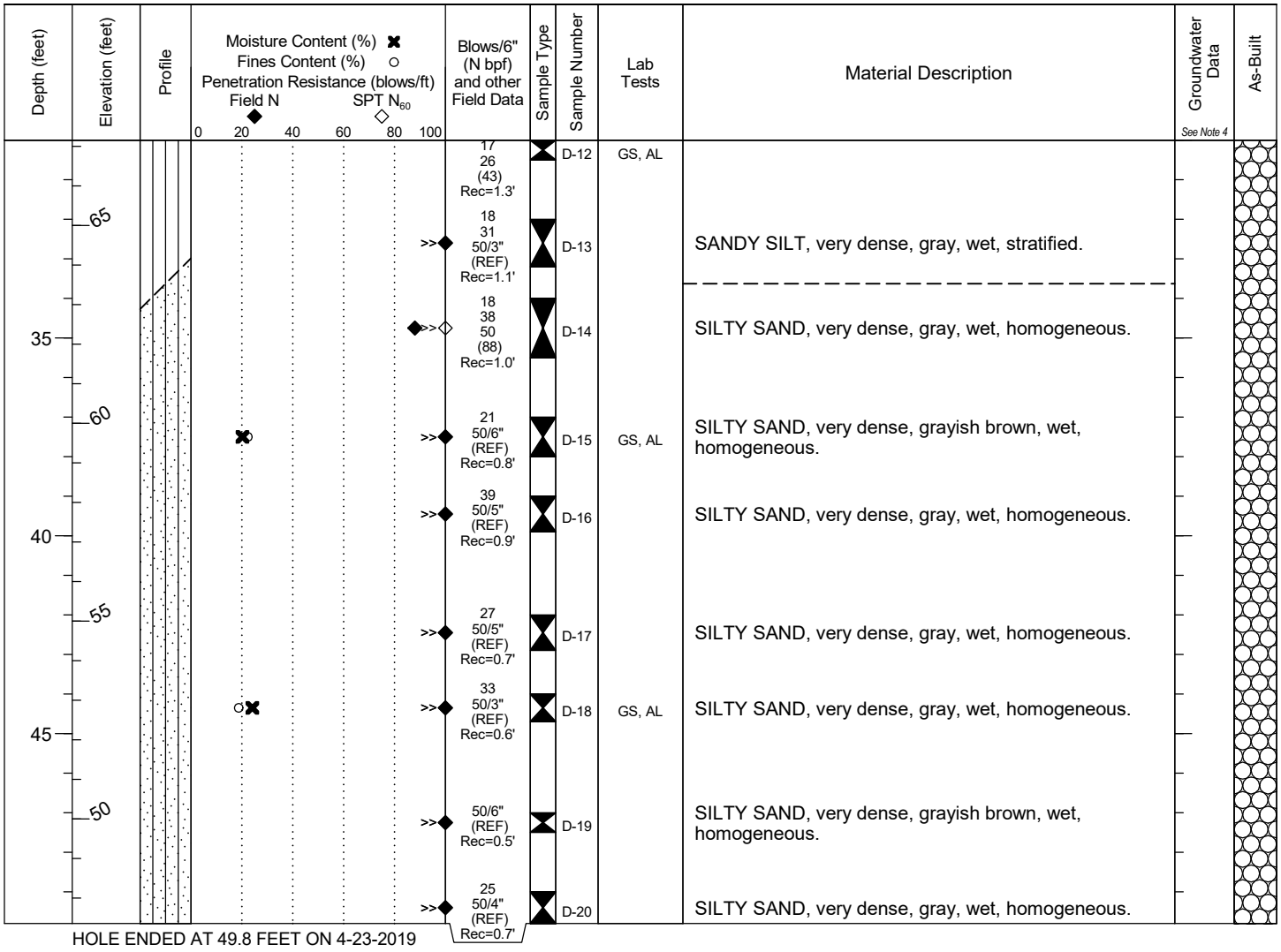
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/1/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: April 23, 2019
Hole Depth / Casing Depth: 49.8 feet / 44.0 feet
Water Depth Before Bailing: 10.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	35.5
5	28.9
10	28.6
15	28.1

WSDOT

LOG OF BORING NE-36p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

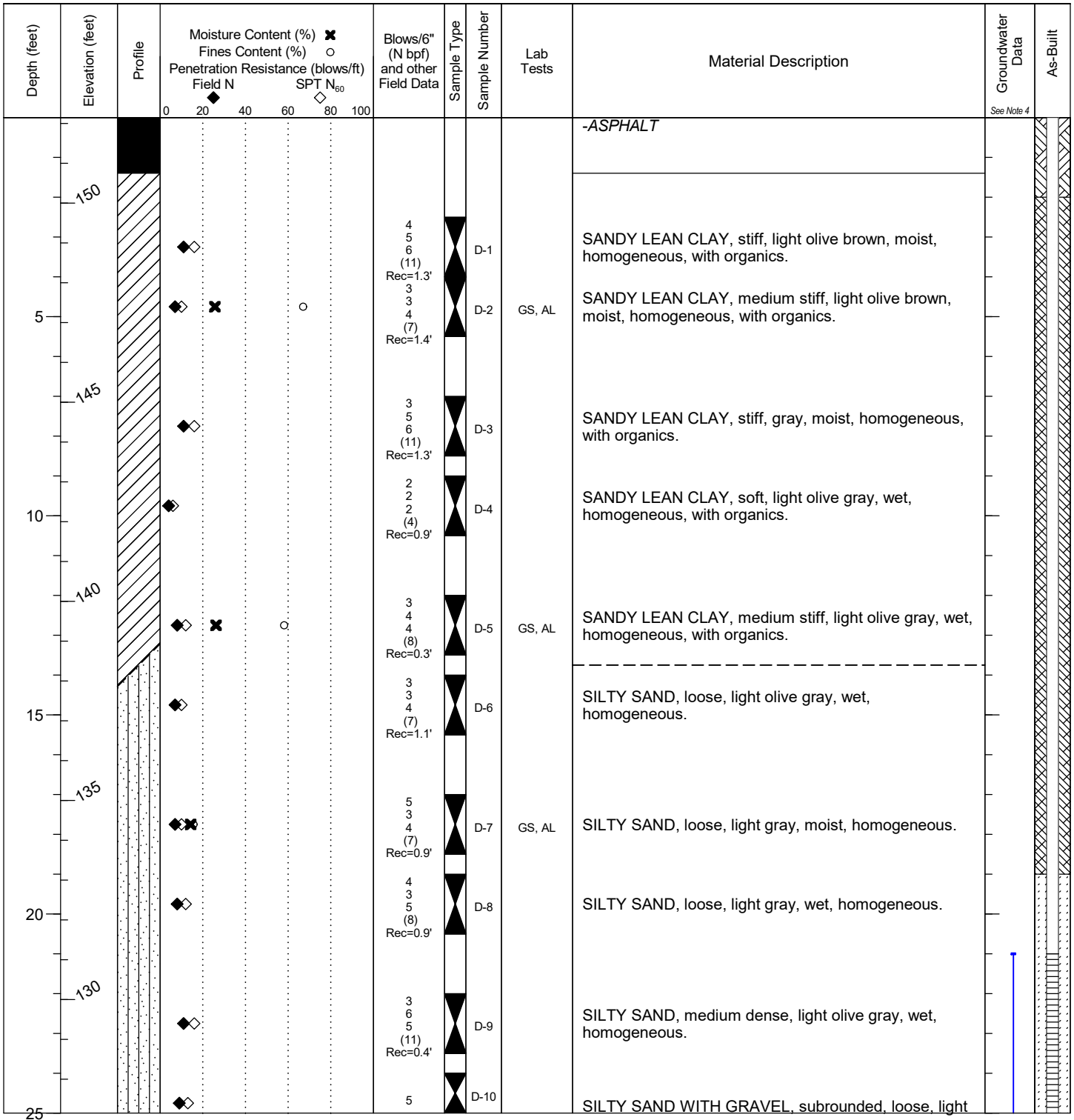
Northing: 287,782.4 feet *Latitude:* 47.780832 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Shepherd, Robert #2710

Easting: 1,305,830.2 feet *Longitude:* -122.194295 deg. *Start Card:* RE-17424 *Well Tag:* BLN-030 *Instrument:* 1" PVC

Elevation: 152.2 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-4) *Rod Type:* AWJ

Started: May 29, 2019 *Completed:* May 30, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.9%



CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data	As-Built
		3 6 (9) Rec=0.9'		D-10		gray, wet, homogeneous, with organics, used Oversized sampler to retain sample.	See Note 4	
	125	2 3 3 (6) Rec=1.5'		D-11	GS, AL	SANDY SILTY CLAY, medium stiff, light olive brown, moist, homogeneous.		
30		2 3 3 (6) Rec=1.2'		D-12		SANDY SILTY CLAY, medium stiff, light olive brown, moist, homogeneous.		
						-Drilling behavior indicates a change at approx. 31 ft.		
	120	17 36 44 (80) Rec=1.1'		D-13	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very dense, light gray, moist, homogeneous, with organics.	DRY	
		38 50/6" (REF) Rec=0.5'		D-14		SILTY SAND WITH GRAVEL, subrounded, very dense, light gray, moist, homogeneous.	Bail test: water at 34 ft	
35								
	115	36 37 32 (69) Rec=1.3'		D-15		SILTY SAND WITH GRAVEL, subrounded, very dense, light gray, wet, homogeneous.		
		30 29 50 (79) Rec=1.5'		D-16		SILTY SAND WITH GRAVEL, subrounded, very dense, light gray, moist, homogeneous.		
40								
	110							
		30 50/5" (REF) Rec=0.8'		D-17		WELL-GRADED GRAVEL WITH SAND, subrounded, very dense, gray, wet, homogeneous.		
45								
	105							
		20 30 50 (80) Rec=1.4'		D-18		WELL-GRADED SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.		
50								
	100							
		20 31		D-19	GS, AL, LOI	[D-19A] 54 to 54.6: WELL-GRADED SAND WITH GRAVEL, subrounded, very dense, gray, wet, Sample Bag-B tested.		
55								

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

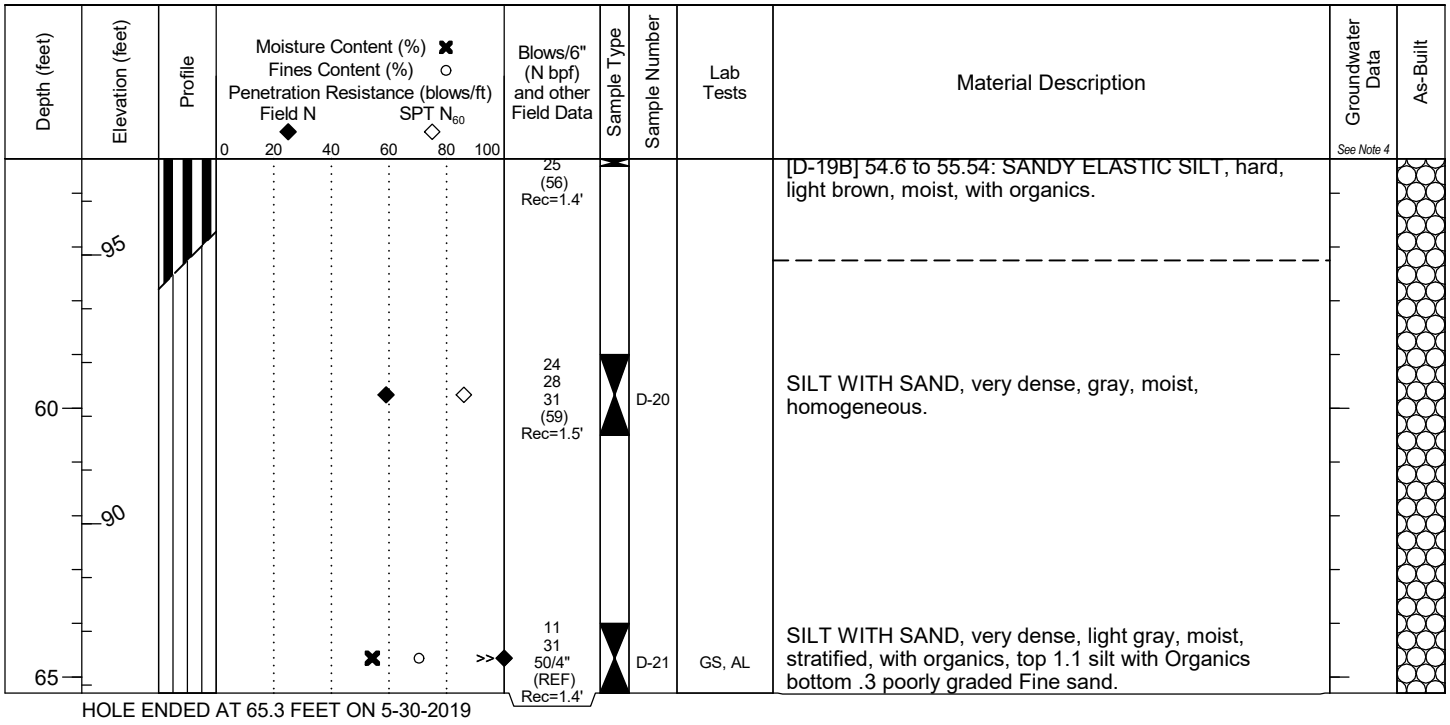
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 65.3 FEET ON 5-30-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 6/18/2019 and 9/14/2020. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 30, 2019
Hole Depth / Casing Depth: 65.0 feet / 59.0 feet
Water Depth Before Bailing: 2.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	55.2
1	51.5
2	50.2
3	48.7
4	47.3
5	46.1
10	41.4
15	38.5
20	36.7
25	35.6
30	34.6
35	34.2
40	34.0

WSDOT

LOG OF BORING NE-37-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 288,898.7 feet *Latitude:* 47.783872 deg.

Driller/Inspector: Peterson, Trevor (#3008) / Haller, Robert #2779

Easting: 1,305,430.9 feet *Longitude:* -122.196000 deg.

Start Card: SE-69581 AE-54200 *Well Tag:* N/A *Instrument:*

Elevation: 193.6 feet *Collector:* Region Survey

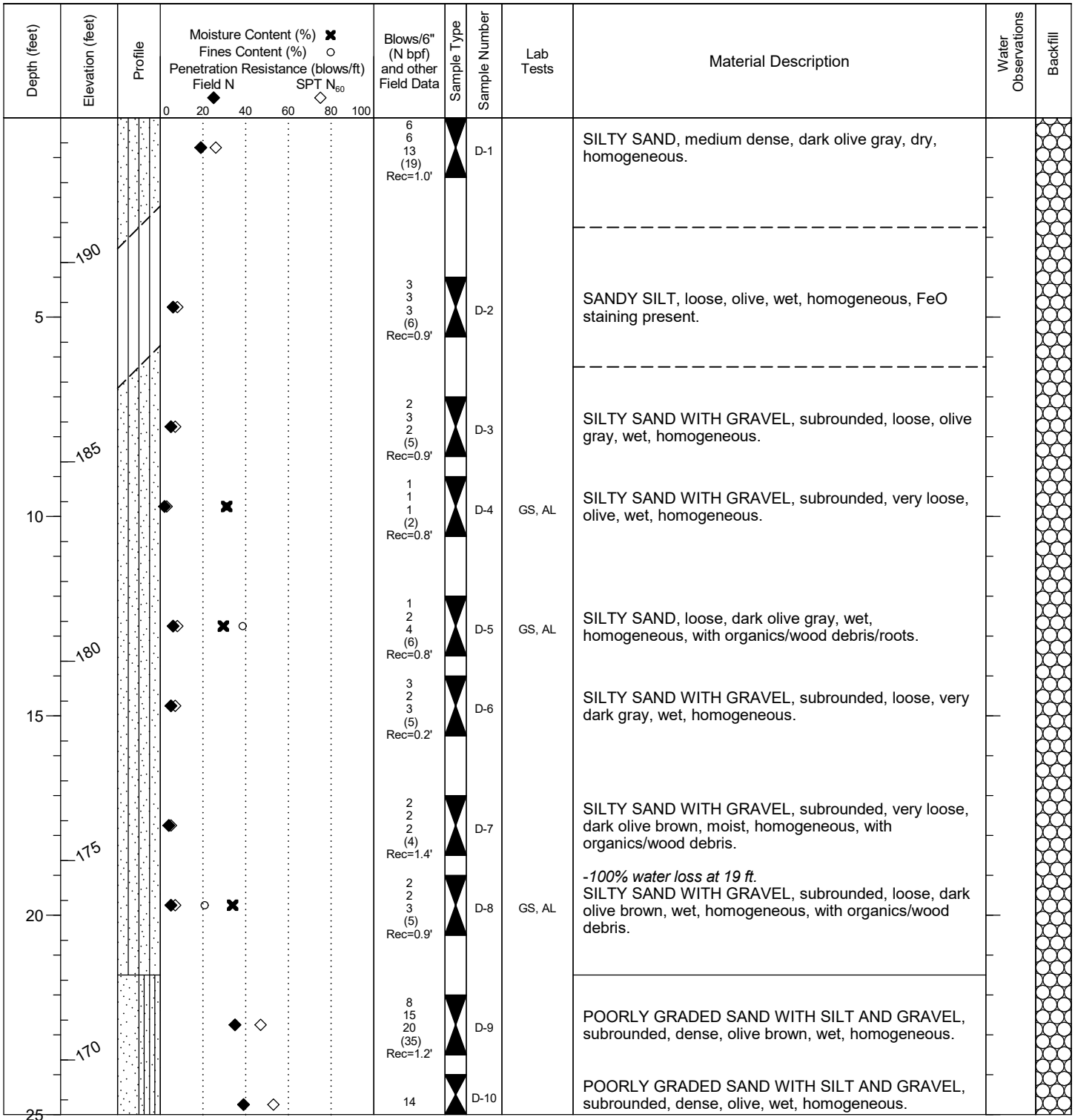
Drilling Method: Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88

Equipment: CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: May 23, 2019 *Completed:* May 29, 2019

Hammer Type: AutoHammer *Historic Efficiency:* 81.29%



CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/3/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

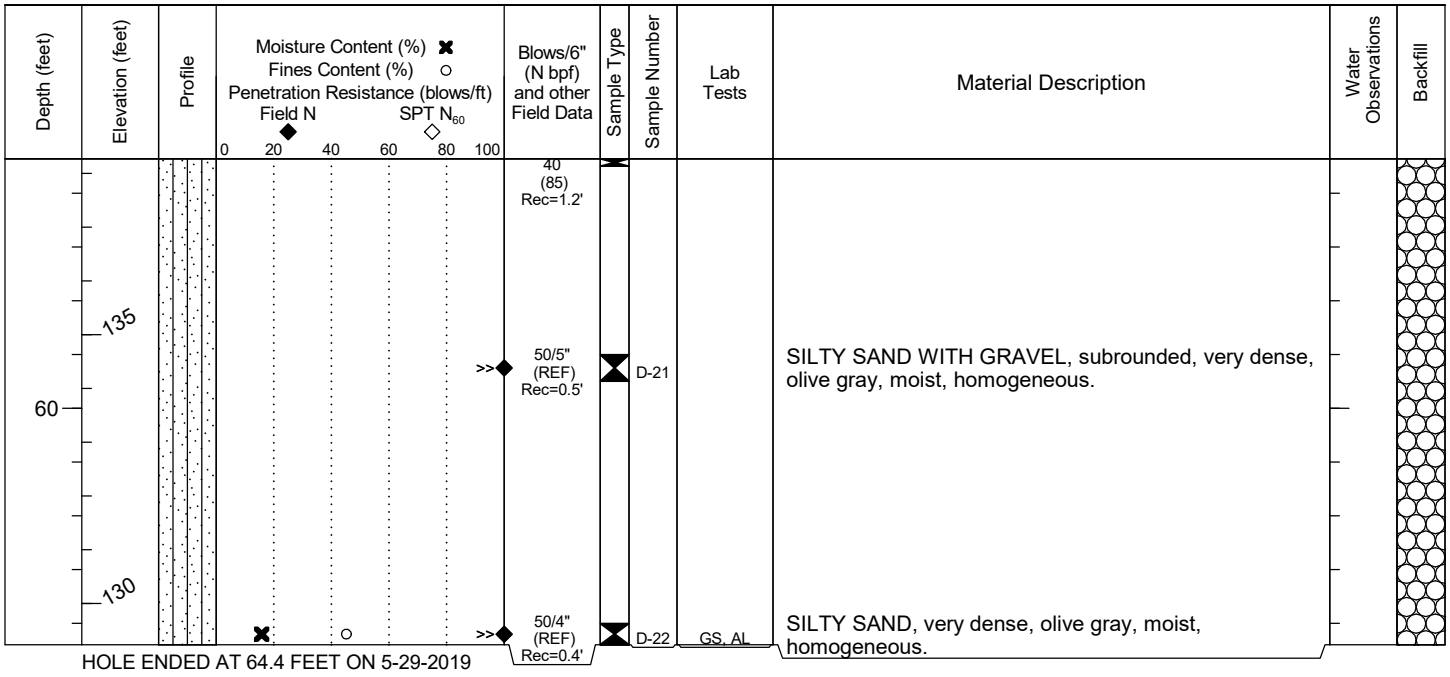
Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
		18 21 (39) Rec=0.7'		D-10				
		5 8 11 (19) Rec=1.1'		D-11		POORLY GRADED SAND WITH SILT AND GRAVEL, medium dense, olive, wet, homogeneous.	▽ *Bail test: water at 26.9 ft*	
30	165	10 11 15 (26) Rec=0.9'		D-12	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, olive gray, wet, homogeneous.		
		6 6 9 (15) Rec=0.7'		D-13		SILTY SAND, medium dense, olive, moist, homogeneous.		
35	160	6 8 9 (17) Rec=0.8'		D-14		SILTY SAND, medium dense, olive, wet, homogeneous.		
		9 11 14 (25) Rec=1.1'		D-15		SILTY SAND, dense, olive, wet, homogeneous.		
40	155	15 16 16 (32) Rec=1.1'		D-16		SILTY SAND, dense, olive, moist, homogeneous.		
		14 19 23 (42) Rec=1.4'		D-17	GS, AL	SILTY SAND, dense, olive, wet, homogeneous.		
45	150	11 18 23 (41) Rec=1.3'		D-18		SILTY SAND, dense, olive, moist, homogeneous, FeO staining.		
		17 20 24 (44) Rec=1.3'		D-19		SILTY SAND, dense, olive, wet, homogeneous, FeO staining.		
55	140	25 45		D-20	GS, AL	SILTY SAND, very dense, olive gray, wet, homogeneous.		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/3/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

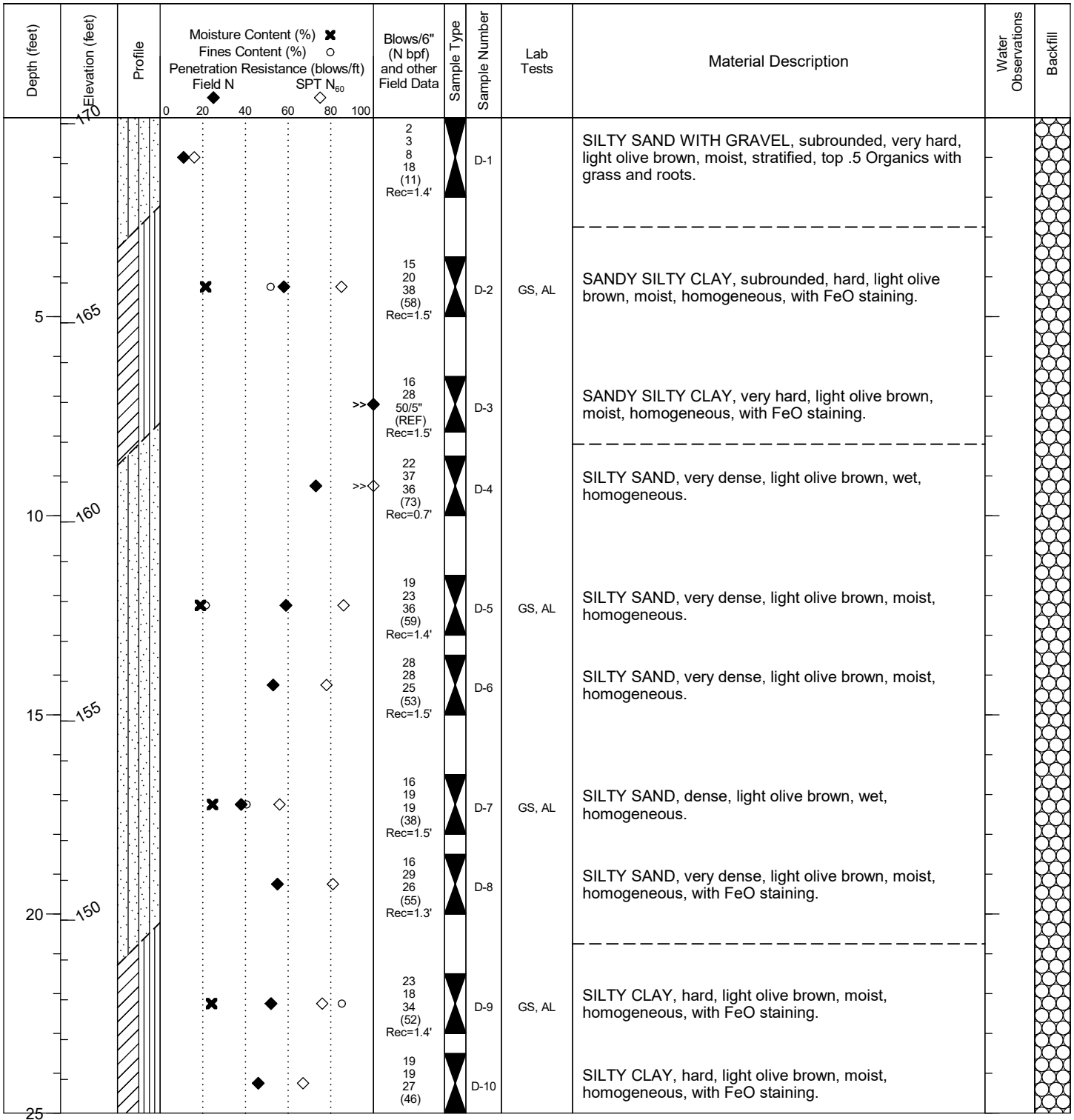
Test Date: May 29, 2019
Hole Depth / Casing Depth: 64.4 feet / 64.0 feet
Water Depth Before Bailing: 11.4 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	36.1
1	34.1
2	32.9
3	32.1
4	31.4
5	31.0
10	29.5
15	28.4
20	27.3
25	26.9
30	26.9

WSDOT

LOG OF BORING NE-38-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 290,387.5 feet *Latitude:* 47.787894 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Shepherd, Robert #2710
Easting: 1,304,212.0 feet *Longitude:* -122.201064 deg. *Start Card:* SE-69582 AE-54201 *Well Tag:* N/A *Instrument:*
Elevation: 170.2 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-4) *Rod Type:* AWJ
Started: May 28, 2019 *Completed:* May 28, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.9%
Remark: Detention Vault

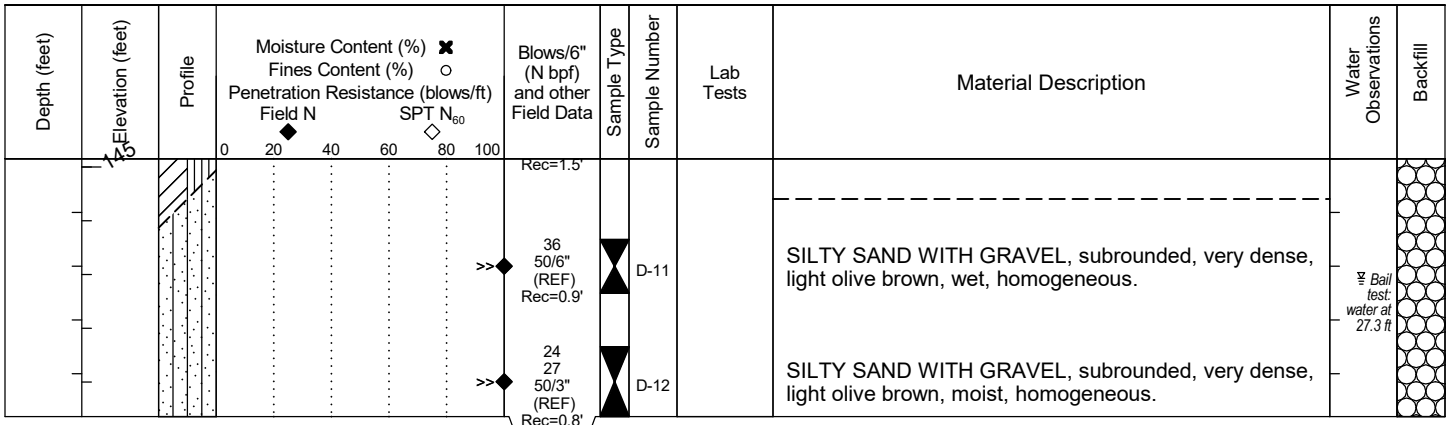


CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/3/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 29.8 FEET ON 5-28-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 28, 2019
Hole Depth / Casing Depth: 28.5 feet / 28.5 feet
Water Depth Before Bailing: 15.9 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	27.7
1	27.3
2	27.3
3	27.3
4	27.3
5	27.3

WSDOT

LOG OF BORING NE-39-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

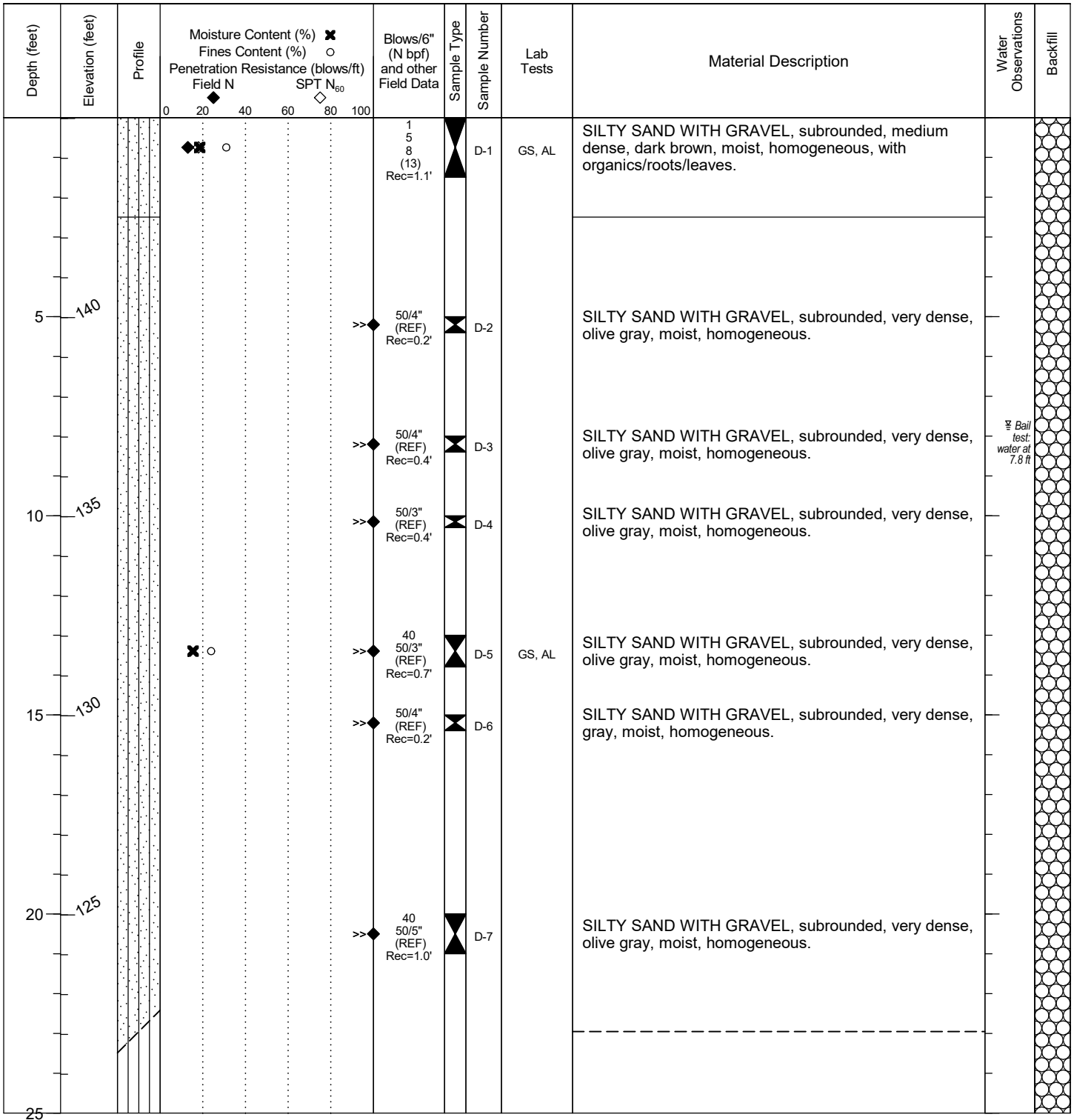
Northing: 291,116.1 feet *Latitude:* 47.789844 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,303,254.0 feet *Longitude:* -122.205014 deg. *Start Card:* SE-69588 AE-54211 *Well Tag:* N/A *Instrument:*

Elevation: 145.0 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: May 22, 2019 *Completed:* May 22, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

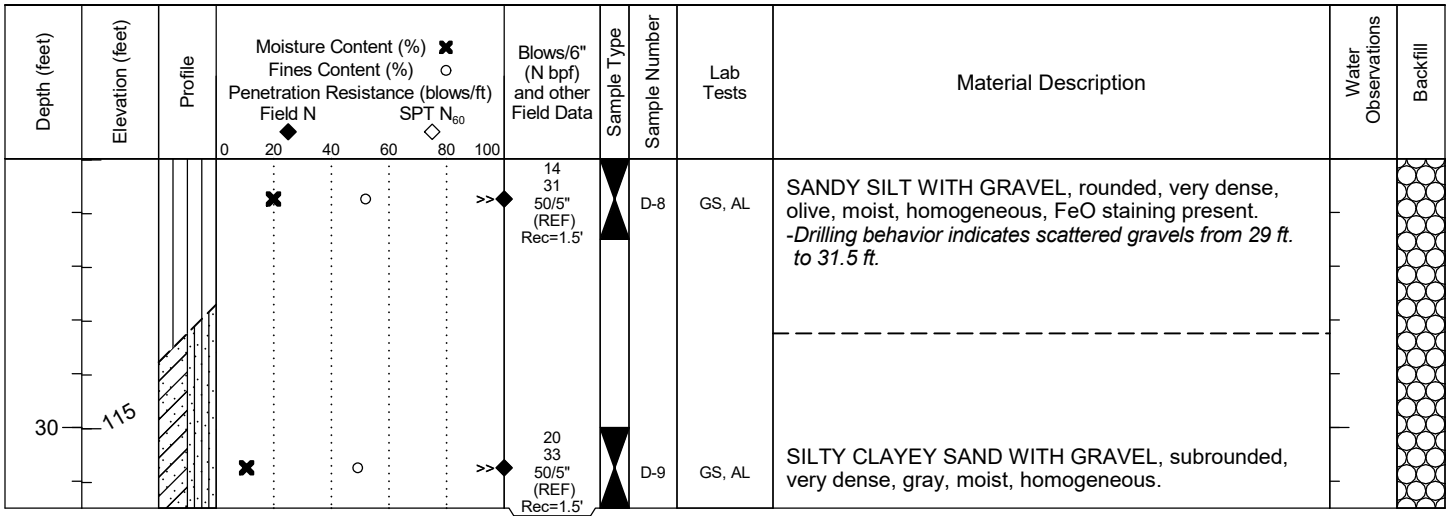


CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 31.5 FEET ON 5-22-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 22, 2019
Hole Depth / Casing Depth: 31.5 feet / 29.0 feet
Water Depth Before Bailing: 4.5 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	28.5
1	27.7
2	26.8
3	26.0
4	25.3
5	24.6
10	20.6
15	17.3
20	14.8
25	12.9
30	11.4
35	10.2
40	9.4
45	8.6
50	8.0
55	7.8

WSDOT

LOG OF BORING NE-40-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

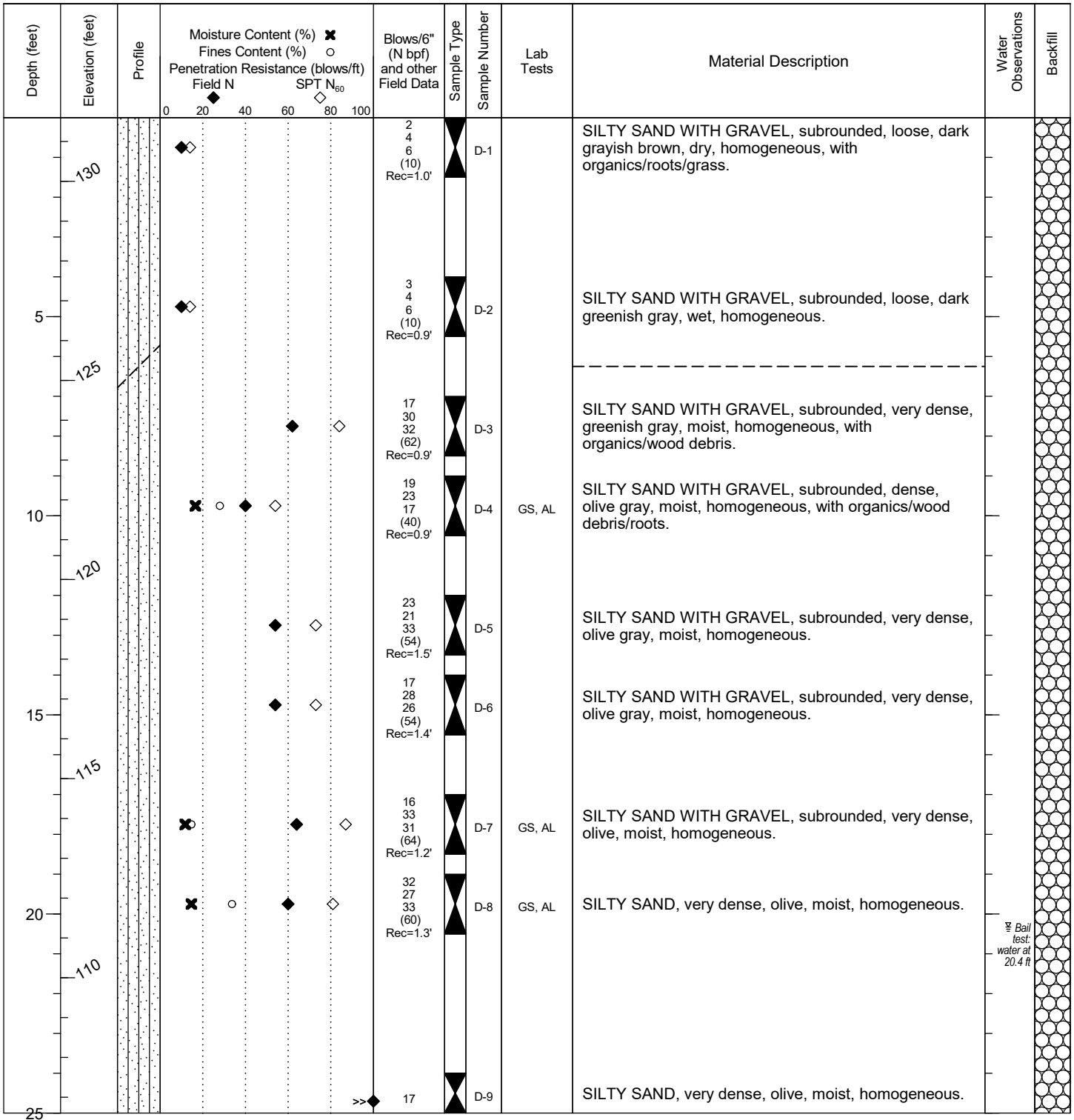
Northing: 291,389.5 feet *Latitude:* 47.790578 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,302,932.5 feet *Longitude:* -122.206341 deg. *Start Card:* SE-69588 AE-54211 *Well Tag:* N/A *Instrument:*

Elevation: 131.6 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: May 21, 2019 *Completed:* May 21, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%



CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
	105			35 50/4" (REF) Rec=1.5'		D-9				
30			>> ◆	23 42 50/4" (REF) Rec=1.3'		D-10		SILTY SAND WITH GRAVEL, subrounded, very dense, olive gray, moist, homogeneous.		

HOLE ENDED AT 30.4 FEET ON 5-21-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 21, 2019
Hole Depth / Casing Depth: 30.4 feet / 29.0 feet
Water Depth Before Bailing: 3.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	23.0
1	22.0
2	21.6
3	21.1
4	21.0
5	20.9
10	20.4
15	20.4

WSDOT

LOG OF BORING NE-41-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 291,579.4 feet *Latitude:* 47.791098 deg.

Driller/Inspector: Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,302,934.8 feet *Longitude:* -122.206346 deg.

Start Card: SE-69545 AE-54147 *Well Tag:* N/A *Instrument:*

Elevation: 130.7 feet *Collector:* Region Survey

Drilling Method: Casing Advancer *Hole Diam.:* 4 in

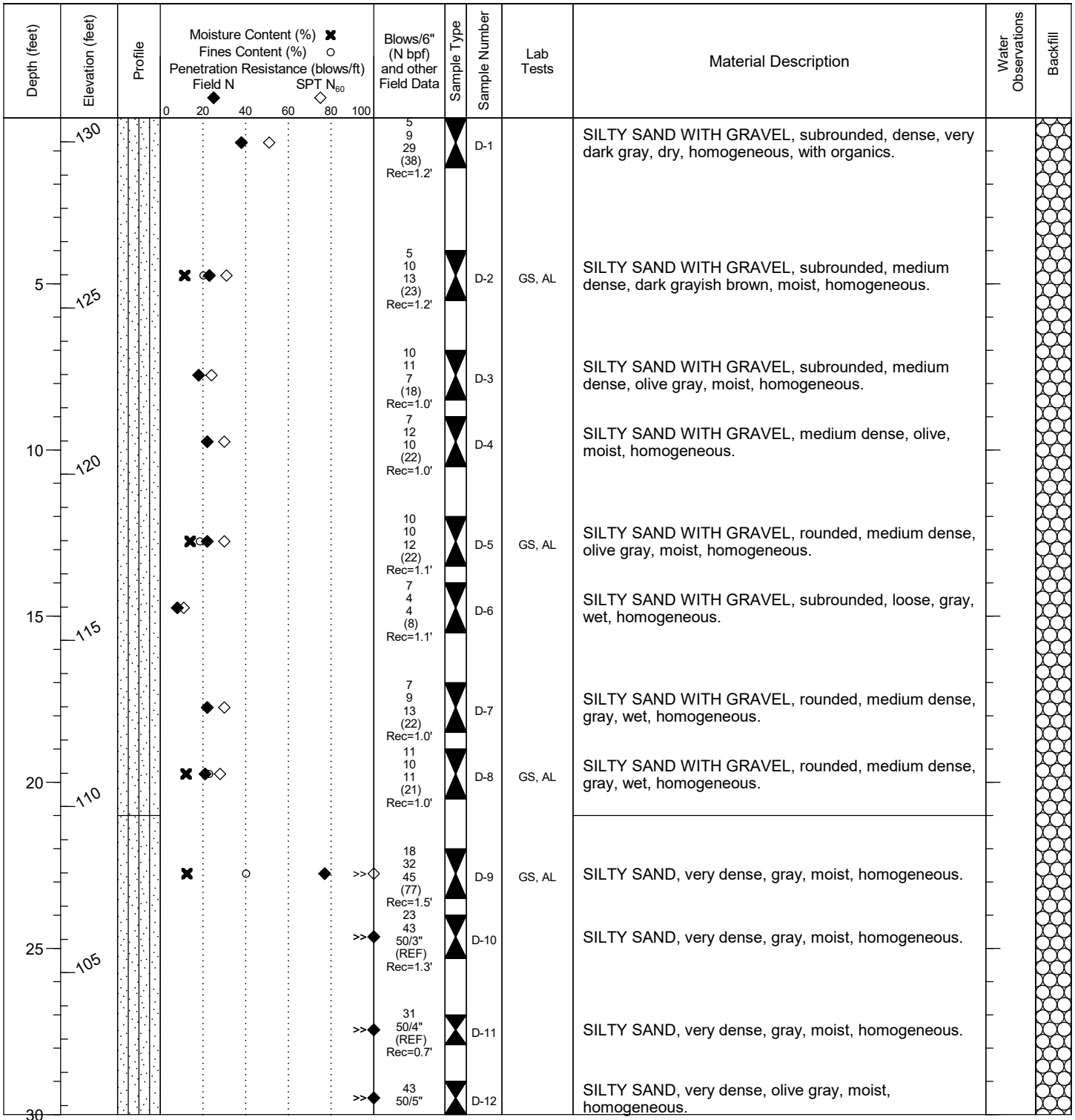
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88

Equipment: CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: June 3, 2019 *Completed:* June 4, 2019

Hammer Type: AutoHammer *Historic Efficiency:* 81.29%

Remark: I-405 Over 228th Street Bridge



CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

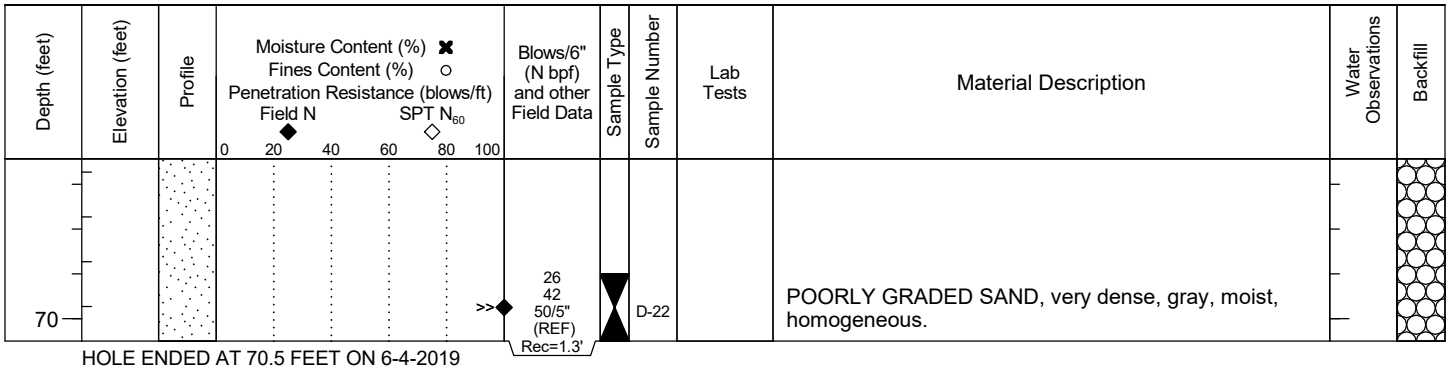
Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
	100	(REF) Rec=0.8'						
		19 23 29 (52) Rec=1.3'		D-13		SILTY SAND, very dense, olive gray, moist, homogeneous.	▽ Bail test: water at 32 ft	
35	95	20 28 34 (62) Rec=1.4'		D-14		SILTY SAND, very dense, olive gray, moist, homogeneous.		
		25 37 39 (76) Rec=1.5'		D-15	GS, AL	SILTY SAND, very dense, olive gray, wet, homogeneous.		
40	90	9 23 27 (50) Rec=1.3'		D-16		POORLY GRADED SAND, dense, olive gray, moist, homogeneous.		
45	85	25 30 39 (69) Rec=1.4'		D-17		POORLY GRADED SAND, very dense, olive gray, moist, homogeneous.		
50	80	18 31 36 (67) Rec=1.3'		D-18		POORLY GRADED SAND, very dense, gray, moist, homogeneous.		
55	75	24 29 36 (65) Rec=1.3'		D-19		POORLY GRADED SAND, very dense, gray, wet, homogeneous.		
60	70	16 32 34 (66) Rec=1.3'		D-20		POORLY GRADED SAND, very dense, gray, moist, homogeneous, with silt lenses.		
65	65	16 24 22 (46) Rec=1.4'		D-21		POORLY GRADED SAND, dense, gray, wet, homogeneous, with silt lenses.		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 70.5 FEET ON 6-4-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 4, 2019
Hole Depth / Casing Depth: 70.5 feet / 69.0 feet
Water Depth Before Bailing: 12.6 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	35.6
1	31.2
2	31.7
3	31.7
4	31.9
5	32.0
10	32.0
15	32.0

WSDOT

LOG OF BORING NE-42p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 291,766.5 feet *Latitude:* 47.791600 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,302,694.1 feet *Longitude:* -122.207338 deg. *Start Card:* RE-17414 *Well Tag:* BLA-741 *Instrument:* 1" PVC

Elevation: 123.5 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: June 4, 2019 *Completed:* June 5, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: I-405 Over 228th Street Bridge

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				40 43 17 (60) Rec=1.5'		D-1		SILTY SAND WITH GRAVEL, subrounded, very dense, very dark gray, dry, homogeneous, with some asphalt debris.		2.0'
5	120			6 7 10 (17) Rec=0.2'		D-2		SILTY GRAVEL WITH SAND, subrounded, medium dense, olive, wet, homogeneous, used oversize sampler to retain more material 2 in. ID 2.5 in. OD.		
				4 7 5 (12) Rec=0.8'		D-3	GS, AL	SILTY SAND WITH GRAVEL, subrounded, medium dense, olive gray, wet, homogeneous, used oversize sampler to retain more material 2 in. ID 2.5 in. OD.		
10	115			3 2 3 (5) Rec=1.0'		D-4	GS, AL	SILTY SAND WITH GRAVEL, subrounded, loose, olive, wet, homogeneous.		
				7 10 13 (23) Rec=0.3'		D-5		SILTY SAND WITH GRAVEL, subrounded, medium dense, gray, wet, homogeneous.		
15	110			9 8 8 (16) Rec=0.7'		D-6		SILTY GRAVEL WITH SAND, subrounded, medium dense, gray, wet, homogeneous.		
				9 14 13 (27) Rec=1.0'		D-7	GS, AL	*-Drilling behavior indicates gravels from 17 ft. to 22 ft.* SILTY SAND WITH GRAVEL, subrounded, dense, olive gray, wet, homogeneous.		
20	105			12 9 12 (21) Rec=1.3'		D-8		SILTY SAND WITH GRAVEL, subrounded, medium dense, olive gray, wet, homogeneous.		
				7 12 14 (26) Rec=0.7'		D-9		SILTY GRAVEL WITH SAND, rounded, dense, gray, wet, homogeneous.		
25	100			9 14 20 (34) Rec=1.0'		D-10	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous, with organics.		
				7 7 9 (16) Rec=1.1'		D-11		SILTY SAND WITH GRAVEL, subrounded, medium dense, gray, wet, homogeneous.		
30	95			10		D-12		SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.	Bail test: water at 28.6 ft	

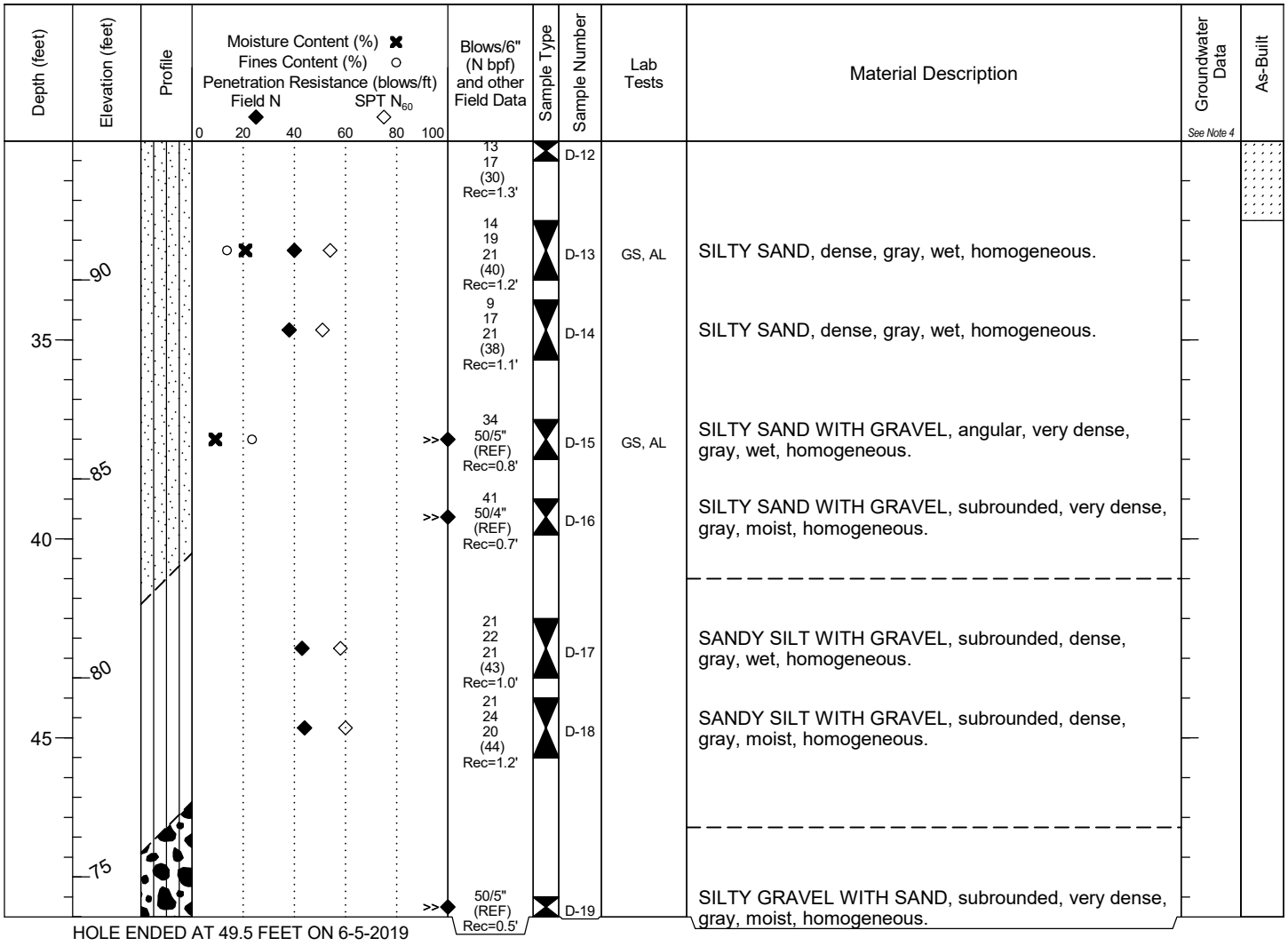
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 7/24/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 5, 2019
Hole Depth / Casing Depth: 49.5 feet / 49.0 feet
Water Depth Before Bailing: 26.5 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	48.6
1	36.1
2	34.9
3	33.8
4	32.9
5	32.1
10	30.1
15	29.2
20	28.7
25	28.6
30	28.6

WSDOT

LOG OF BORING NE-43-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 291,920.5 feet *Latitude:* 47.792013 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

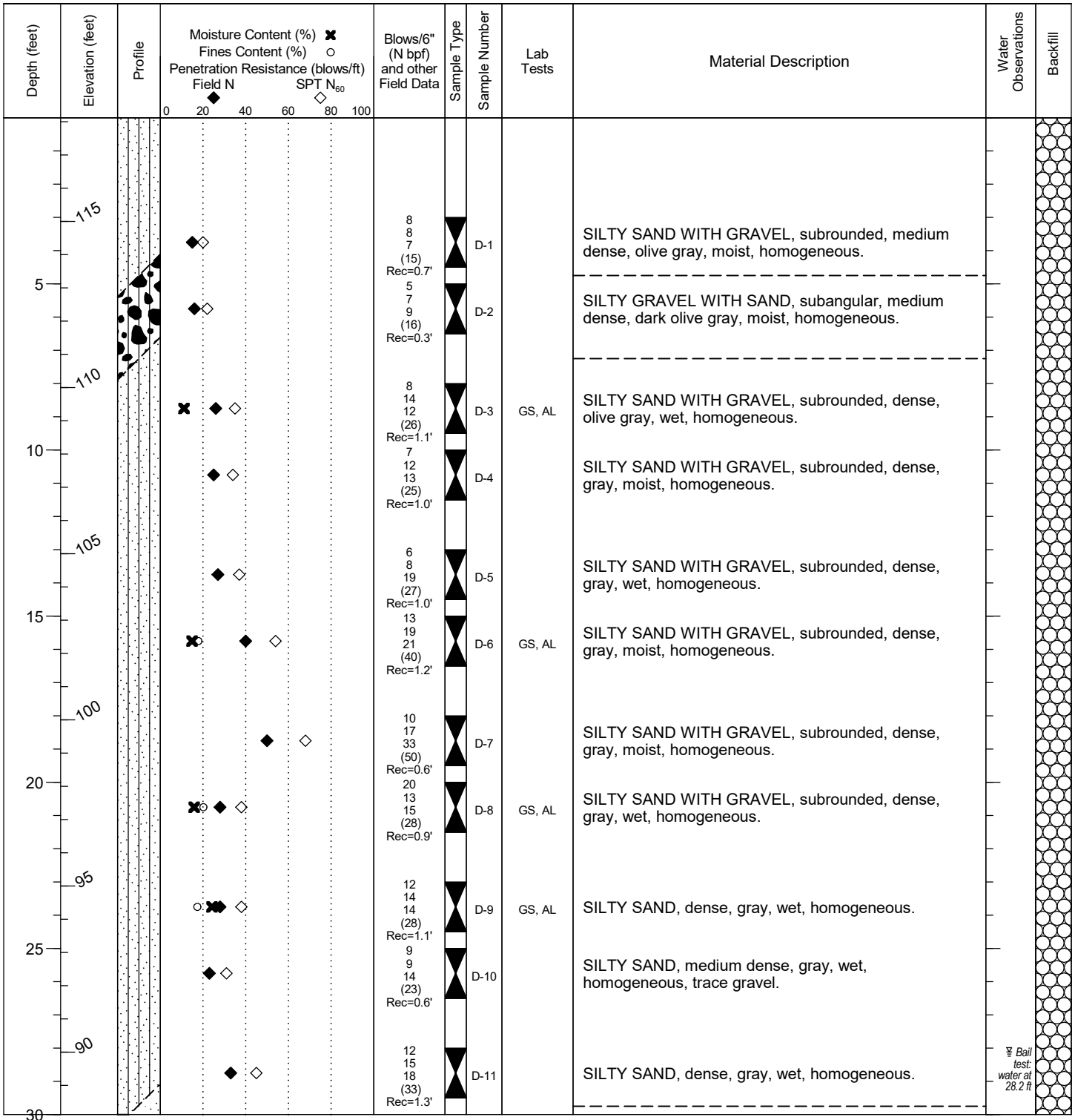
Easting: 1,302,521.7 feet *Longitude:* -122.208050 deg. *Start Card:* SE-69546 AE-54148 *Well Tag:* N/A *Instrument:*

Elevation: 118.1 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: June 5, 2019 *Completed:* June 6, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: Wall 26.34R



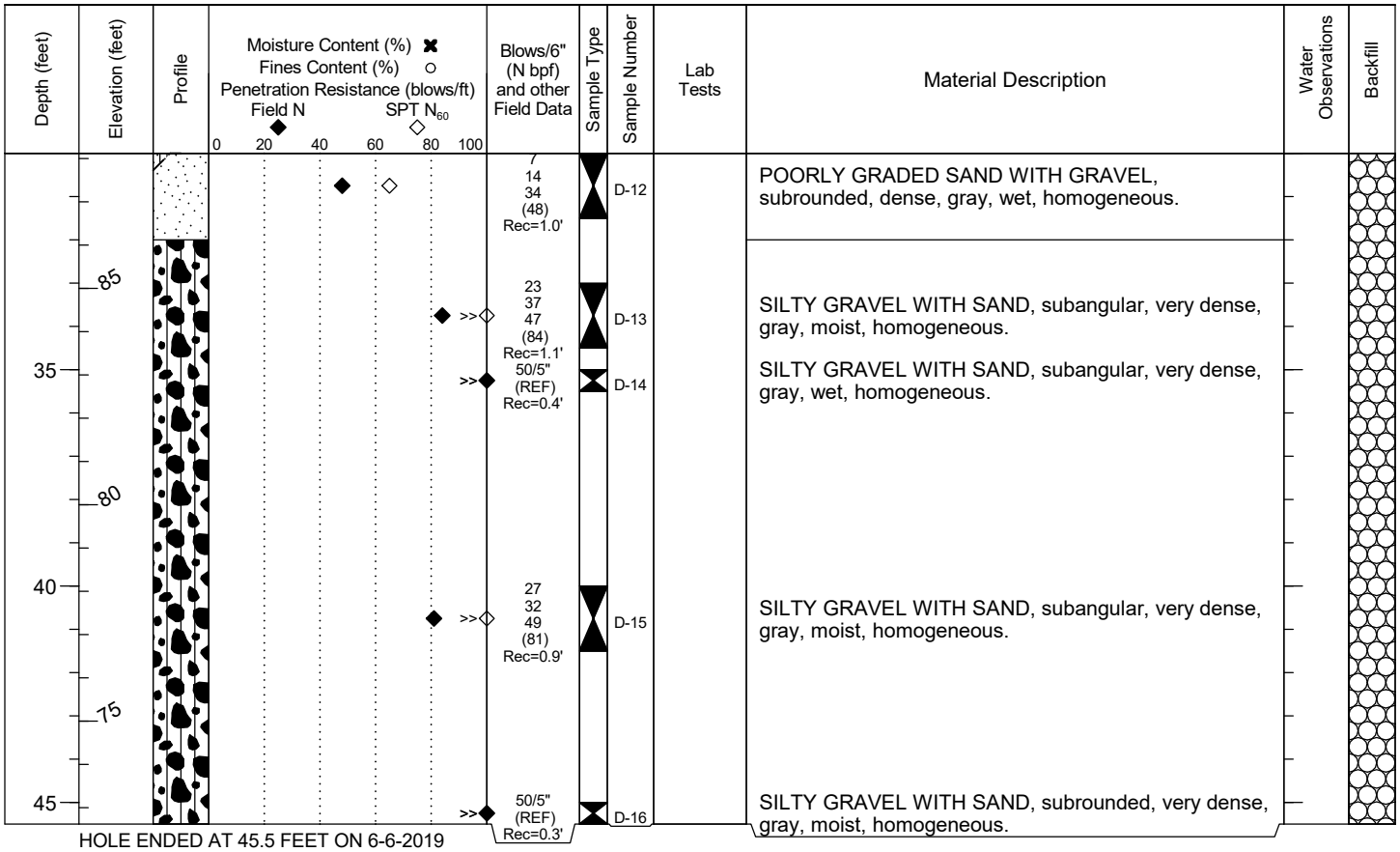
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/1/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 45.5 FEET ON 6-6-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 6, 2019
Hole Depth / Casing Depth: 45.5 feet / 45.0 feet
Water Depth Before Bailing: 21.5 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	40.7
1	39.7
2	39.0
3	38.3
4	37.7
5	37.2
10	34.9
15	32.9
20	31.3
25	29.7
30	28.5
35	28.2

WSDOT

LOG OF BORING NE-44p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 292,100.8 feet *Latitude:* 47.792498 deg. *Driller/Inspector:* Walker, Robert (#2864) / Harvey, Thomas #2599
Easting: 1,302,321.4 feet *Longitude:* -122.208879 deg. *Start Card:* RE17398 *Well Tag:* BLN-023 *Instrument:* 1" PVC
Elevation: 115.7 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ
Started: July 30, 2019 *Completed:* July 30, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%
Remark: North Fork of Perry Creek (08.0070 A 0.25)

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	115	8 12 15 15 (27) Rec=1.0'		D-1		SILTY SAND WITH GRAVEL, subrounded, dense, grayish brown, moist, homogeneous.
5	110	18 27 31 (58) Rec=0.8'		D-2		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, very dense, grayish brown, moist, homogeneous.
		24 50/6" (REF) Rec=0.7'		D-3	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, very dense, grayish brown, moist, homogeneous.
10	105	31 34 29 (63) Rec=0.9'		D-4		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, very dense, grayish brown, moist, homogeneous.
		21 27 23 (50) Rec=1.0'		D-5		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, grayish brown, moist, homogeneous.
15	100	14 9 9 (18) Rec=0.5'		D-6	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, grayish brown, wet, homogeneous.
		3 5 7 (12) Rec=0.3'		D-7		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, gray, wet, homogeneous.
20	95	11 10 12 (22) Rec=0.6'		D-8		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, gray, wet, homogeneous.
		13 15 18 (33) Rec=1.0'		D-9	GS, AL	SILTY SAND, dense, gray, wet, homogeneous.
25	90	13 17 20 (37) Rec=1.5'		D-10	GS, AL	SILTY SAND, dense, gray, moist, homogeneous.
		50/6" (REF) Rec=0.3'		D-11	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.
30		50/4" (REF) Rec=0.2'		D-12		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data (See Note 4): Bail Test: water at 15.8 ft

As-Built: 2.0"

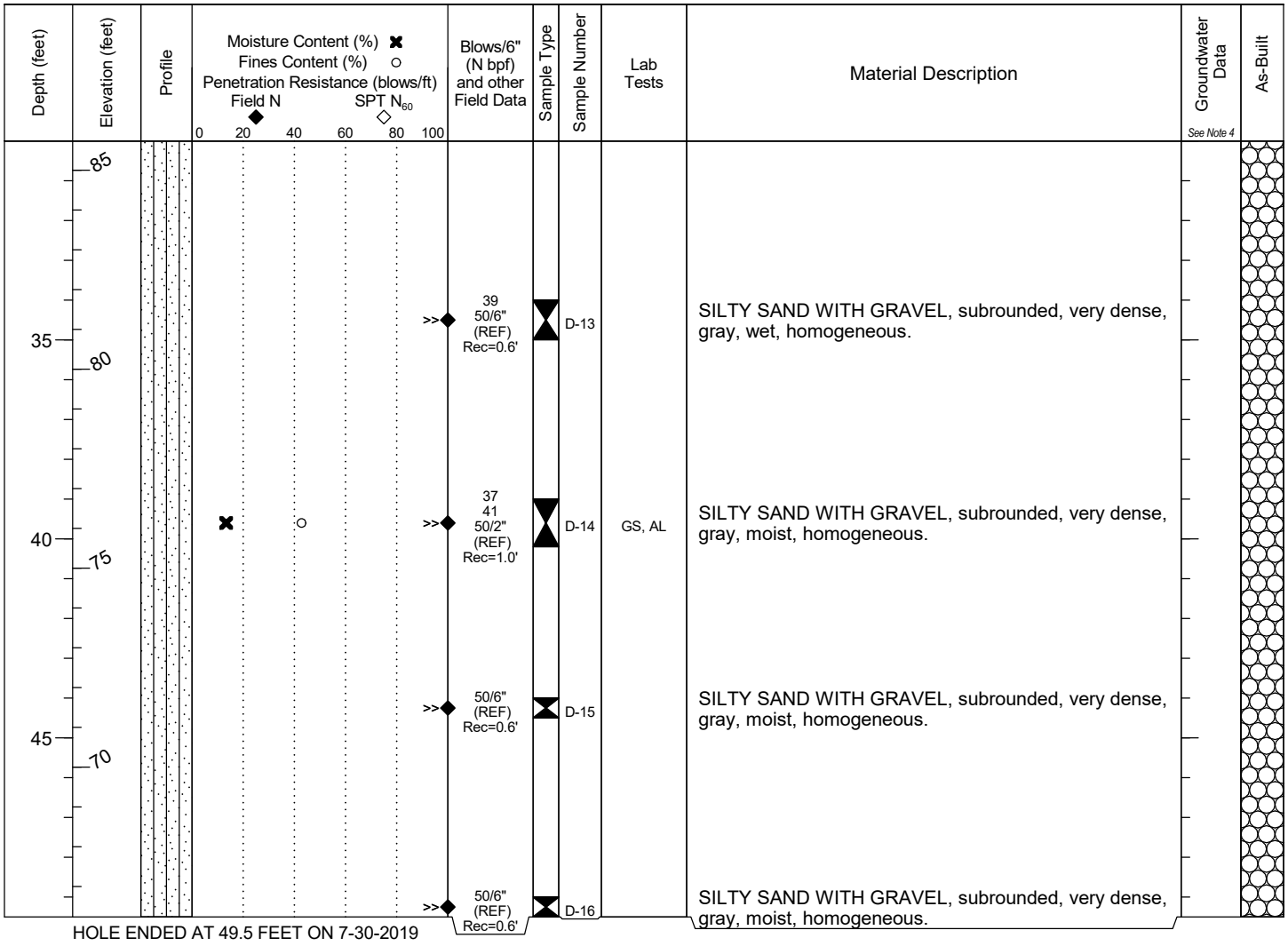
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 10/9/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: July 30, 2019
Hole Depth / Casing Depth: 49.5 feet / 39.0 feet
Water Depth Before Bailing: 7.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	19.1
1	16.0
5	15.9
10	15.9
15	15.8
20	15.8
30	15.8

WSDOT

LOG OF BORING NE-45-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 292,062.1 feet *Latitude:* 47.792377 deg. *Driller/Inspector:* Cooper, Richard (#2964) / Brun, Mike #1711
Easting: 1,302,016.3 feet *Longitude:* -122.210117 deg. *Start Card:* SE69580 AE54199 *Well Tag:* N/A *Instrument:*
Elevation: 112.4 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9A2-523) *Rod Type:* AWJ
Started: April 30, 2019 *Completed:* May 1, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 89.4%
Remark: North Fork of Perry Creek (08.0070 A 0.25)

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
	110	3 9 7 6 (16) Rec=1.9'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, brown, moist, stratified, with few organics.		
5	105	6 6 5 5 (11) Rec=1.2'		D-2		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, grayish brown, wet, homogeneous.	05-01-19 DH	
		10 5 12 11 (17) Rec=1.2'		D-3		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, gray, wet, homogeneous.		
10	100	2 6 9 11 (15) Rec=1.2'		D-4	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, grayish brown, wet, homogeneous.		
		6 9 15 17 (24) Rec=1.5'		D-5		POORLY GRADED SAND WITH SILT, medium dense, gray, wet, homogeneous.	▼ Bail test: water at 12.6 ft	
15	95	5 10 11 15 (21) Rec=1.3'		D-6		SILTY SAND, medium dense, gray, wet, homogeneous.		
		10 19 15 19 (34) Rec=1.4'		D-7	GS, AL	SILTY SAND, dense, gray, wet, homogeneous.		
20	90	>> 18 50/6" (REF) Rec=1.0'		D-8		SILTY SAND, very dense, gray, wet, homogeneous.		
		16 15 12 14 (27) Rec=1.5'		D-9	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, gray, wet, homogeneous.		
25	85	7 24 32 39 (56) Rec=1.4'		D-10		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.		
		>> 50/6" (REF) Rec=0.5'		D-11		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, wet, homogeneous.		
30		>> 24 50/6"		D-12		SILTY CLAY WITH SAND, very hard, gray, dry, homogeneous.		

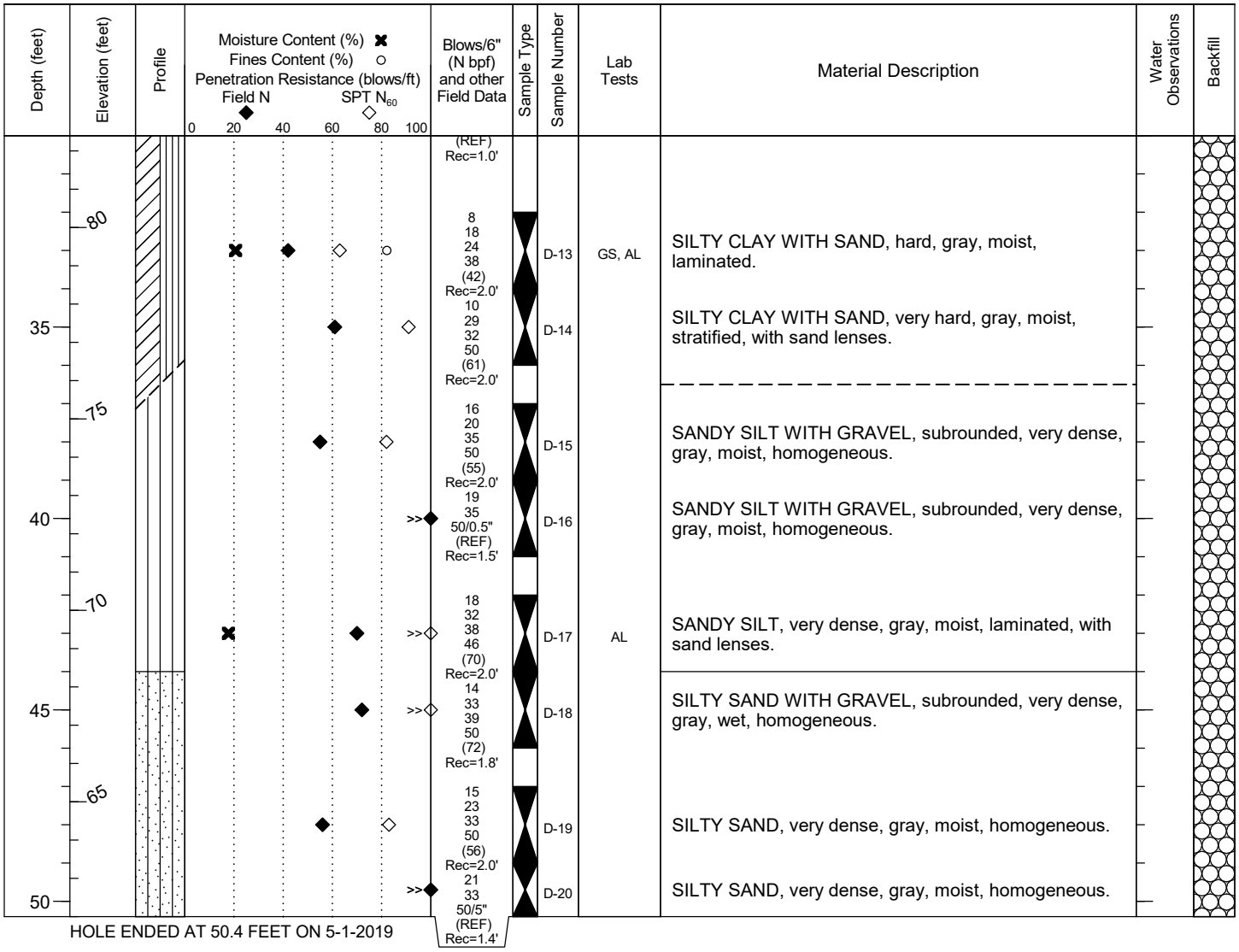
Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/1/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 1, 2019
Hole Depth / Casing Depth: 50.4 feet / 49.0 feet
Water Depth Before Bailing: 12.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	24.7
5	21.5
10	17.5
15	15.0
20	13.5
30	12.6

WSDOT

LOG OF BORING NE-46p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 292,299.3 feet *Latitude:* 47.793030 deg. *Driller/Inspector:* Walker, Robert (#2864) / Harvey, Thomas #2599
Easting: 1,302,084.1 feet *Longitude:* -122.209858 deg. *Start Card:* RE17398 *Well Tag:* BLN-024 *Instrument:* 1" PVC
Elevation: 114.5 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ
Started: July 31, 2019 *Completed:* August 1, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%
Remark: Detention Pond

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	114.5	3 5 6 (11) Rec=0.4'		D-1		POORLY GRADED SAND WITH GRAVEL, subrounded, medium dense, grayish brown, moist, stratified, with organics.
5	110	12 15 15 (30) Rec=0.8'		D-2		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, grayish brown, moist, homogeneous.
		14 15 10 (25) Rec=0.4'		D-3		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, grayish brown, moist, homogeneous.
10	105	7 5 5 (10) Rec=0.7'		D-4	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, loose, grayish brown, wet, homogeneous.
						-Lost 100% drilling fluid at 11 ft.
		25 14 9 (23) Rec=0.7'		D-5		SILTY GRAVEL WITH SAND, subrounded, medium dense, grayish brown, wet, stratified, with organics.
15	100	8 12 11 (23) Rec=1.0'		D-6	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, dark brown, wet, homogeneous, with roots.
		8 13 21 (34) Rec=1.0'		D-7		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, gray, moist, homogeneous.
20	95	19 27 34 (61) Rec=1.0'		D-8		SILTY SAND, very dense, gray, moist, homogeneous.
		20 22 25 (47) Rec=1.0'		D-9	GS, AL	SILTY SAND, dense, gray, moist, homogeneous.
25	90	21 23 19 (42) Rec=1.5'		D-10	GS, AL	SILTY SAND, dense, gray, moist, homogeneous.
		17 27 34 (61) Rec=1.5'		D-11		SANDY SILT, very dense, gray, moist, homogeneous.
30	85	21		D-12	GS, AL	SANDY SILT, very dense, gray, moist, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4
Bail test: water at 11.5 ft

As-Built
2.0'

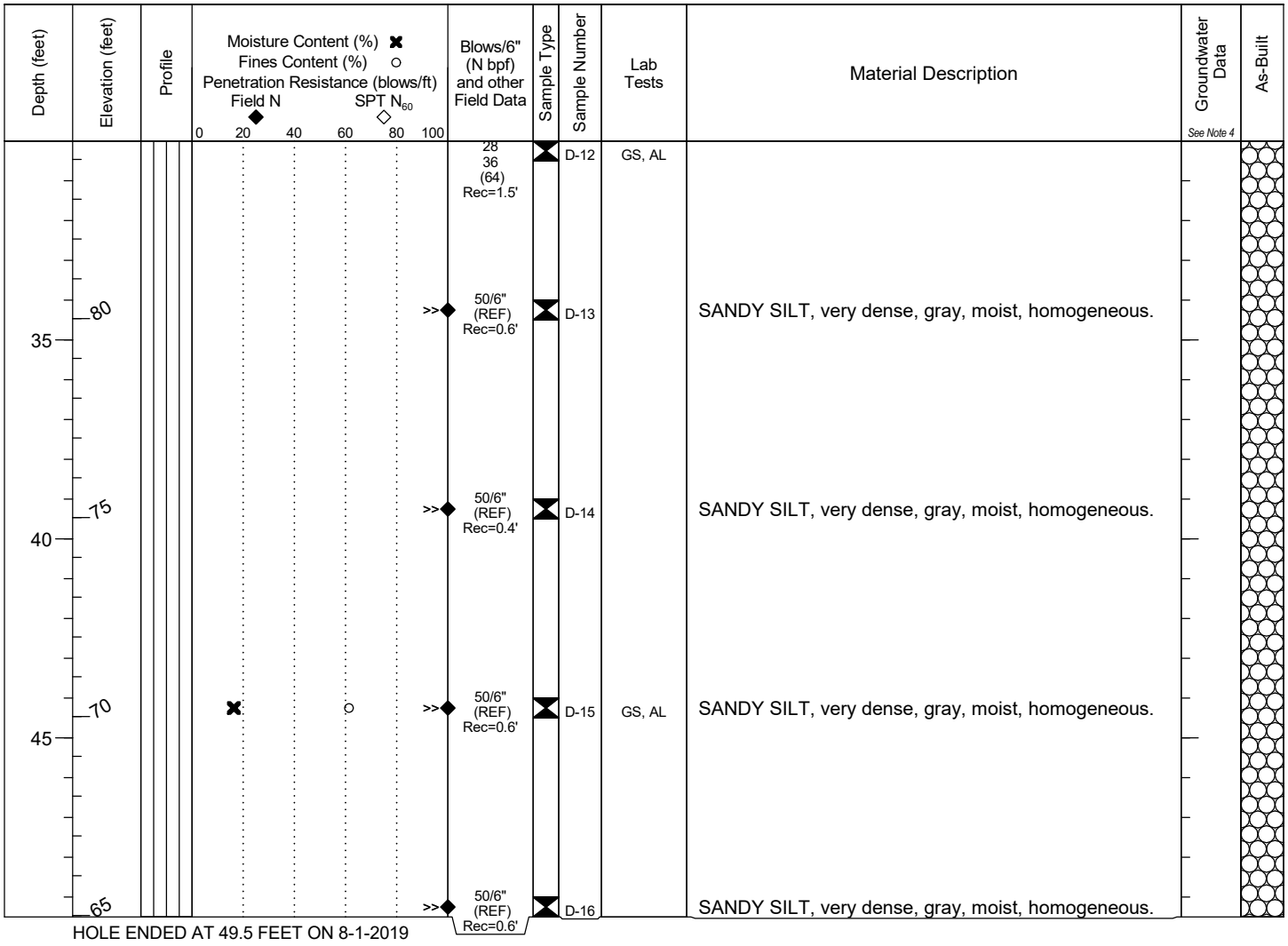
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 10/9/2019 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

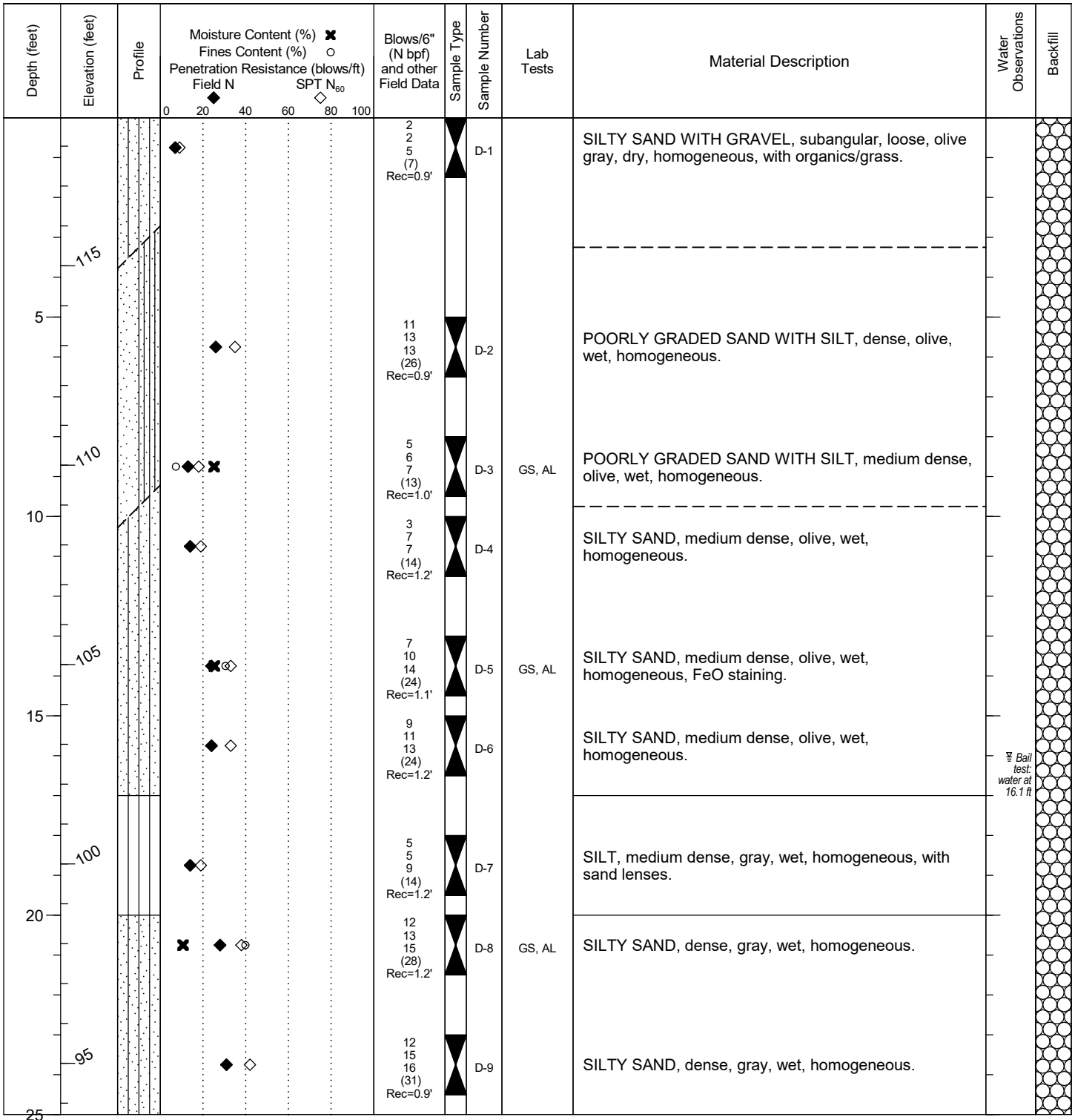
Test Date: August 1, 2019
Hole Depth / Casing Depth: 49.5 feet / 39.0 feet
Water Depth Before Bailing: 13.6 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	31.2
1	24.7
5	18.1
10	14.4
15	11.6
20	11.5
30	11.5

WSDOT

LOG OF BORING NE-47-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 292,354.1 feet *Latitude:* 47.793168 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779
Easting: 1,301,835.4 feet *Longitude:* -122.210874 deg. *Start Card:* SE-69580 AE-54199 *Well Tag:* N/A *Instrument:*
Elevation: 118.7 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ
Started: June 8, 2019 *Completed:* June 9, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%
Remark: DA Bridge and Walls 23.38R and 26.42L



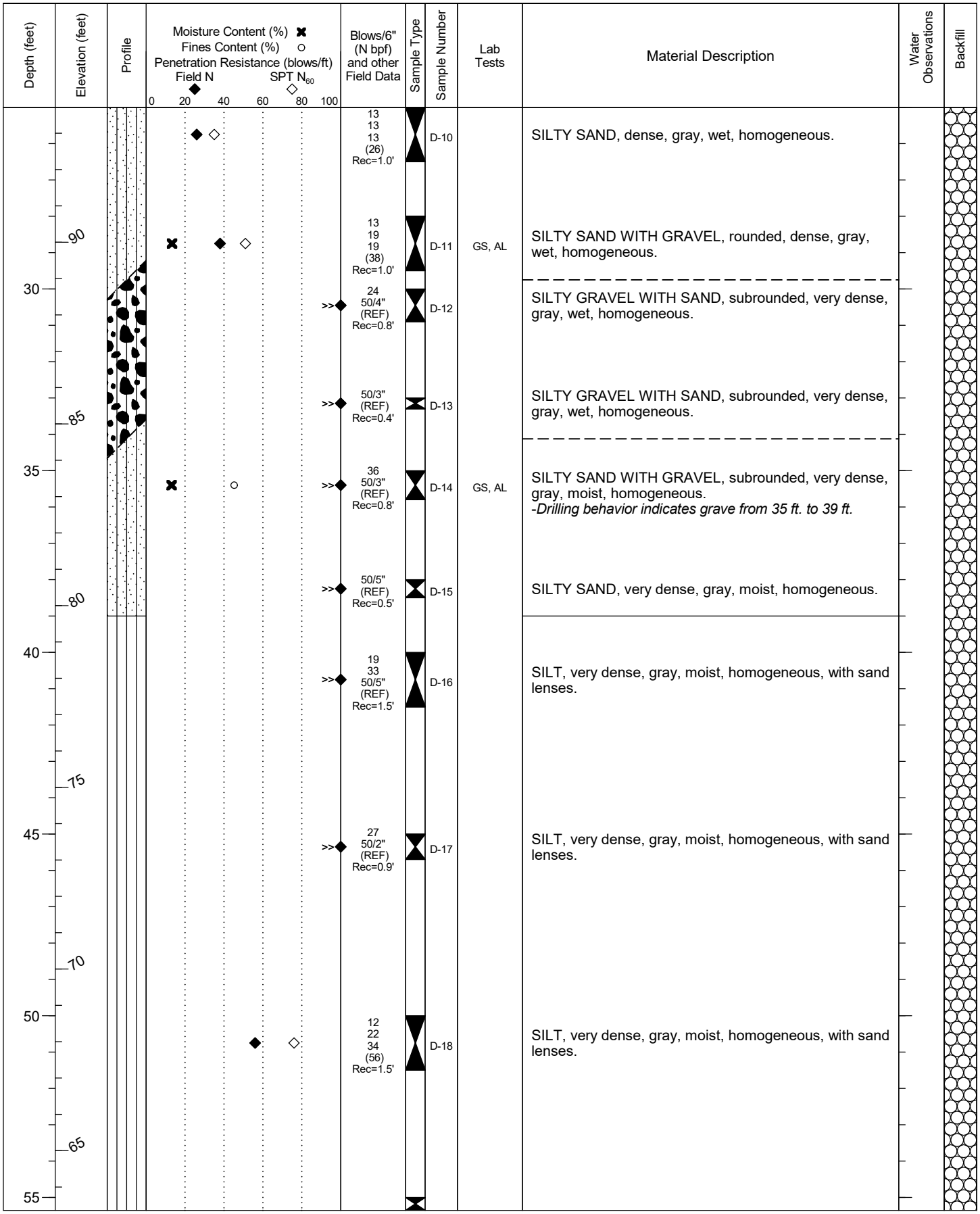
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

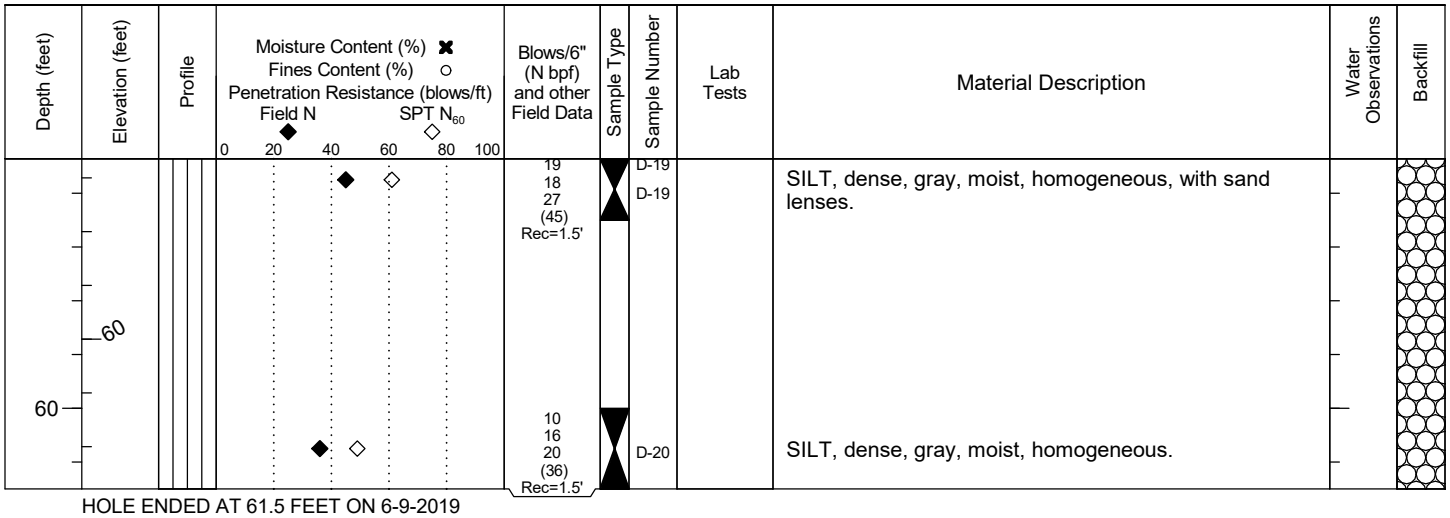


CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 61.5 FEET ON 6-9-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 9, 2019
Hole Depth / Casing Depth: 12.4 feet / 61.5 feet
Water Depth Before Bailing: 60.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	51.7
1	50.7
2	50.0
3	49.4
4	48.8
5	48.3
10	45.7
15	43.5
1000	16.1

WSDOT

LOG OF BORING NE-48vw-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 292,494.9 feet *Latitude:* 47.793556 deg. *Driller/Inspector:* Walker, Robert (#2864) / Haller, Robert #2779

Easting: 1,301,875.7 feet *Longitude:* -122.210720 deg. *Start Card:* RE-17448 *Well Tag:* BLA-743 *Instrument:* VWP

Elevation: 119.1 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: August 12, 2019 *Completed:* August 15, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Remark: DA Bridge and Walls 26.54R and 26.55R

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
0				2 3 10 (13) Rec=1.2'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, olive brown, dry, homogeneous.		2.5'
5	115			4 4 3 (7) Rec=0.7'		D-2		WELL-GRADED GRAVEL WITH SAND, subrounded, loose, olive, moist, homogeneous.		
	110			5 5 6 (11) Rec=0.8'		D-3	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, olive, wet, homogeneous.		
10				6 5 8 (13) Rec=0.6'		D-4		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, olive brown, wet, homogeneous.		
	105			5 7 5 (12) Rec=0.9'		D-5		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, olive, wet, homogeneous.		
15				5 6 6 (12) Rec=0.6'		D-6		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, olive, wet, homogeneous, FeO staining present.		
	100			10 14 13 (27) Rec=0.9'		D-7		SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.		
20				6 16 29 (45) Rec=0.9'		D-8		SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.		
	95			7 9 14 (23) Rec=1.1'		D-9	GS, AL	SANDY SILT, medium dense, gray, moist, homogeneous.		
25				15 20 24 (44) Rec=1.0'		D-10		SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.		
	90			8 19 22 (41) Rec=1.3'		D-11	GS, AL	SILT WITH SAND, dense, gray, moist, homogeneous.		
30										

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
35	85		◆ ◇	10 19 27 (46) Rec=1.5'		D-13		SILT WITH SAND, dense, gray, moist, homogeneous.		
			◆ ◇	14 25 33 (58) Rec=1.5'		D-14		SILT WITH SAND, very dense, gray, moist, homogeneous.		
40	80		✖ ◇ ○	8 11 18 (29) Rec=1.5'		D-15	GS, AL	SILT, dense, gray, moist, homogeneous, with sand lenses.		
45	75		>> ◆	28 38 50/3" (REF) Rec=1.4'		D-16		SILT, very dense, gray, moist, homogeneous, with sand lenses.		
50	70		◆ ◇	17 22 43 (65) Rec=1.5'		D-17		SILT, very dense, gray, moist, homogeneous, with sand lenses.		
55	65		◆ ◇	10 16 22 (38) Rec=1.5'		D-18		SILT, dense, dark gray, moist, homogeneous, with sand lenses. *-Dilling behavior indicates scattered gravel from 55 ft. to 65.9 ft.*		
60	60		✖ ◆ ○ ◇	15 21 37 (58) Rec=1.5'		D-19	GS, AL	SANDY SILT, very dense, dark gray, moist, homogeneous.		
65	55		>> ◆	34 50/4" (REF) Rec=0.7'		D-20		SILT, very dense, dark gray, wet, homogeneous, with sand lenses.		

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
70	50		>> ◆	17 50/5" (REF) Rec=0.6'		D-21		SILT, very dense, dark gray, moist, homogeneous, with sand lenses.		
75	45		◆ ◇	10 15 21 (36) Rec=1.5'		D-22		SILT, dense, dark gray, moist, homogeneous, with sand lenses.		

HOLE ENDED AT 76.5 FEET ON 8-15-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 10/9/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-49vw-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 292,620.4 feet *Latitude:* 47.793893 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Jamie Wilson

Easting: 1,301,740.5 feet *Longitude:* -122.211279 deg. *Start Card:* RE-17455 *Well Tag:* BLA-750 *Instrument:* VWP

Elevation: 121.1 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: September 29, 2019 *Completed:* September 29, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Pedestrian Bridge and Elevator

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
								-ASPHALT		
	120			9 11 14 (25) Rec=0.9'		D-1		SILTY SAND WITH GRAVEL, subangular, dense, grayish brown, moist, homogeneous.		
				14 >> 50/2" (REF) Rec=0.3'		D-2		WELL-GRADED GRAVEL, subrounded, very dense, gray, moist, homogeneous.		
5	115			>> 50/5" (REF) Rec=0.1'		D-3		WELL-GRADED GRAVEL, subrounded, very dense, gray, moist, homogeneous.		
				8 15 19 (34) Rec=0.8'		D-4	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, brown, moist, homogeneous.		
10	110			10 15 17 (32) Rec=0.7'		D-5		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, brown, moist, homogeneous.		
				4 9 12 (21) Rec=0.7'		D-6		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, grayish brown, wet, homogeneous.		
15	105			7 9 13 (22) Rec=0.6'		D-7	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, brown, wet, homogeneous.		
				7 14 17 (31) Rec=1.1'		D-8		SILTY SAND, dense, gray, moist, homogeneous.		
20	100			8 13 14 (27) Rec=1.4'		D-9	GS, AL	SANDY SILT, dense, gray, moist, homogeneous.		
				15 17 22 (39) Rec=1.1'		D-10		SILTY SAND WITH GRAVEL, subangular, dense, gray, moist, homogeneous.		
25	95			14 19 19 (38) Rec=0.8'		D-11		SILTY SAND WITH GRAVEL, subangular, dense, gray, moist, homogeneous.		
30				10		D-12	GS, AL	SILTY SAND WITH GRAVEL, subangular, dense, gray, moist, homogeneous.		

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/1/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

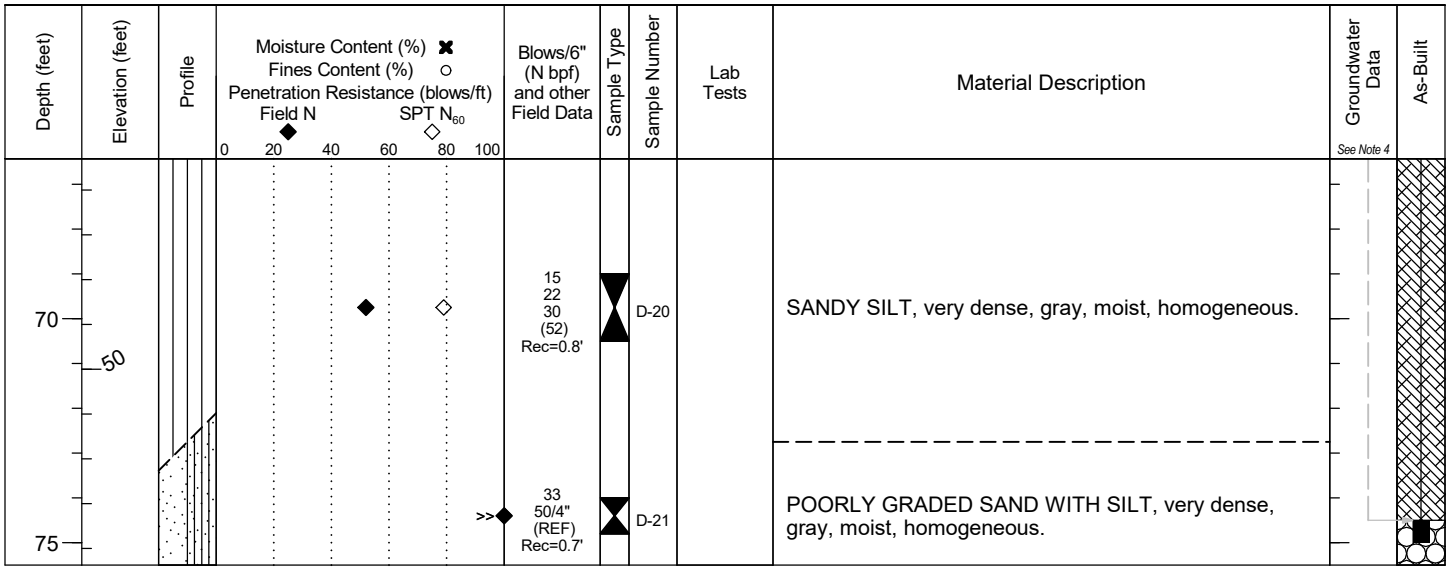
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	90			16 23 (39) Rec=1.3'		D-12	GS, AL			
35	85		◆ ◇	12 24 33 (57) Rec=0.9'		D-13		SILTY SAND WITH GRAVEL, subangular, very dense, gray, moist, homogeneous.		
40	80		>> ◆	17 33 50/5" (REF) Rec=1.0'		D-14		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.		
45	75		>> ◆	33 50/5" (REF) Rec=0.7'		D-15		SILTY SAND WITH GRAVEL, subrounded, very dense, dark gray, moist, homogeneous.		
50	70		>> ◆	16 43 50/5" (REF) Rec=1.4'		D-16		SANDY SILT, very dense, gray, moist, homogeneous.		
55	65		◆ ◇	10 18 26 (44) Rec=1.5'		D-17		SILT, dense, gray, moist, homogeneous.		
60	60		✖ ◆ ◇ ○	11 15 26 (41) Rec=1.5'		D-18	GS, AL	SILT, dense, gray, moist, homogeneous.		
65	55		◆ ◇	14 24 29 (53) Rec=1.3'		D-19		SILT, very dense, gray, moist, homogeneous.		

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/1/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 75.5 FEET ON 9-29-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 10/9/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

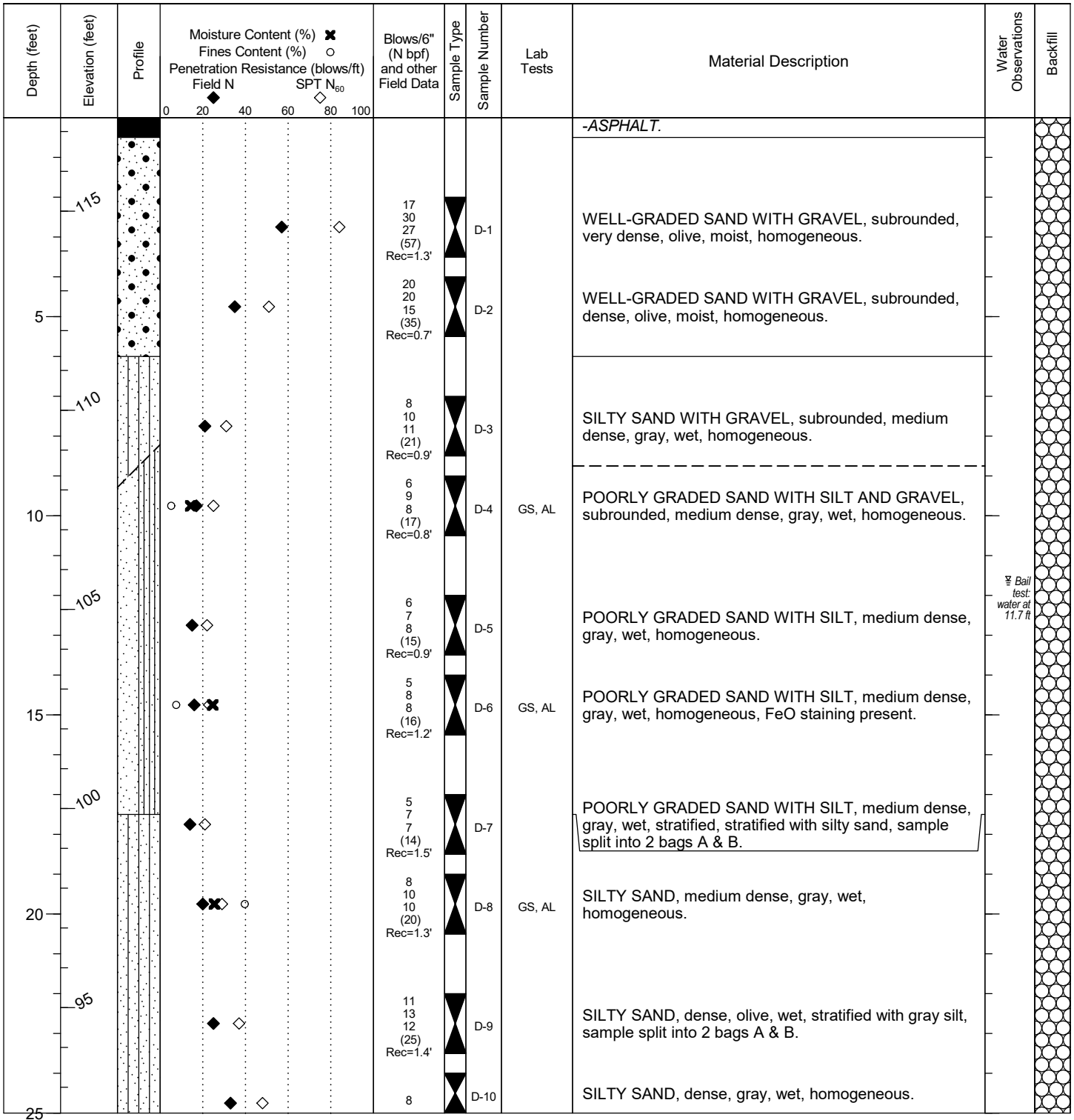
Test Date: September 29, 2019
Hole Depth / Casing Depth: 75.5 feet / 74.0 feet
Water Depth Before Bailing: 7.6 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	45.7
1	43.4
2	42.7
3	42.6

WSDOT

LOG OF BORING NE-50-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 292,689.6 feet *Latitude:* 47.794089 deg. *Driller/Inspector:* Haller, Robert (#2779) / Fetterly, Jamie #2507
Easting: 1,301,865.4 feet *Longitude:* -122.210776 deg. *Start Card:* SE-69580 AE-54199 *Well Tag:* N/A *Instrument:*
Elevation: 117.3 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 850 (ID:9C2-4) *Rod Type:* AWJ
Started: May 18, 2019 *Completed:* May 19, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.9%
Remark: Walls 26.54R and 26.55R



CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
		13 20 (33) Rec=0.7'		D-10		SILTY SAND, dense, gray, wet, homogeneous.
	90	8 10 13 (23) Rec=1.1'		D-11		SILTY SAND WITH GRAVEL, subrounded, medium dense, gray, wet, homogeneous.
30		14 21 17 (38) Rec=0.4'		D-12		SILTY GRAVEL WITH SAND, subrounded, dense, gray, wet, homogeneous.
	85					
35		22 35 50 (85) Rec=1.5'		D-13	GS, AL, HT, SG	SILT, very dense, gray, moist, homogeneous.
	80					
		33 50/6" (REF) Rec=1.0'		D-14		SILT, very dense, gray, moist, homogeneous.
40	75					
		14 20 29 (49) Rec=1.5'		D-15		SILT, dense, gray, moist, homogeneous.
45	70					
		33 40 30 (70) Rec=1.5'		D-16		SILT, very dense, gray, moist, homogeneous.
50	65					
		28 50/5" (REF) Rec=0.9'		D-17		SILT, very dense, gray, moist, homogeneous.
55						

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Water Observations

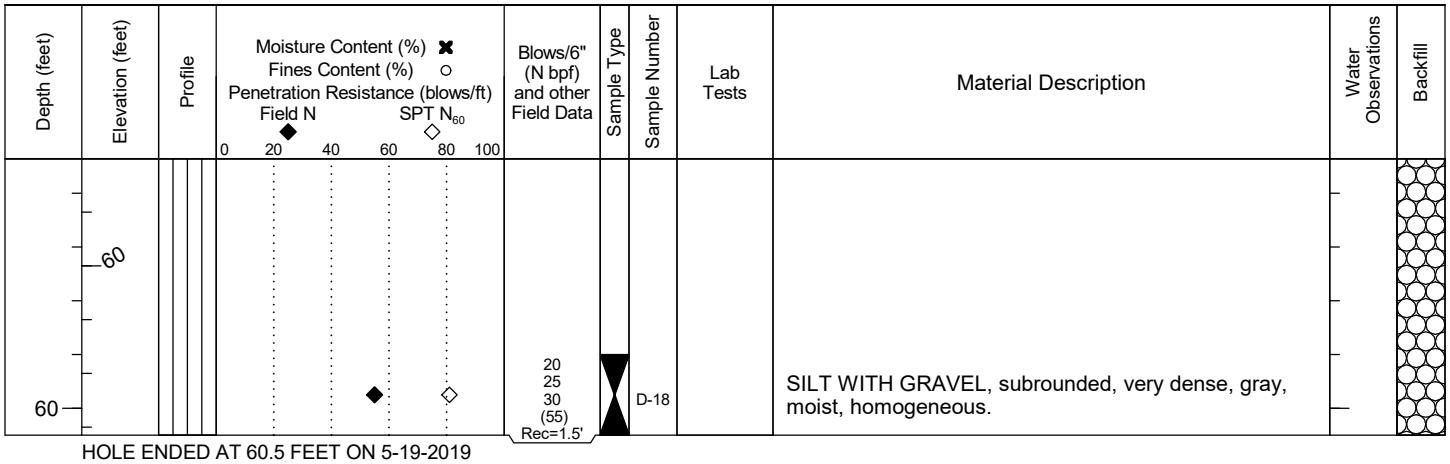
Backfill

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 60.5 FEET ON 5-19-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

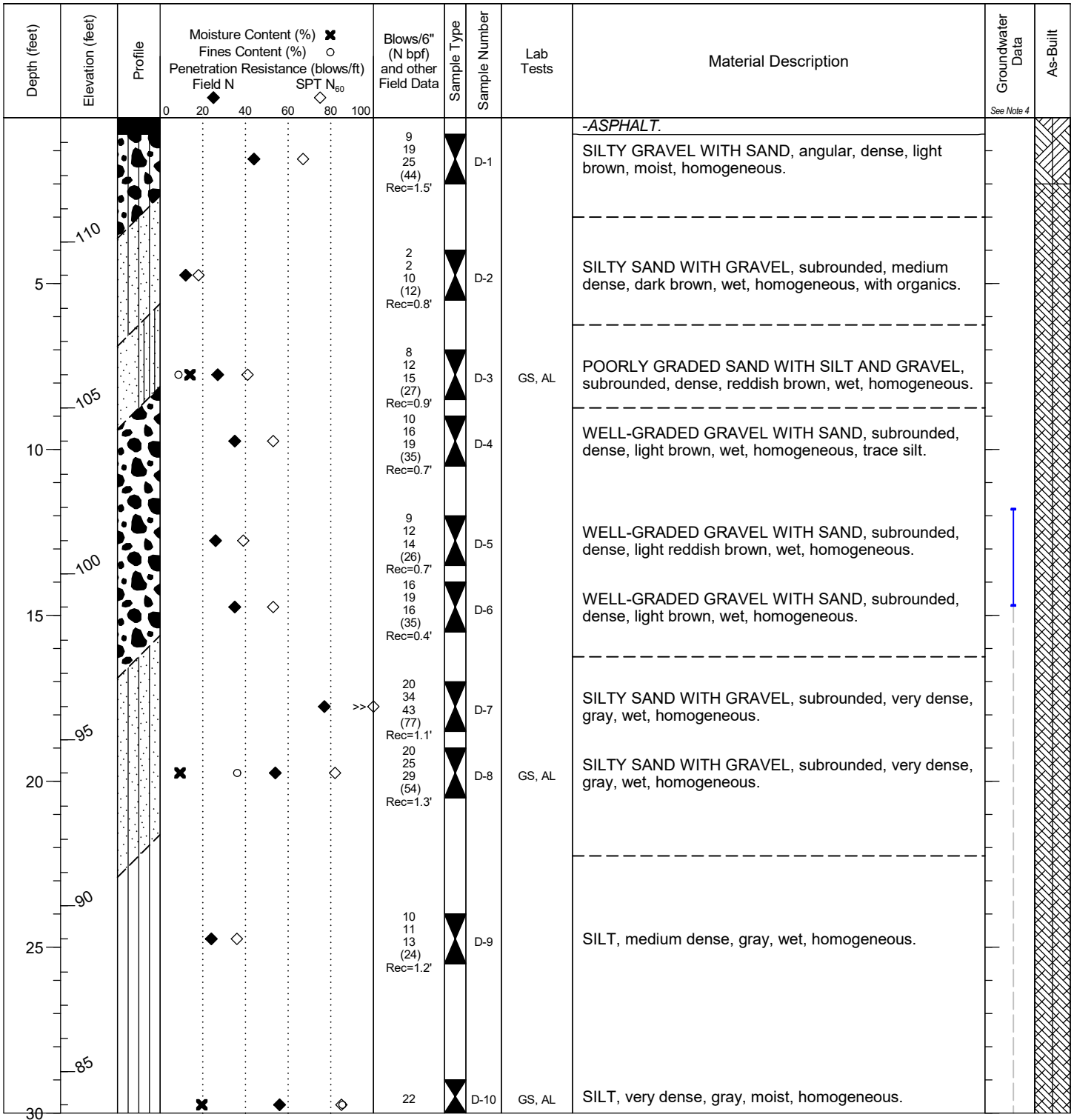
Test Date: May 19, 2019
Hole Depth / Casing Depth: 60.5 feet / 59.0 feet
Water Depth Before Bailing: 9.2 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	18.8
1	17.6
2	16.8
3	16.1
4	15.5
5	15.1
10	12.6
15	11.7

WSDOT

LOG OF BORING NE-51vw-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 292,846.8 feet *Latitude:* 47.794520 deg. *Driller/Inspector:* Walker, Robert (#2864) / Shepherd, Robert #2710
Easting: 1,301,872.2 feet *Longitude:* -122.210760 deg. *Start Card:* RE-17456 *Well Tag:* BLN-031 *Instrument:* VWP
Elevation: 113.7 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ
Started: May 18, 2019 *Completed:* May 19, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%
Remark: Walls 26.54R, 26.55R



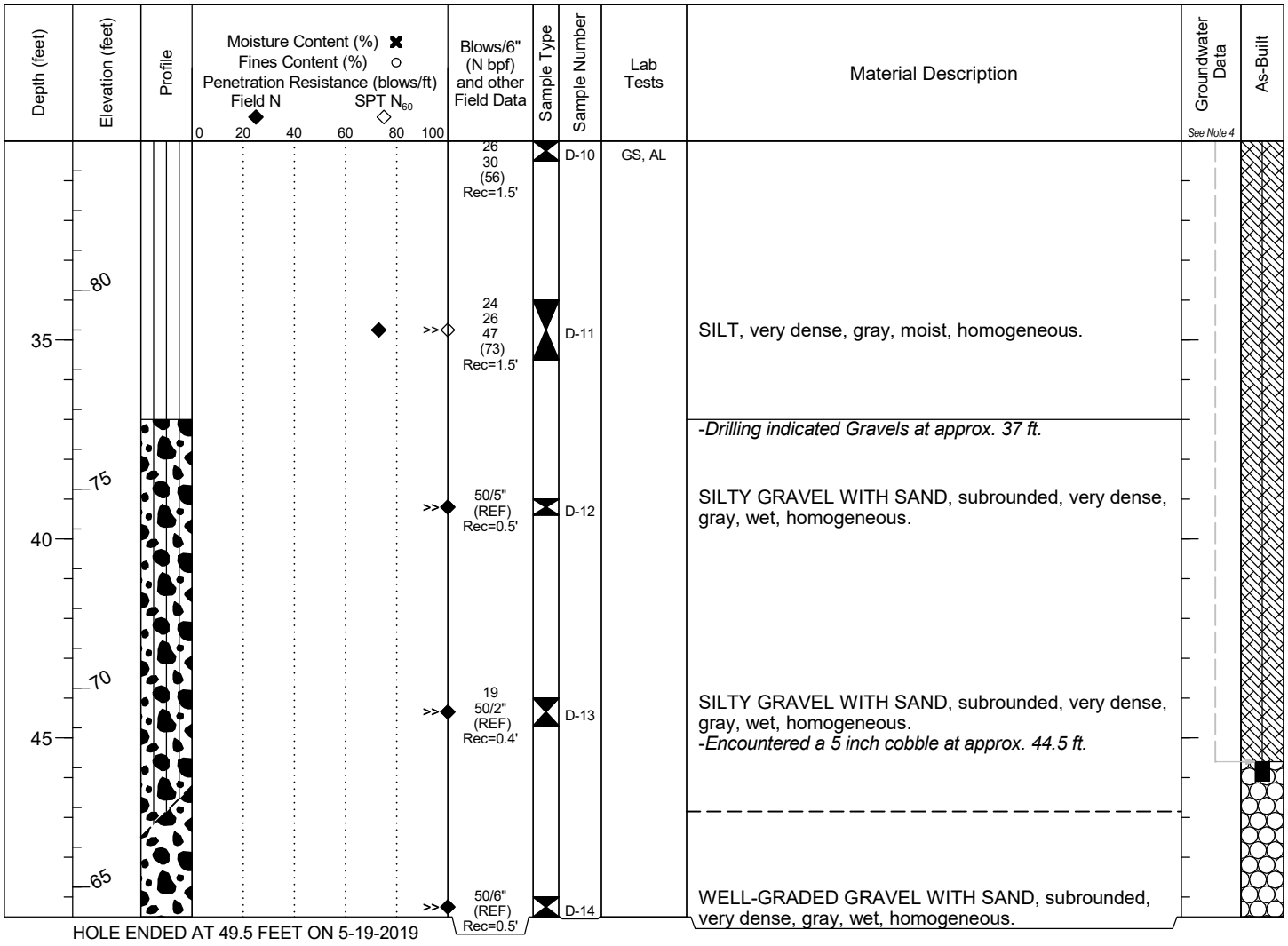
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/13/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 18, 2019
Hole Depth / Casing Depth: 49.5 feet / 49.0 feet
Water Depth Before Bailing: 8.3 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	31.0
1	25.6
2	22.2
3	19.6
4	17.7
5	16.3
6	15.3
7	14.6
8	14.0
9	13.7
10	13.3
15	12.7
20	12.2
25	11.8

WSDOT

LOG OF BORING NE-53-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 292,418.5 feet *Latitude:* 47.793332 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Fetterly, Jamie #2507

Easting: 1,301,580.6 feet *Longitude:* -122.211915 deg. *Start Card:* SE-69579 AE-54198

Elevation: 121.8 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: September 27, 2019 *Completed:* September 27, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Pedestrian Bridge

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
								-ASPHALT		
	120			10 13 13 (26) Rec=1.2'		D-1		POORLY GRADED SAND, dense, olive, moist, homogeneous.		
5				7 6 7 (13) Rec=1.3'		D-2		POORLY GRADED SAND, medium dense, olive, moist, homogeneous.		
	115			3 3 4 (7) Rec=1.0'		D-3	GS, AL	SILT WITH SAND, loose, olive, wet, homogeneous, FeO staining present.	09-27-19 ⊓	
10				5 5 6 (11) Rec=1.0'		D-4		SILT WITH SAND, medium dense, olive, wet, homogeneous.		
	110			7 10 10 (20) Rec=1.2'		D-5	GS, AL	POORLY GRADED SAND, medium dense, olive, wet, homogeneous.		
15				8 11 14 (25) Rec=1.2'		D-6		SILTY SAND, dense, gray, wet, homogeneous.		
	105			8 12 13 (25) Rec=1.2'		D-7	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, gray, wet, homogeneous.		
20				12 15 14 (29) Rec=0.9'		D-8		SILTY SAND WITH GRAVEL, subrounded, dense, gray, wet, homogeneous.		
	100		>>	24 40 43 (83) Rec=0.2'		D-9		SILTY SAND, very dense, gray, wet, homogeneous. *-Most of the sample washed out upon retrieval.*		
25				19 24 24 (48) Rec=0.4'		D-10		GRAVELLY SILT WITH SAND, subrounded, dense, gray, wet, homogeneous.		
	95			35 43 50 (93) Rec=1.5'		D-11	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.		
30			>>	42 50/5"		D-12		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.		

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
		(REF) Rec=0.9'						
35	90	32 45 50/5" (REF) Rec=1.4'		D-13	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, very dense, gray, wet, homogeneous.		
40	85	4 3 3 (6) Rec=0.4'		D-14		WELL-GRADED GRAVEL WITH SAND, subrounded, loose, gray, wet, homogeneous.		
45	80	9 7 8 (15) Rec=0.7'		D-15		WELL-GRADED GRAVEL WITH SAND, subrounded, medium dense, gray, wet, homogeneous.		
50	75	8 7 8 (15) Rec=0.5'		D-16		WELL-GRADED GRAVEL WITH SAND, subrounded, medium dense, gray, wet, homogeneous.		
	70					*-Silt contact at approx. 51 ft.*		
55	65	15 31 50/5" (REF) Rec=1.4'		D-17		SILTY CLAY, very hard, gray, moist, homogeneous.		
60	60	16 25 36 (61) Rec=1.5'		D-18		SILTY CLAY, very hard, gray, moist, homogeneous.		
65		11 23 35 (58) Rec=1.5'		D-19	GS, AL	SILTY CLAY, hard, gray, moist, homogeneous.		

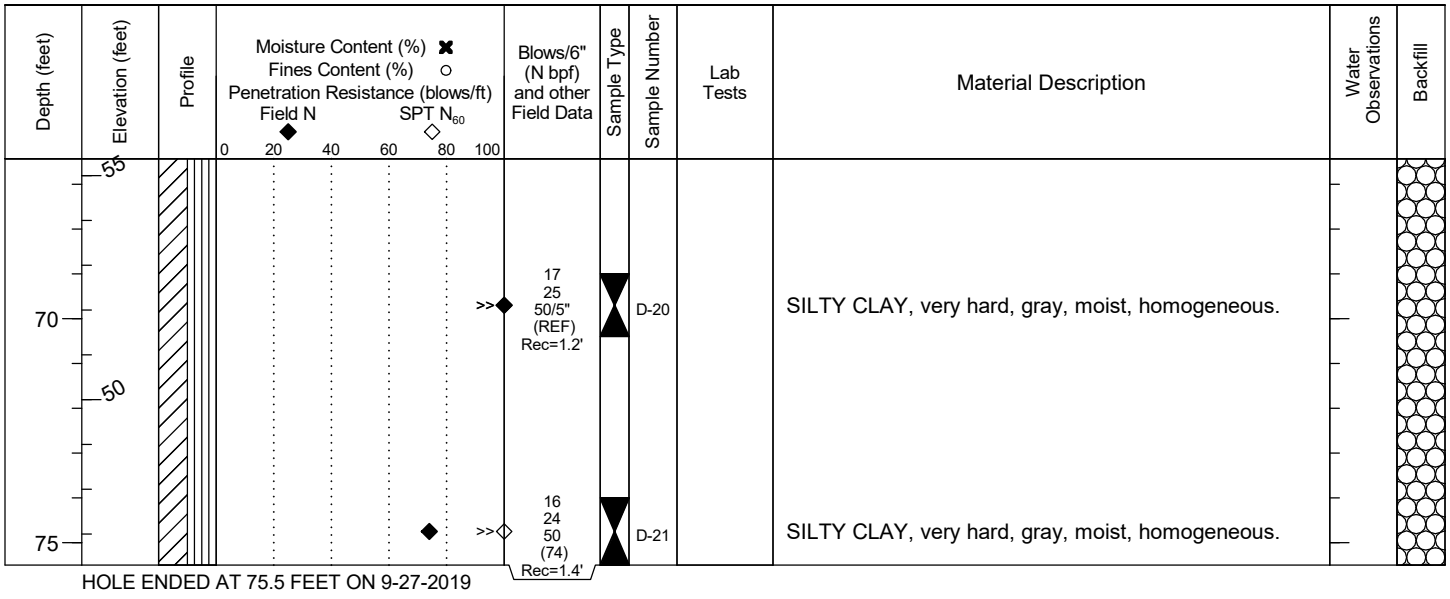
Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 75.5 FEET ON 9-27-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: September 27, 2019
Hole Depth / Casing Depth: 75.5 feet / 74.0 feet
Water Depth Before Bailing: 3.8 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	11.7
1	8.7
2	8.0
3	8.0
4	8.0
5	8.0
10	8.0

WSDOT

LOG OF BORING NE-54-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 293,040.6 feet *Latitude:* 47.795017 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,301,173.1 feet *Longitude:* -122.213618 deg. *Start Card:* SE-69579 AE-54198 *Well Tag:* N/A *Instrument:*

Elevation: 124.0 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: June 7, 2019 *Completed:* June 8, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

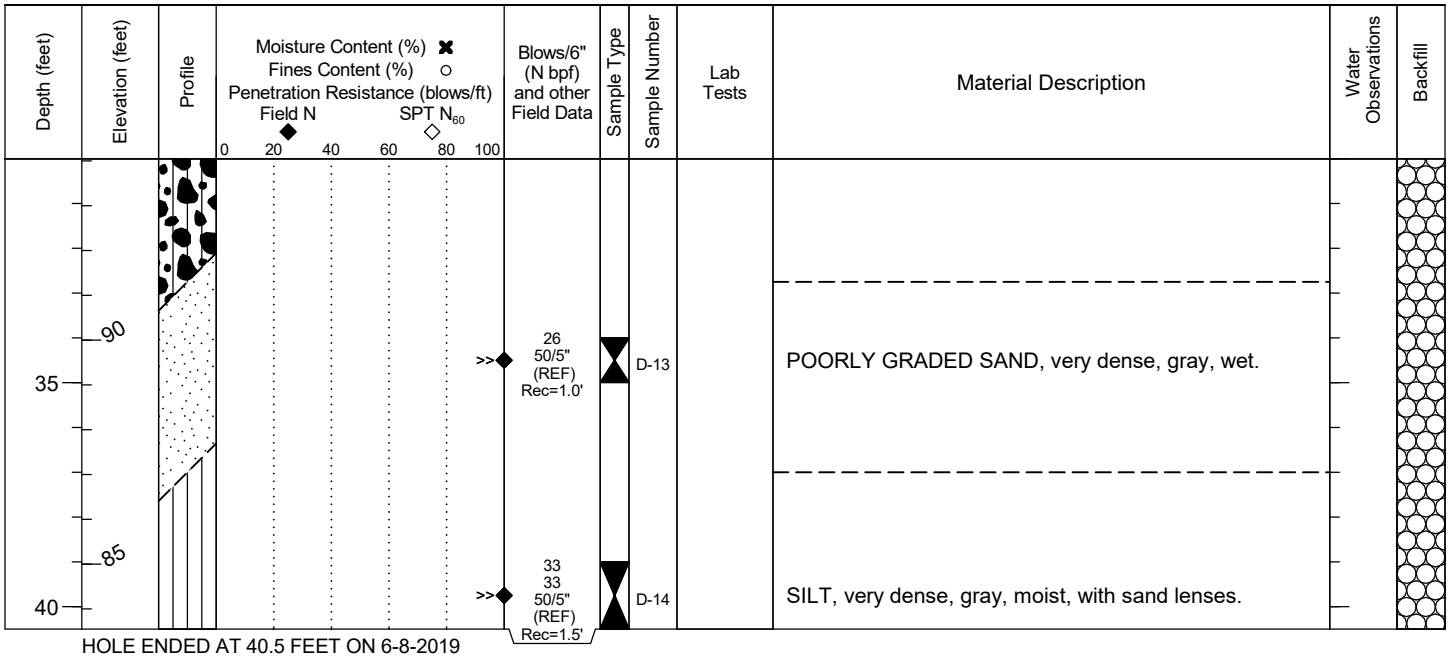
Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
						-Quarry Spalls/large crushed rock		
		4 7 8 (15) Rec=0.8'		D-1		POORLY GRADED SAND WITH SILT, medium dense, olive gray, wet, homogeneous.	⊻ *Bail test: water at 1 ft*	
	120	4 7 9 (16) Rec=1.3'		D-2	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, olive gray, wet, homogeneous, FeO staining present.		
5		4 5 7 (12) Rec=1.3'		D-3	GS, AL	SILTY SAND, medium dense, olive, wet, homogeneous, Feo staining present.		
	115	4 6 7 (13) Rec=1.1'		D-4		SILTY SAND, medium dense, olive, wet, homogeneous, FeO staining present.		
10		7 11 13 (24) Rec=1.4'		D-5		SILTY SAND, medium dense, olive, wet, homogeneous.		
	110	4 10 12 (22) Rec=1.3'		D-6		SILTY SAND, medium dense, olive, wet, homogeneous.		
15		13 17 22 (39) Rec=1.5'		D-7	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, gray, wet, homogeneous.		
	105	13 16 14 (30) Rec=1.2'		D-8		SILTY SAND WITH GRAVEL, subrounded, dense, gray, wet, homogeneous.		
20		13 17 20 (37) Rec=1.3'		D-9		SILTY SAND, dense, gray, wet, homogeneous.		
	100	16 22 21 (43) Rec=1.3'		D-10		SILTY SAND WITH GRAVEL, subrounded, dense, gray, wet, homogeneous.		
25		17 30 >> 50/5" (REF) Rec=1.4'		D-11	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.		
	95	>> 50/5" (REF) Rec=0.4'		D-12		SILTY GRAVEL WITH SAND, subrounded, very dense, gray, wet, homogeneous.		
30								

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/2/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 40.5 FEET ON 6-8-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 8, 2019
Hole Depth / Casing Depth: 40.5 feet / 39.0 feet
Water Depth Before Bailing: 1.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	39.1
1	27.7
2	24.5
3	21.9
4	19.5
5	17.5
10	9.8
15	5.1
20	2.7
25	1.0

WSDOT

LOG OF BORING NE-55p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 293,094.8 feet *Latitude:* 47.795140 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Harvey, Thomas #2599

Easting: 1,300,659.3 feet *Longitude:* -122.215712 deg. *Start Card:* RE17183 *Well Tag:* BLA-722 *Instrument:* 1" PVC

Elevation: 155.2 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-2) *Rod Type:* AWJ

Started: June 6, 2019 *Completed:* June 6, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 87.7%

Remark: Detention Pond at I-405/SR-527 Interchange

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	155	5 6 8 11 (14) Rec=2.0'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, brown, moist, stratified.
5	150	4 5 5 (10) Rec=1.0'		D-2		SANDY SILT, loose, brown, moist, homogeneous.
		11 9 11 (20) Rec=1.5'		D-3	GS, AL, HT, SG	SANDY SILT, medium dense, brown, moist, homogeneous, stratified.
10	145	5 4 5 (9) Rec=1.5'		D-4	GS, AL, HT, SG	SILT, loose, olive brown, wet, homogeneous.
		3 3 5 (8) Rec=1.5'		D-5		SILT, loose, brown, wet, homogeneous.
15	140	5 7 7 (14) Rec=1.5'		D-6	GS, AL	SILTY SAND, medium dense, brown, wet, homogeneous.
		5 6 5 (11) Rec=1.5'		D-7	GS, AL	SILTY SAND, medium dense, olive brown, wet, homogeneous.
20	135	3 4 3 (7) Rec=1.5'		D-8	GS, AL	SILT, loose, olive brown, wet, homogeneous.
		8 12 14 (26) Rec=1.5'		D-9	GS, AL	POORLY GRADED SAND WITH SILT, dense, dark brown, wet, homogeneous.
25		8		D-10	GS, AL	SILTY SAND, medium dense, dark brown, wet, stratified.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data *See Note 4*

As-Built

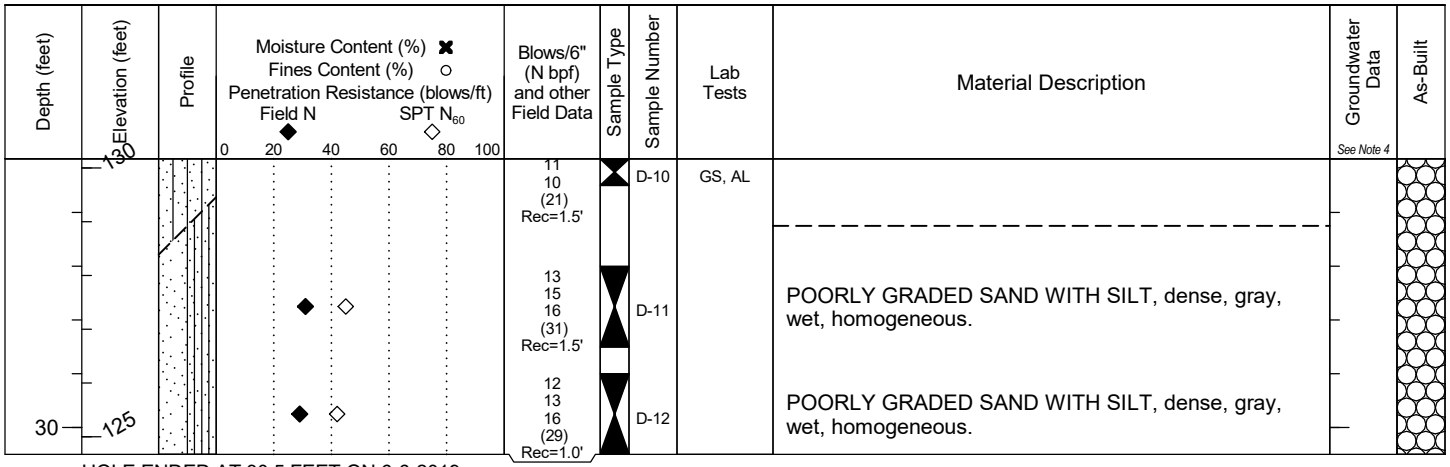
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/2/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 30.5 FEET ON 6-6-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 6/18/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 6, 2019
Hole Depth / Casing Depth: 30.5 feet / 24.0 feet
Water Depth Before Bailing: 12.5 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	12.5

WSDOT

LOG OF BORING NE-56p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 293,417.0 feet *Latitude:* 47.796054 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779
Easting: 1,301,265.2 feet *Longitude:* -122.213271 deg. *Start Card:* RE-17457 *Well Tag:* BLN-034 *Instrument:* 1" PVC
Elevation: 140.5 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ
Started: June 6, 2019 *Completed:* June 7, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%
Remark: Queensborough Creek at SR-527 (993084)

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
	140	2 6 9 (15) Rec=0.9'		D-1		*-Scattered gravels from 0 ft. to 19 ft.* WELL-GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, olive gray, dry, homogeneous.
5	135	13 16 18 (34) Rec=1.3'		D-2		WELL-GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, olive gray, moist, homogeneous.
		10 17 23 (40) Rec=1.3'		D-3		WELL-GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, olive gray, moist, homogeneous.
10	130	12 11 16 (27) Rec=1.0'		D-4	GS, AL	WELL-GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, gray, moist, homogeneous, trace gravel.
		8 9 9 (18) Rec=1.0'		D-5		WELL-GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, gray, wet, homogeneous.
15	125	6 7 10 (17) Rec=0.7'		D-6		SILTY SAND WITH GRAVEL, subrounded, medium dense, gray, wet, homogeneous.
		3 4 3 (7) Rec=0.3'		D-7		SILTY SAND, loose, gray, wet, homogeneous, trace gravels, used oversize sampler to retain a sample 2in Id 2.5in Od.
20	120	1 4 4 (8) Rec=0.9'		D-8		POORLY GRADED SAND, loose, gray, wet, homogeneous, with organics/peat/wood debris.
		7 13 21 (34) Rec=0.5'		D-9		SILTY GRAVEL WITH SAND, rounded, dense, gray, wet, homogeneous.
25	115	13 18 23 (41) Rec=0.4'		D-10		SILTY GRAVEL WITH SAND, subrounded, dense, gray, wet, homogeneous.
		16 24 24 (48) Rec=1.0'		D-11	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, gray, wet, homogeneous.
30		19		D-12		SILTY GRAVEL WITH SAND, rounded, dense, gray, wet, homogeneous.

Profile: Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)

Groundwater Data (See Note 4): Bail test: water at 23.5 ft

As-Built: 2.0"

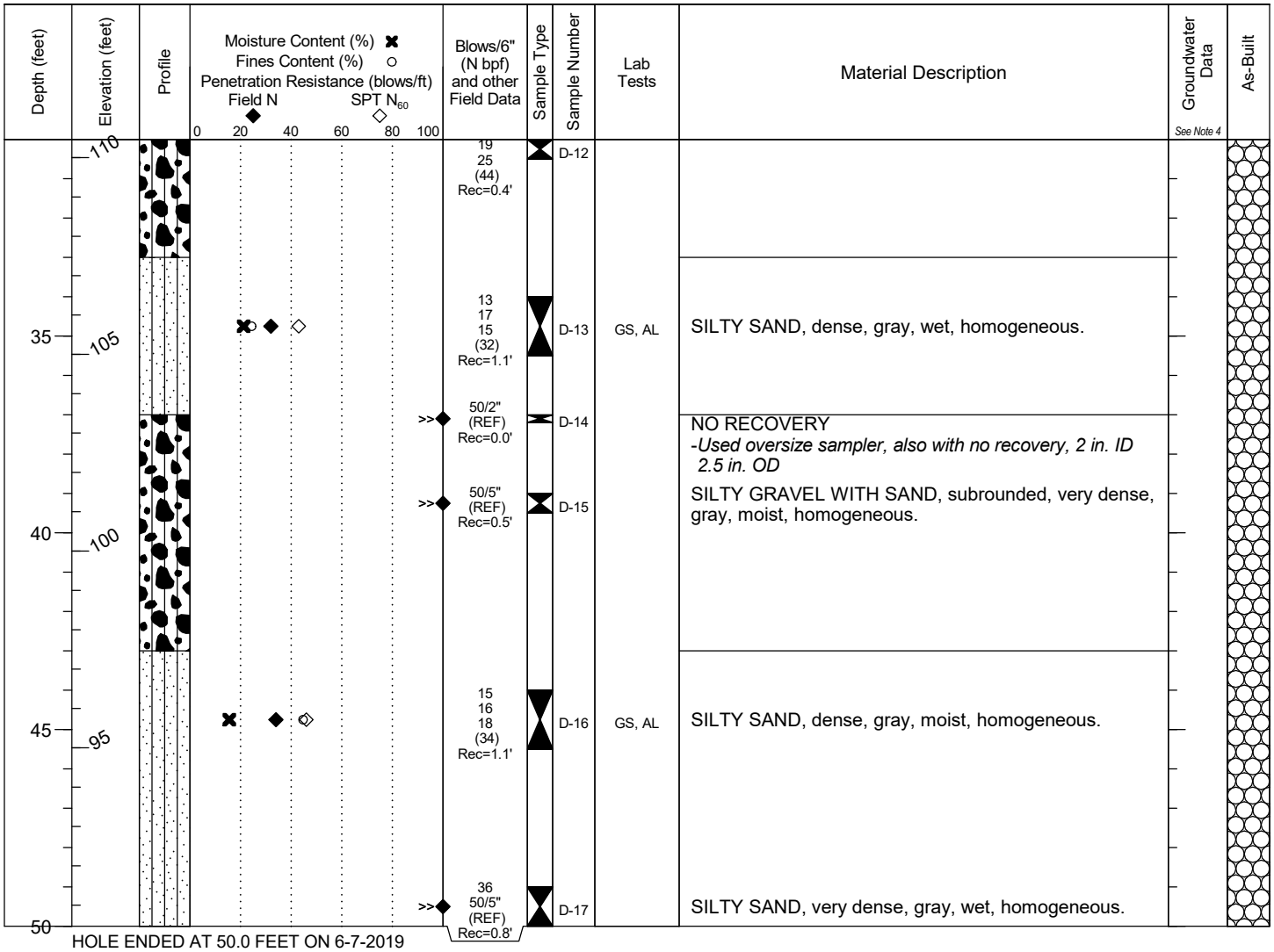
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1 FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 6/18/2019 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: June 7, 2019
Hole Depth / Casing Depth: 50.0 feet / 49.0 feet
Water Depth Before Bailing: 18.3 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	46.4
1	44.2
2	42.9
3	41.4
4	40.2
5	38.9
10	34.2
15	30.2
20	28.0
25	26.0
30	24.5
35	23.5

WSDOT

LOG OF BORING NE-57-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 293,586.5 feet *Latitude:* 47.796462 deg.

Driller/Inspector: Wilson, Jamie (#2941) / Fetterly, Jamie #2507

Easting: 1,300,119.0 feet *Longitude:* -122.217946 deg.

Start Card: SE-69638 AE-54272

Elevation: 172.2 feet *Collector:* Region Survey

Drilling Method: Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88

Equipment: CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: September 26, 2019 *Completed:* September 26, 2019

Hammer Type: AutoHammer *Historic Efficiency:* 91.1%

Remark: Queensborough Creek

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
								-ASPHALT		
	170			10 12 12 (24) Rec=1.2'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, olive, moist, homogeneous.		
5				9 12 15 (27) Rec=1.3'		D-2	GS, AL	SILTY SAND, dense, olive, moist, homogeneous.		
	165			7 11 9 (20) Rec=1.2'		D-3	GS, AL	SILTY SAND WITH GRAVEL, subrounded, medium dense, gray, moist, homogeneous.		
10				8 19 22 (41) Rec=1.2'		D-4		SILTY SAND WITH GRAVEL, rounded, dense, olive, moist, homogeneous.		
	160			2 2 3 (5) Rec=1.0'		D-5	PH, RES	SILTY SAND WITH GRAVEL, subrounded, loose, dark gray, wet, stratified with organic soil, sample split into 2 bags A & B.		
15				2 2 3 (5) Rec=0.8'		D-6		ORGANIC SOIL WITH SAND, medium stiff, dark brown, wet, homogeneous.		
	155			12 20 23 (43) Rec=0.4'		D-7		POORLY GRADED SAND WITH SILT AND GRAVEL, rounded, dense, gray, wet, homogeneous.		
20				15 15 14 (29) Rec=0.8'		D-8	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, gray, wet, homogeneous.		
	150			9 12 14 (26) Rec=1.0'		D-9	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, gray, wet, homogeneous.		
25				17		D-10		WELL-GRADED GRAVEL WITH SAND, subangular, dense, gray, wet, homogeneous.		

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

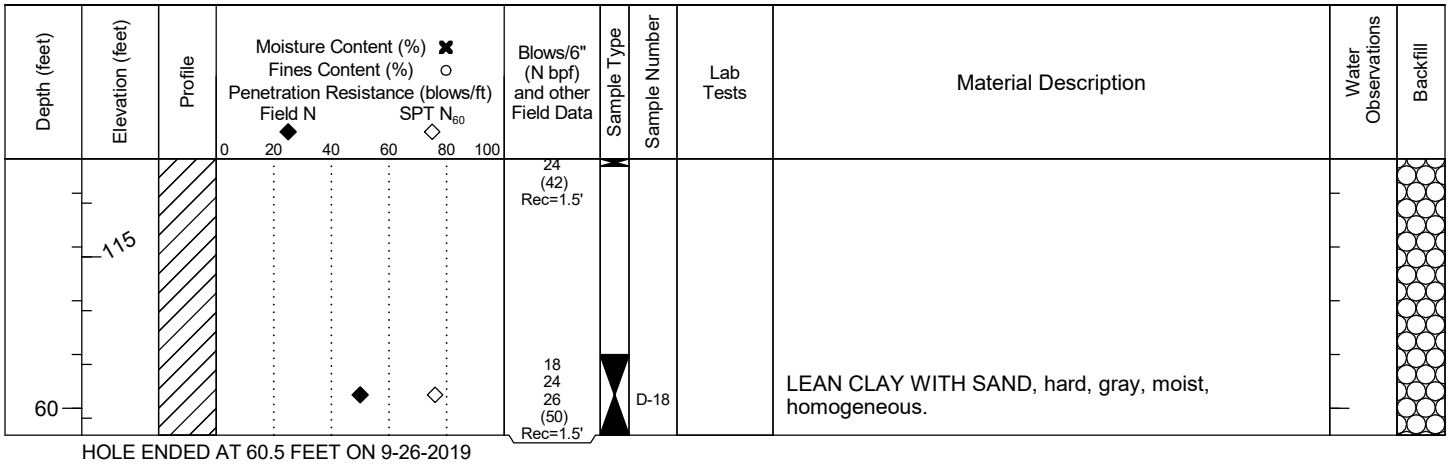
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
				21 17 (38) Rec=0.7'		D-10				
	145		✖ ◆ ◇ ○	8 11 7 (18) Rec=1.0'		D-11	GS, AL	SILTY SAND WITH GRAVEL, subrounded, medium dense, gray, wet, homogeneous.		
30			◆ ◇	10 15 40 (55) Rec=0.9'		D-12		SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.		
	140									
35			◆ ◇	5 6 7 (13) Rec=0.8'		D-13		SILTY SAND WITH GRAVEL, subrounded, medium dense, gray, wet, homogeneous.		
	135									
40			>> ◆	16 25 50/5" (REF) Rec=1.4'		D-14		GRAVELLY SILT WITH SAND, subrounded, very dense, gray, moist, homogeneous.		
	130									
45			◆ ◇	13 20 30 (50) Rec=1.5'		D-15		LEAN CLAY WITH SAND AND GRAVEL, subangular, hard, gray, moist, homogeneous.	▽ *Bail test: water at 45.2 ft*	
	125									
50			✖ ◆ ◇ ○	10 20 27 (47) Rec=1.5'		D-16	GS, AL	LEAN CLAY WITH SAND, hard, gray, moist, homogeneous.		
	120									
55			◆ ◇	9 18		D-17		LEAN CLAY WITH SAND, hard, gray, moist, homogeneous.		

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 60.5 FEET ON 9-26-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling and/or stabilized water measured during a bail test. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

BAIL-RECHARGE TEST RESULTS:

Test Date: September 26, 2019
Hole Depth / Casing Depth: 60.5 feet / 59.0 feet
Water Depth Before Bailing: 7.8 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	55.1
1	53.7
2	52.7
3	51.7
4	51.0
5	50.2
10	45.2

WSDOT

LOG OF BORING NE-64p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 287,869.5 feet *Latitude:* 47.781083 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,306,092.0 feet *Longitude:* -122.193237 deg. *Start Card:* RE-17411 *Well Tag:* BLA-739 *Instrument:* 1" PVC

Elevation: 124.6 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: May 14, 2019 *Completed:* May 15, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
		3 2 5 (7) Rec=0.8'		D-1		WELL-GRADED GRAVEL WITH SAND, subrounded, loose, very dark gray, dry, homogeneous, with organics/roots/grass.
5	120	9 15 22 (37) Rec=0.8'		D-2	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, dark gray, moist, homogeneous.
		8 13 12 (25) Rec=0.6'		D-3		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, olive gray, moist, homogeneous.
10	115	10 11 12 (23) Rec=0.8'		D-4		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, olive gray, wet, homogeneous.
		7 4 4 (8) Rec=0.7'		D-5		POORLY GRADED SAND WITH SILT AND GRAVEL, subangular, loose, olive, wet, homogeneous.
15	110	3 2 2 (4) Rec=0.6'		D-6		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, very loose, olive brown, wet, homogeneous.
		3 3 3 (6) Rec=0.7'		D-7		SILTY SAND WITH GRAVEL, subrounded, loose, olive brown, wet, homogeneous.
20	105	3 1 3 (4) Rec=0.5'		D-8		SILTY SAND, very loose, dark olive gray, wet, homogeneous.
		15 30 45 (75) Rec=0.7'		D-9		*-Drilling behavior indicates scattered gravel from 22.0 ft. to 27.0 ft.* SANDY SILT, very dense, olive, moist, homogeneous.
25	100	20 33 46 (79) Rec=1.5'		D-10	GS, AL	SILTY CLAYEY SAND WITH GRAVEL, subangular, very dense, olive, moist, homogeneous, FeO staining present.
		16 16 25 (41) Rec=1.5'		D-11		SANDY SILT, dense, dark gray, moist, homogeneous.
30	95	17		D-12	GS, AL	SANDY SILT, very dense, dark gray, moist, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data: See Note 4

Bail test: water at 28.1 ft

As-Built: 2.0"

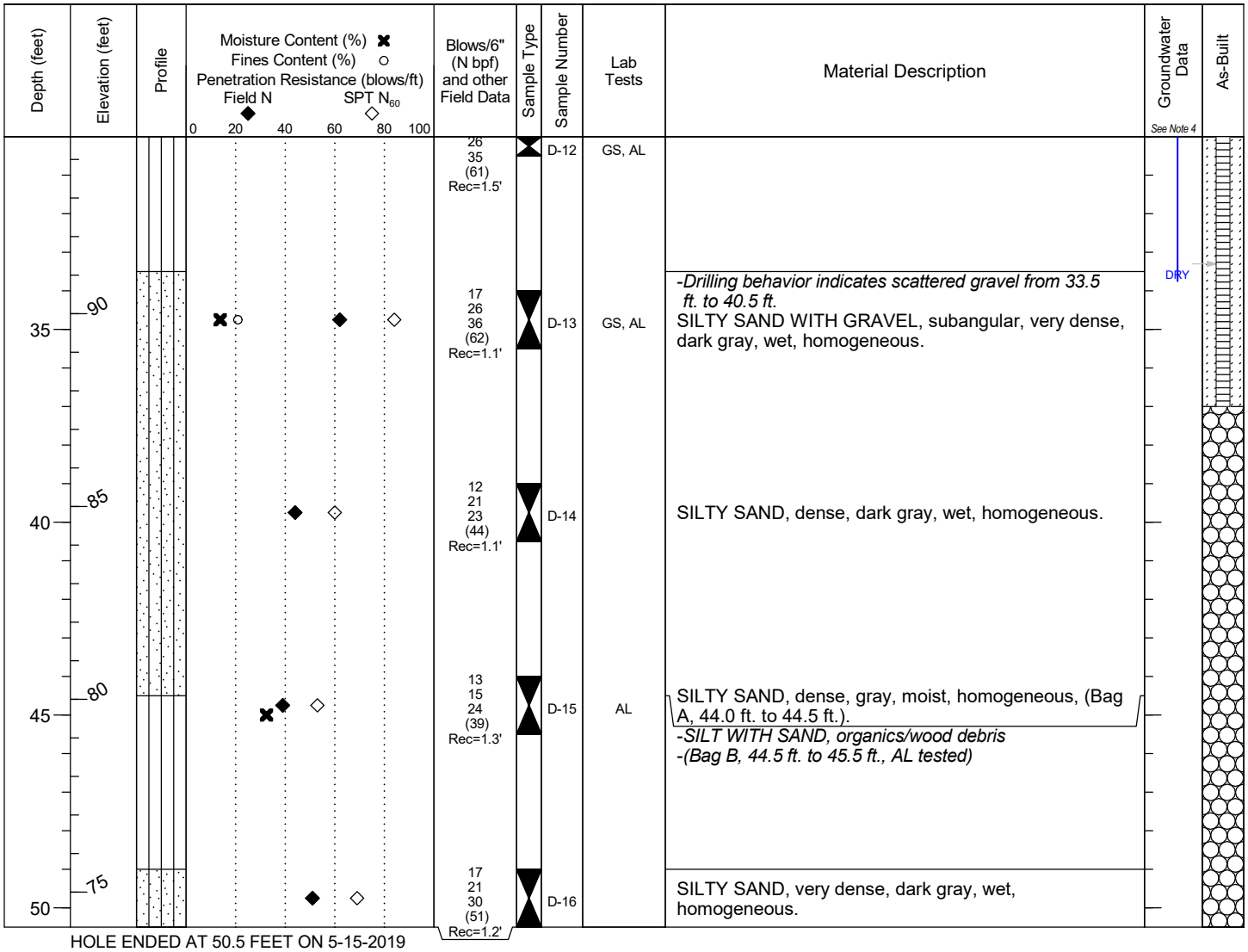
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 50.5 FEET ON 5-15-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 9/14/2020. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 15, 2019
Hole Depth / Casing Depth: 50.5 feet / 49.0 feet
Water Depth Before Bailing: 9.9 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	31.6
1	31.0
2	30.3
3	30.0
4	29.8
5	29.6
10	28.8
15	28.2
20	28.1
25	28.1
30	28.1

WSDOT

LOG OF BORING NE-65p-19

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 288,977.0 feet *Latitude:* 47.784102 deg. *Driller/Inspector:* Wilson, Jamie (#2941) / Haller, Robert #2779

Easting: 1,305,738.3 feet *Longitude:* -122.194755 deg. *Start Card:* RE-17411 *Well Tag:* BLA-740 *Instrument:* 1" PVC

Elevation: 147.4 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-3) *Rod Type:* AWJ

Started: May 16, 2019 *Completed:* May 20, 2019 *Hammer Type:* AutoHammer *Historic Efficiency:* 81.29%

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	145	3 3 5 (8) Rec=0.7'		D-1		SILTY GRAVEL WITH SAND, subrounded, loose, grayish brown, dry, homogeneous.
5	140	6 8 5 (13) Rec=0.8'		D-2		SILTY SAND, medium dense, dark grayish brown, moist, homogeneous.
		2 2 4 (6) Rec=0.6'		D-3		SANDY SILT WITH GRAVEL, subrounded, loose, olive brown, moist, homogeneous.
10	135	5 3 6 (9) Rec=0.7'		D-4		SILTY SAND WITH GRAVEL, subrounded, loose, olive brown, wet, homogeneous.
		15 23 32 (55) Rec=0.8'		D-5		SILTY GRAVEL WITH SAND, subangular, very dense, olive gray, moist, homogeneous.
		21 18 24 (42) Rec=1.0'		D-6		*-Drilling behavior indicates scattered gravel from 14.0 ft. to 22.0 ft.* POORLY GRADED SAND WITH SILT AND GRAVEL, subangular, dense, olive, moist, homogeneous.
15	130	18 25 22 (47) Rec=1.0'		D-7	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subangular, dense, olive, wet, homogeneous.
20		11 24 50/5" (REF) Rec=1.2'	>>	D-8		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, very dense, olive gray, moist, homogeneous.
	125	38 50/3" (REF) Rec=0.8'	>>	D-9	GS, AL	SILTY SAND WITH GRAVEL, subangular, very dense, olive gray, wet, homogeneous.
25		40 50/5" (REF) Rec=0.6'	>>	D-10		SILTY SAND WITH GRAVEL, subangular, very dense, olive gray, moist, homogeneous.
	120	27 50/5" (REF) Rec=1.0'	>>	D-11		*-Drilling behavior indicates scattered gravel from 27.0 ft. to 29.0 ft.* SILTY SAND WITH GRAVEL, subangular, very dense, olive, moist, homogeneous.
30		33 50/4"	>>	D-12		WELL-GRADED GRAVEL WITH SAND, subangular, very dense, gray, wet, homogeneous.

Profile: Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)

Groundwater Data (See Note 4): Bail Test: Dry water at 22 ft

As-Built: 2.0"

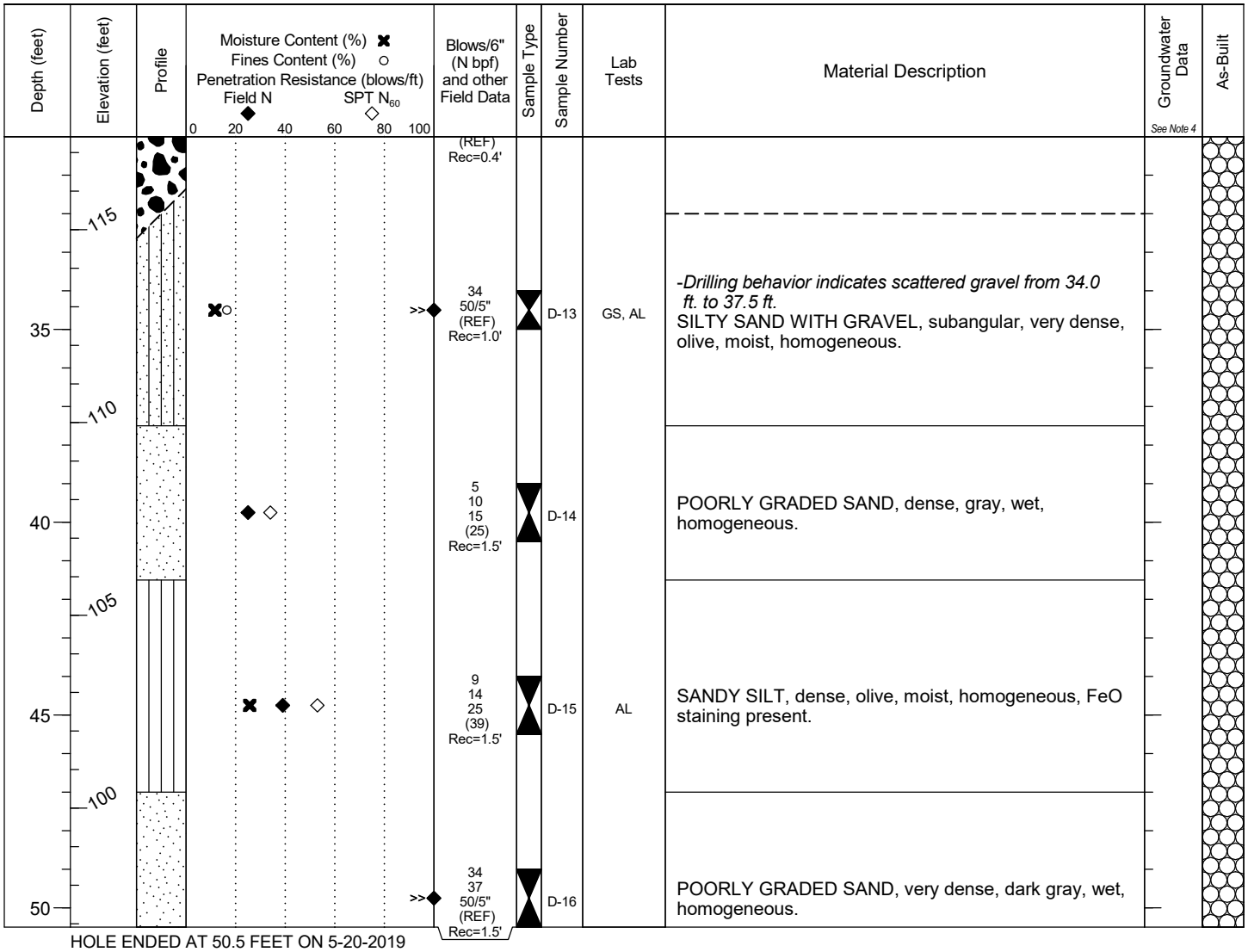
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1 FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 50.5 FEET ON 5-20-2019

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 5/29/2019 and 9/14/2020. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: May 20, 2019
Hole Depth / Casing Depth: 50.5 feet / 49.0 feet
Water Depth Before Bailing: 17.3 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	23.3
1	22.6
2	22.4
3	22.3
4	22.2
5	22.2
10	22.0
15	22.0
20	22.0

WSDOT

LOG OF BORING NE-67p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 273,801.4 feet *Latitude:* 47.742600 deg. *Driller/Inspector:* Shepherd, Robert (#2710) / Fetterly, Jamie #2507

Easting: 1,307,710.6 feet *Longitude:* -122.185649 deg. *Start Card:* RE19140 *Well Tag:* BMB-777 *Instrument:* 1" PVC

Elevation: 291.4 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: August 21, 2020 *Completed:* August 21, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Noise Wall

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	290	3 16 26 (42) Rec=0.8'		D-1		SILTY SAND WITH GRAVEL, angular, dense, brown, dry, homogeneous.
5	285	29 50/6" (REF) Rec=0.9'		D-2	GS, AL	SILTY CLAYEY SAND WITH GRAVEL, subangular, very dense, olive, moist, homogeneous.
		13 16 22 (38) Rec=1.3'		D-3	GS, AL	SILTY SAND WITH GRAVEL, rounded, dense, olive, wet, homogeneous.
10	280	20 41 50 (REF) Rec=1.5'		D-4		SILTY CLAYEY SAND WITH GRAVEL, rounded, very dense, olive, moist, homogeneous.
						-Color changed to gray at approx. 12.0 ft.
15	275	50/5" (REF) Rec=0.5'		D-5	GS, AL	WELL-GRADED SAND WITH SILT AND GRAVEL, rounded, very dense, gray, moist, homogeneous.
20	270	30 50/2" (REF) Rec=0.5'		D-6		WELL-GRADED SAND WITH SILT AND GRAVEL, rounded, very dense, gray, moist, homogeneous.
25	265	50 5 (REF) Rec=0.4'		D-7	GS, AL	WELL-GRADED SAND WITH SILT AND GRAVEL, rounded, very dense, gray, wet, homogeneous.
						-Sand contact at 27.0 ft.
30		20		D-8		SILTY SAND, dense, olive, wet, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4

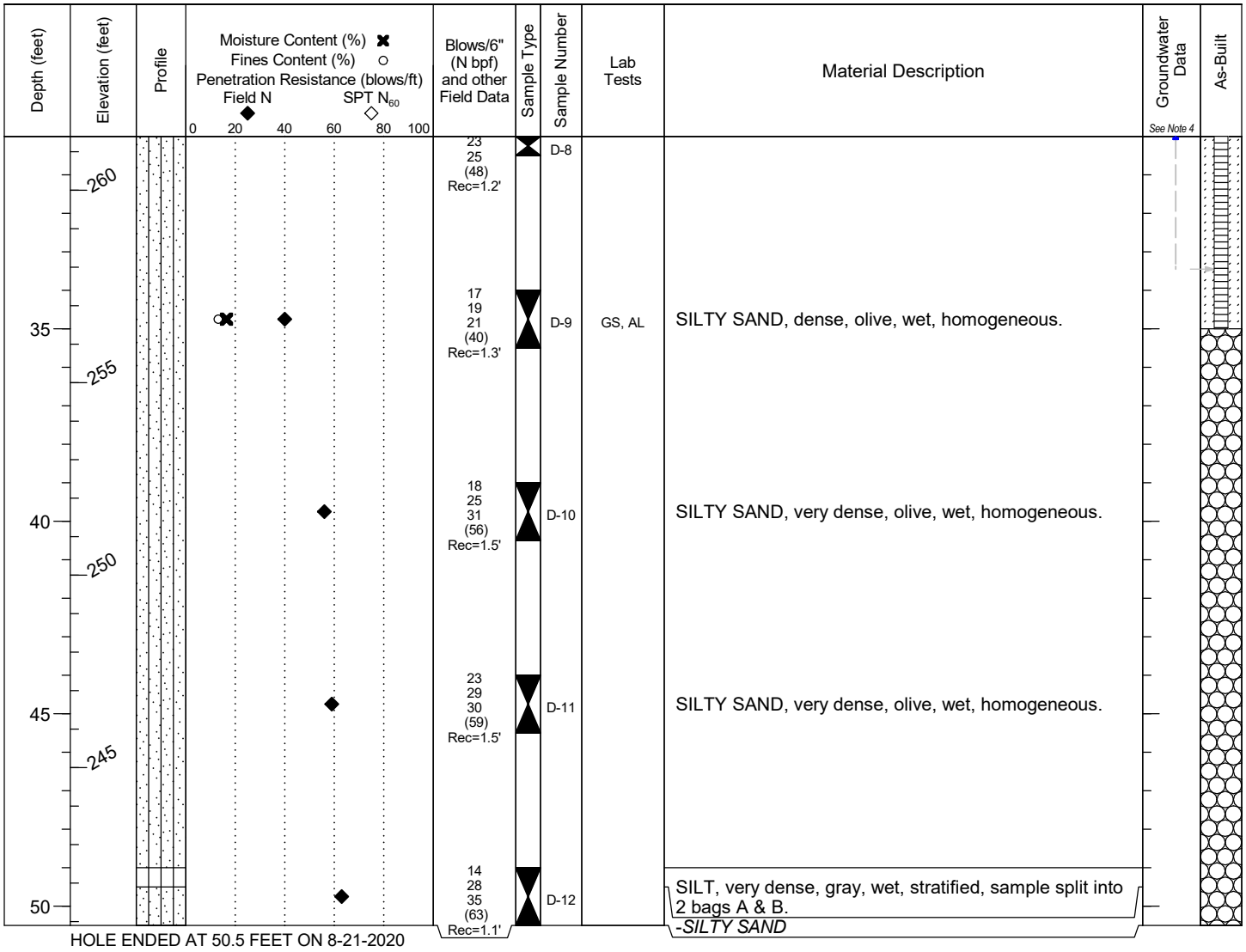
As-Built — 2.0"

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 9/9/2020 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-68-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 279,777.5 feet *Latitude:* 47.758981 deg. *Driller/Inspector:* Anderson, Corey (#3312T) / Shepherd, Robert #2710

Easting: 1,307,714.7 feet *Longitude:* -122.186059 deg. *Start Card:* SE-73322 AE-59793

Elevation: 54.8 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 6 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ

Started: August 13, 2020 *Completed:* August 17, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%

Remark: Wall L1

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
5	50	20 42 29 (71) Rec=0.9'		D-1		SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.		
10	45	13 15 18 (33) Rec=1.3'		D-2	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, light brown, moist, homogeneous.		
15	40	6 10 10 (20) Rec=1.4'		D-3	GS, AL	SILTY SAND, medium dense, light brown, wet, homogeneous.		
		18 40 50 (90) Rec=1.4'		D-4		SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.		
20	35	26 30 21 (51) Rec=1.2'		D-5		SILTY SAND WITH GRAVEL, subrounded, very dense, light brown, moist, homogeneous.		
		9 8 7 (15) Rec=1.0'		D-6	GS, AL	SILTY SAND WITH GRAVEL, subrounded, medium dense, light brownish gray, wet, homogeneous.		
25	30	6		D-7		SILTY SAND WITH GRAVEL, subrounded, medium dense, light brownish gray, wet, homogeneous.		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

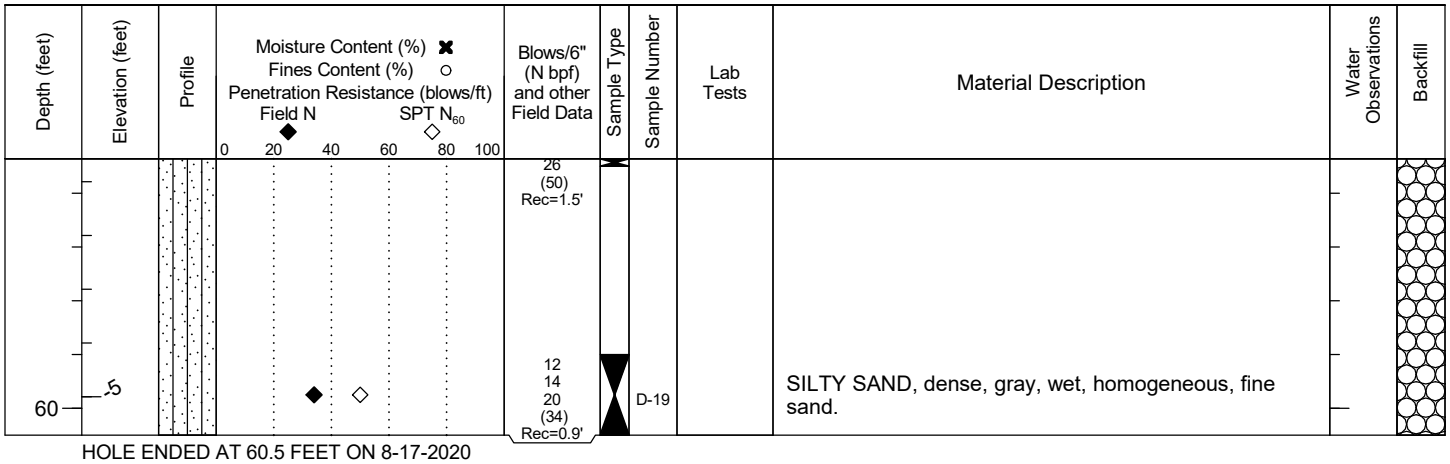
Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
		3 10 (13) Rec=1.0'		D-7				
		13 15 14 (29) Rec=1.2'		D-8	GS, AL	SILTY SAND WITH GRAVEL, subrounded, dense, light gray, moist, homogeneous, with wood and organics.		
30	25	15 13 19 (32) Rec=0.7'		D-9		SILTY SAND WITH GRAVEL, subrounded, dense, light brownish gray, moist, homogeneous.		
						-Drilling behavior indicates a change at approx. 31.0 ft.		
		1 3 5 (8) Rec=1.5'		D-10		SILTY CLAY, medium stiff, light brownish gray, moist, stratified.		
35	20	Rec=2.0'		PS-11	GS, AL, HT, SG, DN	SANDY SILTY CLAY, gray, moist.		
		0 0 2 (2) Rec=1.8'		D-12		LEAN CLAY, soft, gray, moist, homogeneous.		
40	15	Rec=1.8'		PS-13		LEAN CLAY, gray.		
		0 0 2 (2) Rec=1.5'		D-14	GS, AL	LEAN CLAY, soft, gray, moist, homogeneous.		
45	10	0 1 2 (3) Rec=1.8'		D-15		LEAN CLAY, soft, gray, moist, homogeneous.		
		Rec=2.0'		PS-16		LEAN CLAY, gray.		
50	5	0 1 1 (2) Rec=1.8'		D-17	GS, AL	LEAN CLAY, soft, gray, moist, homogeneous.		
						-Drilling behavior indicates a change at approx 52.5 ft.		
55	0	19 24		D-18	GS, AL	SILTY SAND, dense, gray, wet, homogeneous.		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 60.5 FEET ON 8-17-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

WSDOT

LOG OF BORING NE-69p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 286,112.0 feet *Latitude:* 47.776285 deg. *Driller/Inspector:* Anderson, Corey (#3312T) / Shepherd, Robert #2710

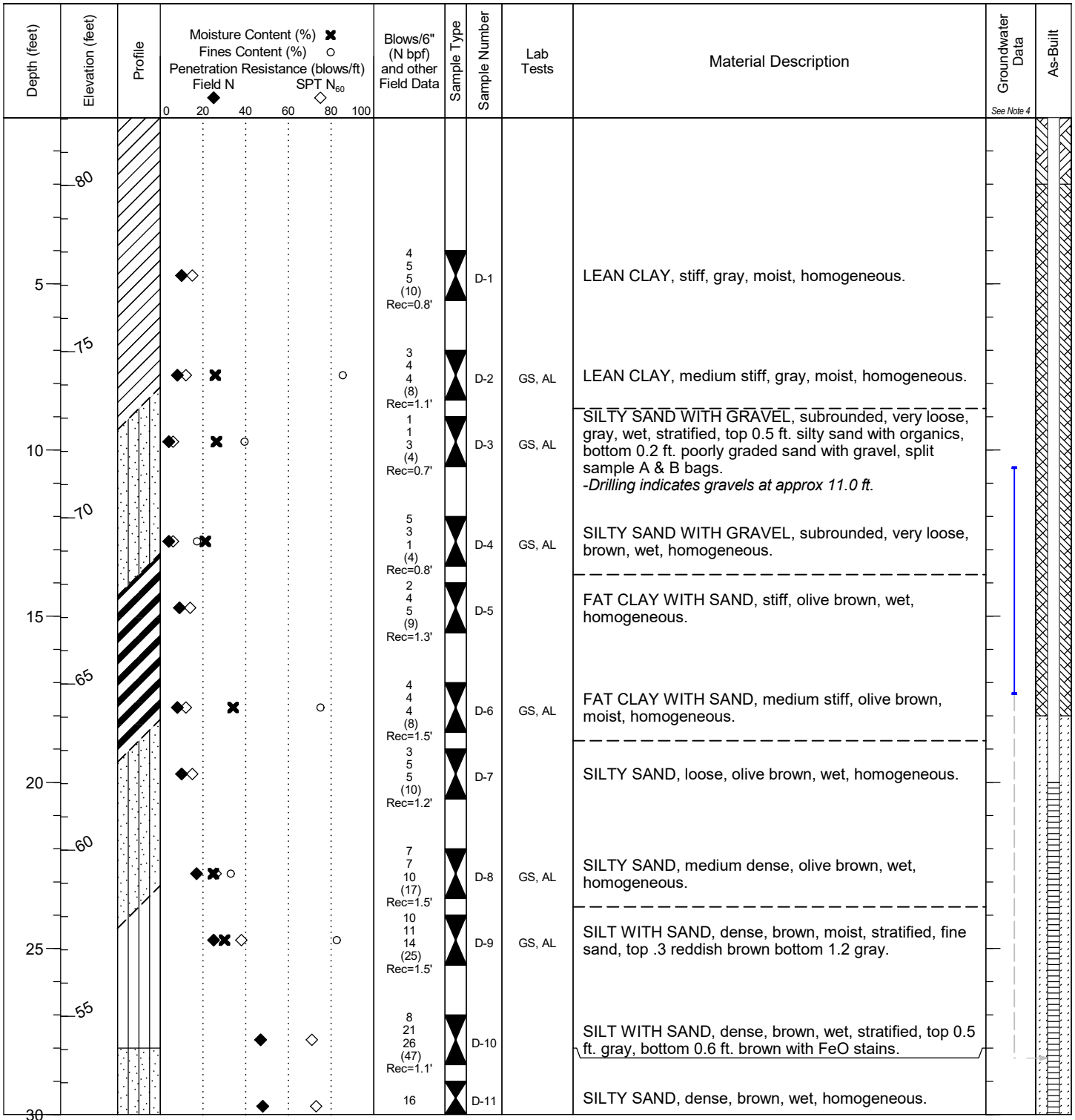
Easting: 1,306,485.8 feet *Longitude:* -122.191509 deg. *Start Card:* RE-19142 *Well Tag:* BMM-414 *Instrument:* 1" PVC

Elevation: 82.0 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: August 11, 2020 *Completed:* August 11, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Stream MP 25.00



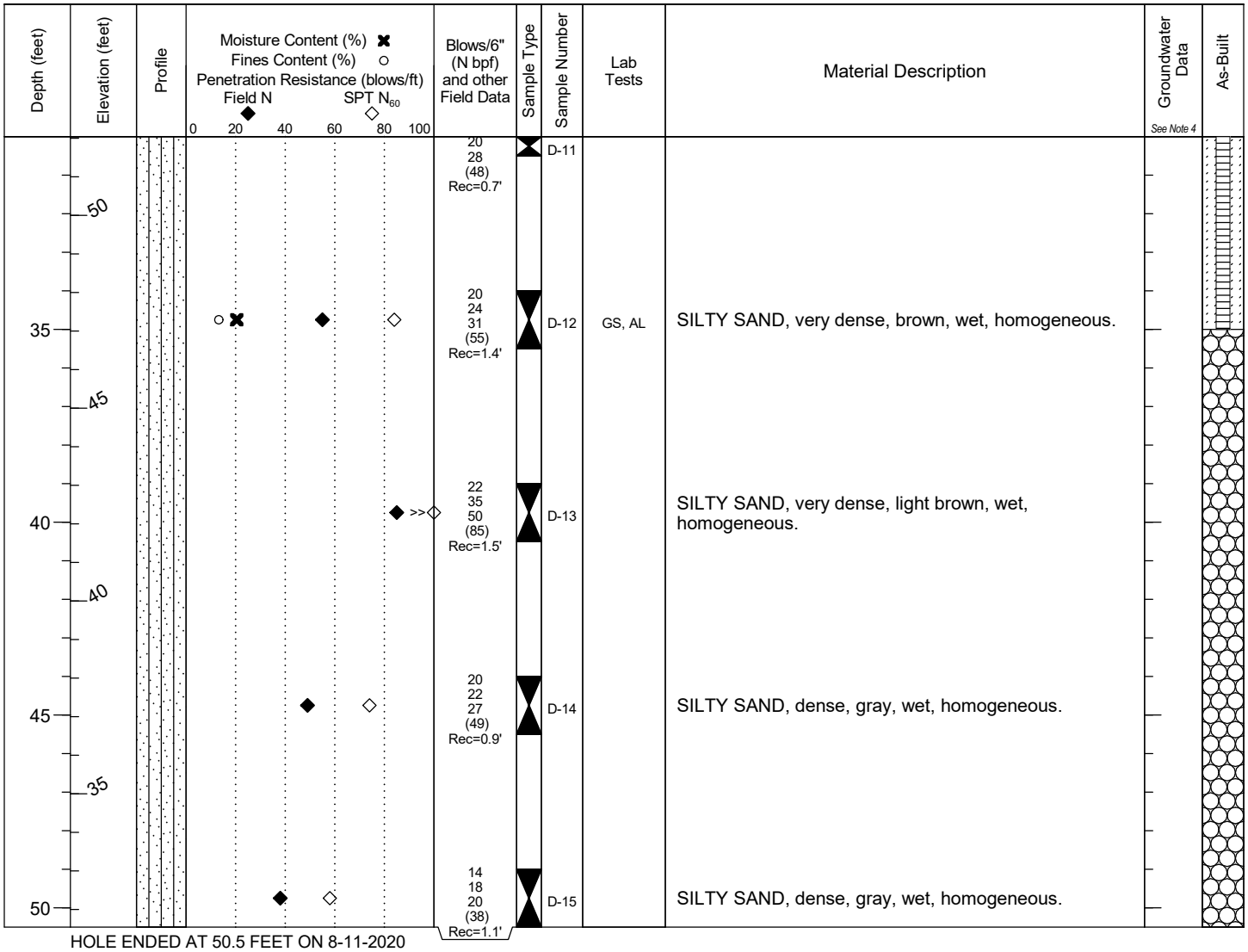
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 9/9/2020 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-70p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 286,089.3 feet *Latitude:* 47.776230 deg. *Driller/Inspector:* Anderson, Corey (#3312T) / Shepherd, Robert #2710

Easting: 1,306,633.9 feet *Longitude:* -122.190905 deg. *Start Card:* RE-19141 *Well Tag:* BMB-778 *Instrument:* 1" PVC

Elevation: 85.0 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ

Started: August 5, 2020 *Completed:* August 5, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%

Remark: Stream 25.00 and Wall 24.83R

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
5	80	7 10 10 (20) Rec=1.0'		D-1		WELL-GRADED SAND WITH SILT, medium dense, light brown, moist, homogeneous.
		8 13 9 (22) Rec=0.7'		D-2	GS, AL	WELL-GRADED SAND WITH SILT, medium dense, brown, wet, homogeneous.
10	75	3 4 4 (8) Rec=0.7'		D-3	GS, AL	SILTY SAND WITH GRAVEL, subrounded, loose, light gray, wet, homogeneous.
		9 7 9 (16) Rec=1.1'		D-4		SILTY SAND WITH GRAVEL, subrounded, medium dense, light brownish gray, wet, homogeneous.
15	70	8 10 9 (19) Rec=1.1'		D-5		SILTY SAND WITH GRAVEL, subrounded, medium dense, light brownish gray, moist, homogeneous.
		8 6 4 (10) Rec=0.8'		D-6	GS, AL	SILTY SAND WITH GRAVEL, subrounded, loose, light brownish gray, moist, homogeneous.
20	65	8 8 5 (13) Rec=0.3'		D-7		SILTY SAND WITH GRAVEL, subrounded, medium dense, light gray, wet, homogeneous.
		2 2 2 (4) Rec=0.2'		D-8		SANDY SILT, subrounded, very loose, light brown, wet, homogeneous. [D-9A] 24 to 24.4: SANDY SILT, medium dense, light brown, wet, stratified, with trace sand and gravel, top .4 silt with trace sand and gravel middle .2 wood bottom .4 poorly graded sand trace gravel. [D-9B] 24.4 to 24.6: WOOD. [D-9C] 24.6 to 25: POORLY GRADED SAND.
25	60	1 3 8 (11) Rec=1.0'		D-9	GS, AL	
		12 17 13 (30) Rec=1.0'		D-10	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, brown, wet, homogeneous. *-Lost all drilling fluid at approx. 29.0 ft.*
30	55	10		D-11		

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data *See Note 4*

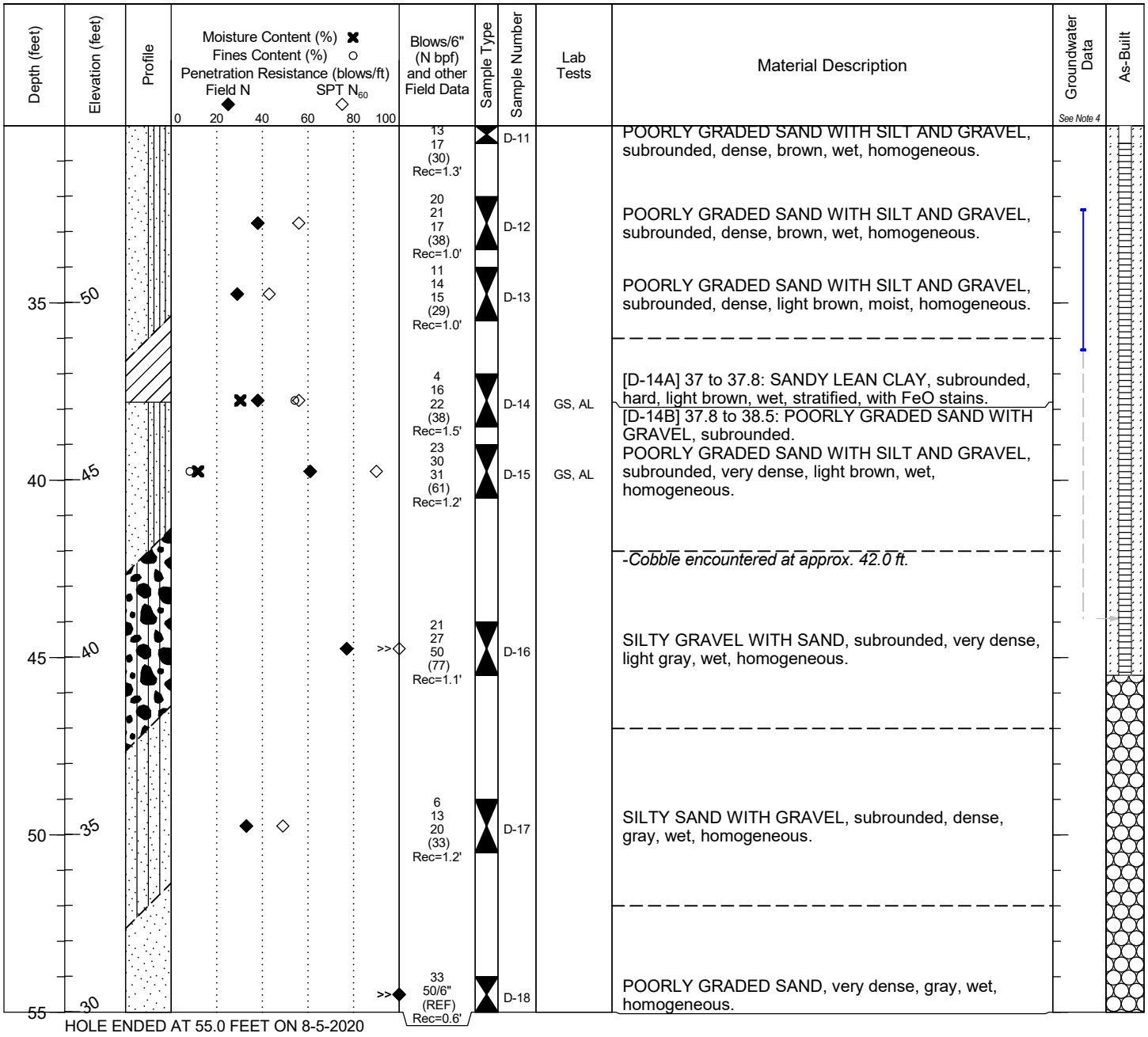
As-Built 2.0'

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 55.0 FEET ON 8-5-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 9/9/2020 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-72p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 291,355.3 feet *Latitude:* 47.790499 deg. *Driller/Inspector:* Anderson, Corey (#3312T) / Shepherd, Robert #2710

Easting: 1,303,239.7 feet *Longitude:* -122.205089 deg. *Start Card:* RE-19143 *Well Tag:* BMB-779 *Instrument:* 1" PVC

Elevation: 139.3 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ

Started: August 12, 2020 *Completed:* August 12, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%

Remark: Noise Wall NWE6

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
5	135	6 7 9 (16) Rec=1.0'		D-1	GS, AL	POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, light brown, moist, homogeneous.
		3 7 4 (11) Rec=1.0'		D-2		POORLY GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, brown, wet, stratified, top 0.7 ft. poorly graded sand with silt and gravel brown, bottom 0.3 ft. silty sand with gravel gray.
10	130	3 2 2 (4) Rec=1.1'		D-3	GS, AL	SANDY LEAN CLAY, soft, gray, wet, homogeneous.
		6 5 5 (10) Rec=0.9'		D-4	GS, AL	SILTY SAND, loose, light brown, moist, homogeneous.
15	125	2 3 8 (11) Rec=0.9'		D-5		SILTY SAND, medium dense, brown, moist, stratified, top 0.3 ft. brown, bottom 0.6 ft. gray.
		7 8 6 (14) Rec=0.2'		D-6		SILTY SAND WITH GRAVEL, subrounded, medium dense, brown, wet, homogeneous.
20	120	13 20 11 (31) Rec=0.4'		D-7		SILTY SAND WITH GRAVEL, subrounded, dense, grayish brown, wet, homogeneous.
		>> 26 50/3" (REF) Rec=0.7'		D-8		SILTY SAND, very dense, light brown, moist, homogeneous.
25	115					
30	110					

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4: DRY

As-Built: 2.0'

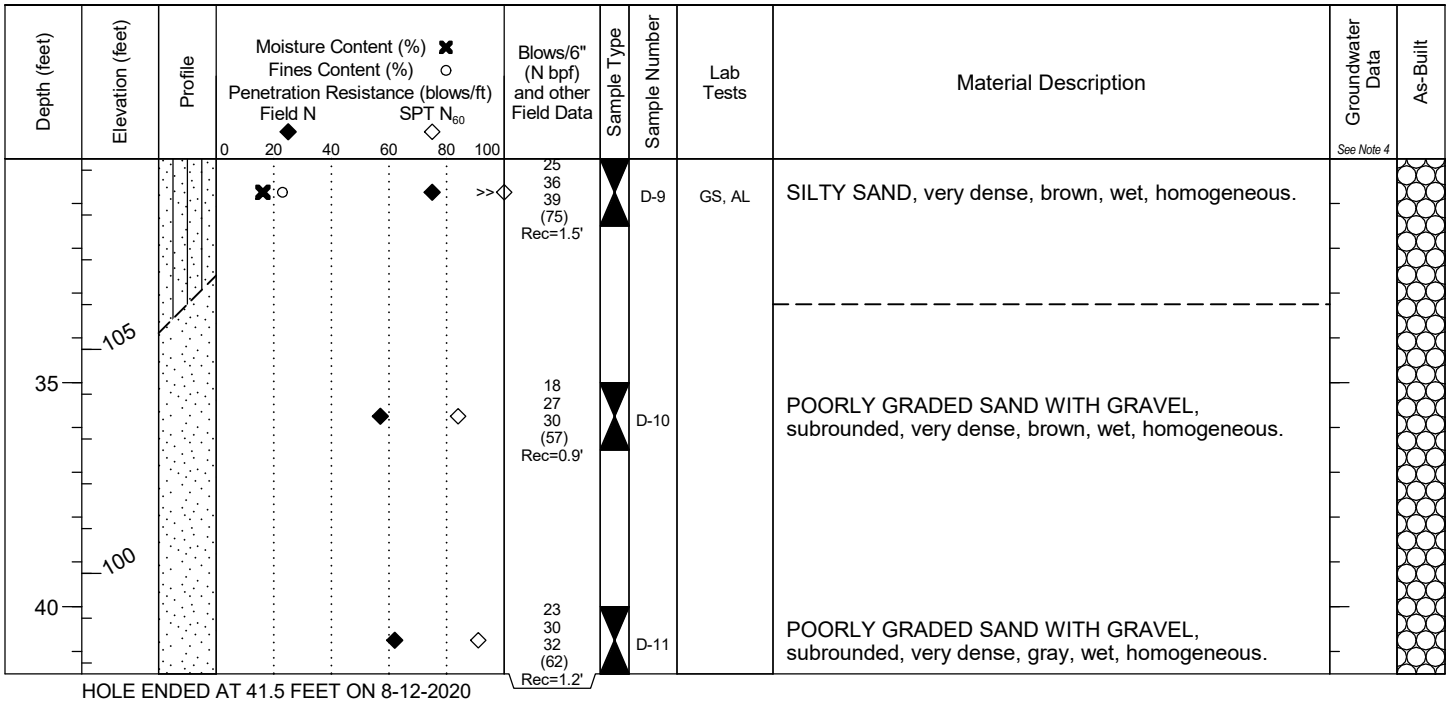
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 41.5 FEET ON 8-12-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 9/9/2020 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-73p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 293,905.3 feet *Latitude:* 47.797401 deg. *Driller/Inspector:* Walker, Robert (#2864) / Haller, Robert #2779

Easting: 1,301,458.0 feet *Longitude:* -122.212522 deg. *Start Card:* RE-19144 *Well Tag:* BMB-780 *Instrument:* 1" PVC

Elevation: 124.4 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45C (ID:9A4-7) *Rod Type:* AWJ

Started: November 17, 2020 *Completed:* November 17, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.7%

Remark: Drainage Vault

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
						-ASPHALT
		11 11 8 (19) Rec=1.0'		D-1	GS, AL	SILTY SAND WITH GRAVEL, rounded, medium dense, gray, moist, homogeneous.
5	120	4 7 7 (14) Rec=0.7'		D-2		SILTY GRAVEL WITH SAND, rounded, medium dense, dark olive gray, moist, homogeneous.
		9 10 11 (21) Rec=0.8'		D-3		SILTY SAND, medium dense, gray, wet, homogeneous.
10	115	8 8 13 (21) Rec=1.0'		D-4	GS, AL, HT, SG	SILTY SAND, medium dense, gray, wet, homogeneous.
		9 15 16 (31) Rec=0.6'		D-5		POORLY GRADED GRAVEL WITH SAND, subrounded, dense, gray, wet, homogeneous.
15	110	9 12 17 (29) Rec=0.8'		D-6	GS, AL	POORLY GRADED GRAVEL WITH SAND, subrounded, dense, gray, wet, homogeneous.
		3 8 20 (28) Rec=1.0'		D-7		POORLY GRADED SAND, dense, gray, wet, homogeneous.
20	105					
		26 50/5" (REF) Rec=0.8'		D-8	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very dense, gray, moist, homogeneous.
25	100					
		14		D-9		SILTY SAND WITH GRAVEL, very dense, gray, moist,
30	95					

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4

As-Built

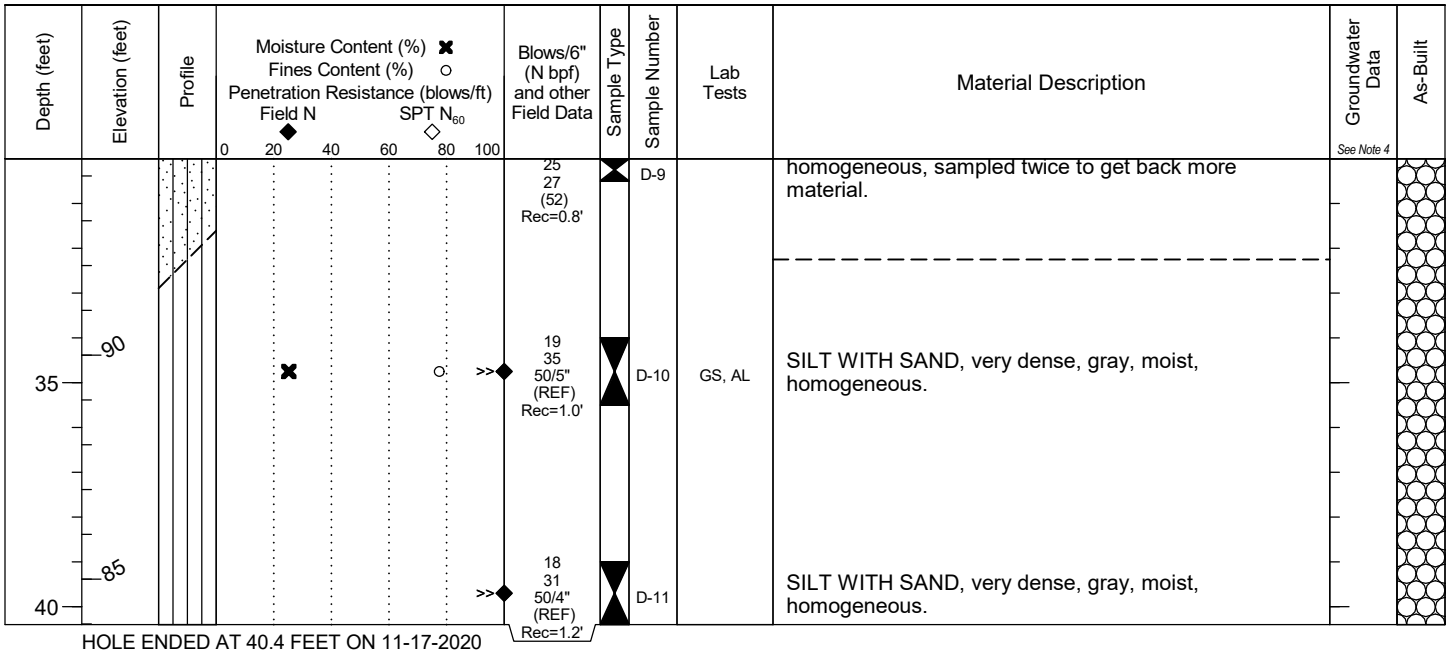
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 12/2/2020 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-74p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 293,789.7 feet *Latitude:* 47.797006 deg. *Driller/Inspector:* Anderson, Corey (#3312T) / Shepherd, Robert #2710

Easting: 1,299,863.6 feet *Longitude:* -122.219000 deg. *Start Card:* RE-19145 *Well Tag:* BMB-800 *Instrument:* 1" PVC

Elevation: 181.4 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: August 20, 2020 *Completed:* August 20, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Noise Wall

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
0	180		◆ ◇	12 6 6 (12) Rec=1.2'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, brown, moist, homogeneous.		2.0'
5	175		◆ ◇	5 4 3 (7) Rec=1.2'		D-2		SILTY SAND WITH GRAVEL, subrounded, loose, gray, moist, homogeneous.		
			◆	2 2 1 (3) Rec=0.7'		D-3		SILTY SAND WITH GRAVEL, subrounded, very loose, gray, wet, homogeneous.		
10	170		◆ ◇ ✖	1 2 1 (3) Rec=0.6'		D-4	GS, AL	SILTY SAND WITH GRAVEL, subrounded, very loose, gray, wet, homogeneous.		
			◆ ◇ ✖	5 6 6 (12) Rec=1.2'		D-5	GS, AL	SILTY SAND, medium dense, gray, wet, homogeneous.		
15	165		◆ ◇	10 11 12 (23) Rec=1.3'		D-6		SILTY SAND, medium dense, gray, wet, homogeneous.		
			◆ ◇	8 10 12 (22) Rec=1.1'		D-7		*-Drilling behavior indicates a change at approx. 15.5 ft.* WELL-GRADED SAND WITH SILT AND GRAVEL, subrounded, medium dense, light brownish gray, wet, homogeneous.		
20	160		✖ ◆ ◇	8 12 13 (25) Rec=1.1'		D-8	GS, AL	WELL-GRADED SAND WITH SILT AND GRAVEL, subrounded, dense, gray, wet, homogeneous.		
			◆ ◇	16 22 16 (38) Rec=1.1'		D-9		SILTY SAND WITH GRAVEL, subrounded, dense, gray, moist, homogeneous.		
25	155		◆ ◇	15 24 35		D-10		SILTY GRAVEL WITH SAND, subrounded, very dense, gray, wet, homogeneous, used oversized to retain sample.		
30										

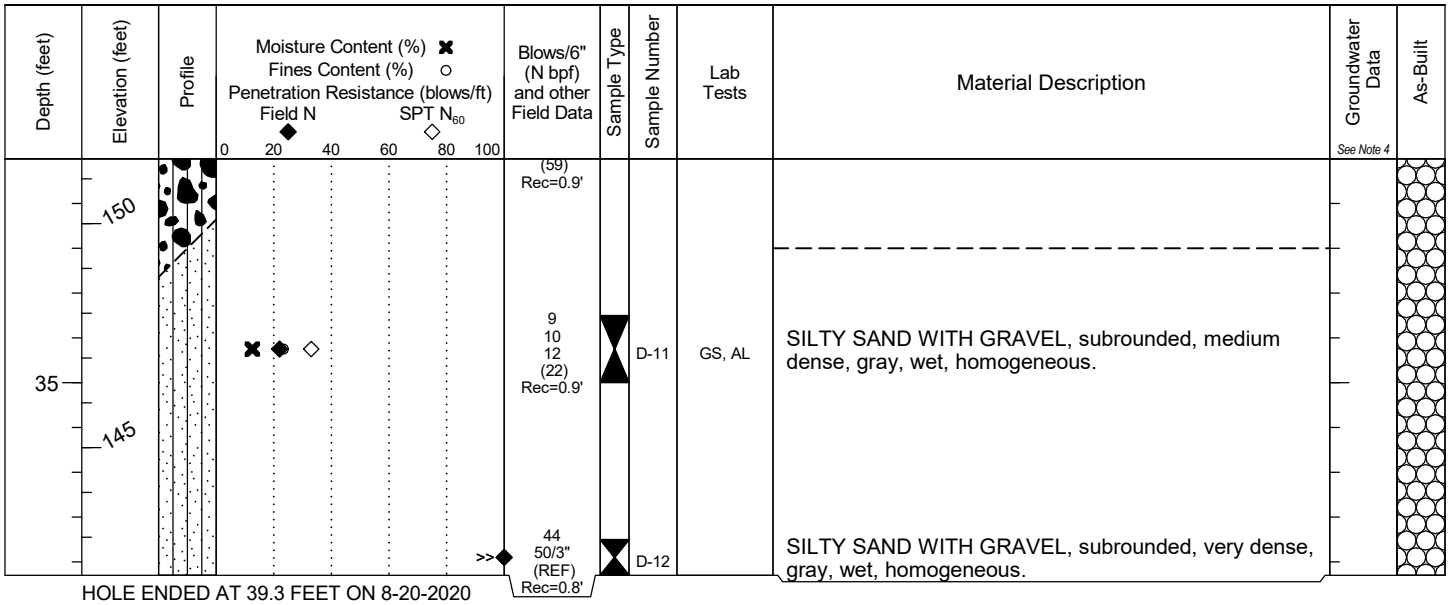
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 39.3 FEET ON 8-20-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 9/9/2020 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-75-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 293,308.6 feet *Latitude:* 47.795713 deg. *Driller/Inspector:* Shepherd, Robert (#2710) / Fetterly, Jamie #2507

Easting: 1,300,389.3 feet *Longitude:* -122.216826 deg. *Start Card:* SE-74964 AE-62235

Elevation: 155.4 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: August 21, 2020 *Completed:* August 21, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Noise Wall

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Water Observations	Backfill
0	155	3 5 6 5 (11) Rec=1.5'		D-1		SILTY SAND, medium dense, olive, dry, homogeneous.		
5	150	8 8 8 (16) Rec=1.0'		D-2		POORLY GRADED SAND, medium dense, olive gray, moist, homogeneous.		
		8 9 8 (17) Rec=1.0'		D-3	GS, AL	POORLY GRADED SAND WITH GRAVEL, rounded, medium dense, gray, moist, homogeneous.		
10	145	8 7 10 (17) Rec=0.7'		D-4		POORLY GRADED SAND WITH GRAVEL, rounded, medium dense, gray, wet, homogeneous.		
		4 4 6 (10) Rec=1.0'		D-5	GS, AL	POORLY GRADED SAND WITH SILT, loose, olive, wet, homogeneous.		
15	140	5 5 6 (11) Rec=1.2'		D-6		POORLY GRADED SAND WITH SILT, medium dense, olive, wet, homogeneous.		
		4 4 5 (9) Rec=1.4'		D-7	GS, AL	SILTY SAND, loose, dark gray, wet, homogeneous, FeO staining present from 17.5' to 18'.		
20	135	6 9 11 (20) Rec=1.1'		D-8	GS, AL	POORLY GRADED SAND WITH SILT, medium dense, dark gray, wet, homogeneous.		
		11 14 16 (30) Rec=1.2'		D-9		POORLY GRADED SAND WITH SILT, dense, gray, moist, homogeneous.		
25	130	11 16 16 (32) Rec=1.1'		D-10		POORLY GRADED SAND WITH SILT, dense, gray, wet, homogeneous.		
						-Drilling behavior indicates gravel from 27.0 ft. to 27.5 ft.		
30		12		D-11	GS, AL	SILTY SAND WITH GRAVEL, rounded, medium dense, gray, wet, homogeneous.		

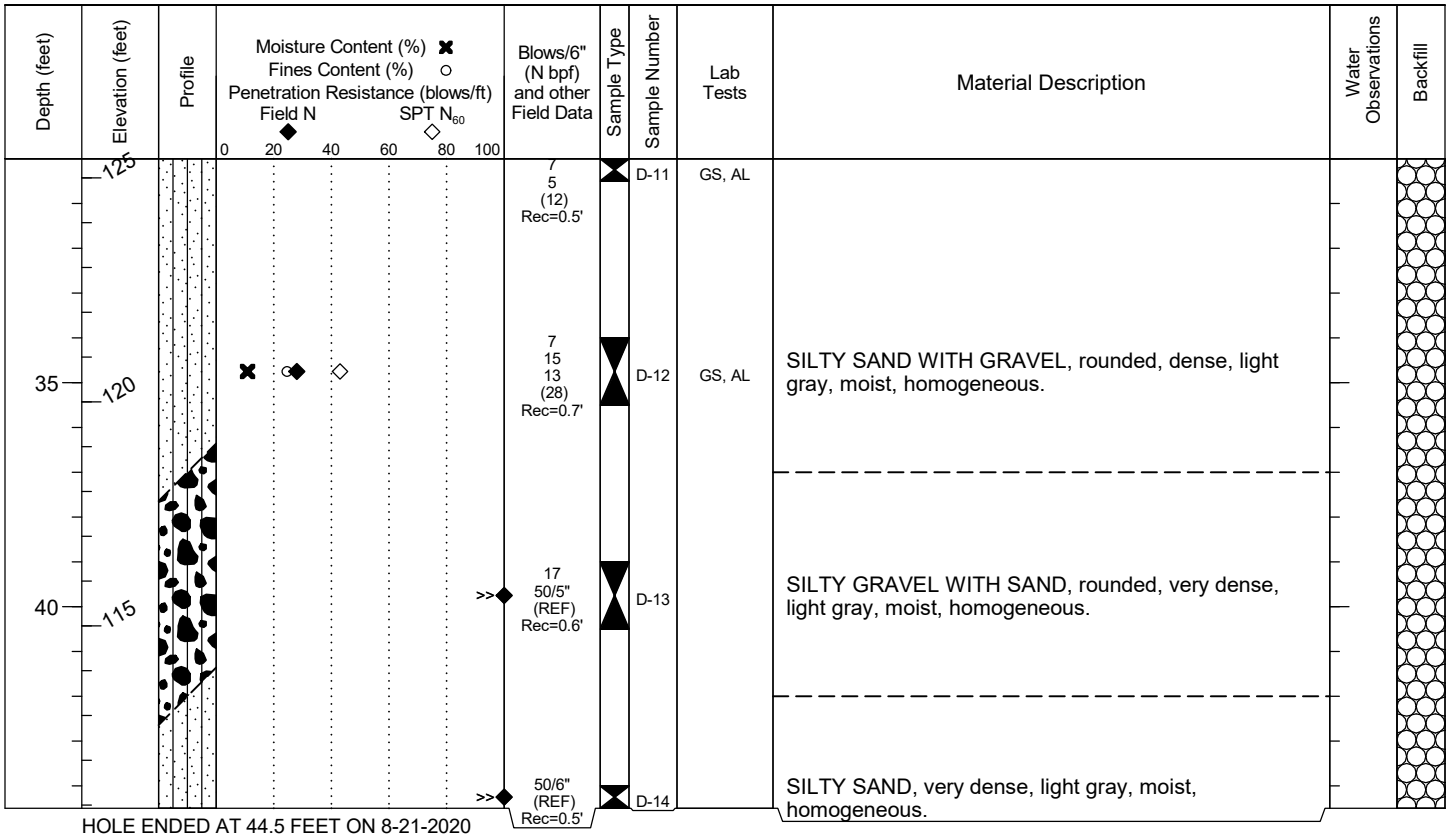
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 44.5 FEET ON 8-21-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level(s), if shown, represents observations made during drilling. The groundwater level should be considered approximate and will vary based on seasonal and other effects.

WSDOT

LOG OF BORING NE-76p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 286,206.4 feet *Latitude:* 47.776539 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Harvey, Thomas #2599
Easting: 1,306,384.0 feet *Longitude:* -122.191930 deg. *Start Card:* RE19606 *Well Tag:* BMM334 *Instrument:* 1" PVC
Elevation: 90.3 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ
Started: July 29, 2020 *Completed:* July 29, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%
Remark: Stream 25

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
5	85	5 7 13 (20) Rec=1.0'		D-1	GS, AL	SILTY SAND WITH GRAVEL, subrounded, medium dense, brown, moist, homogeneous.
		11 13 11 (24) Rec=0.4'		D-2		SILTY SAND WITH GRAVEL, subrounded, medium dense, brown, wet, homogeneous.
10	80	8 7 12 (19) Rec=1.0'		D-3	GS, AL, HT, SG	SANDY SILT, medium dense, brown, moist, homogeneous.
		9 10 11 (21) Rec=1.5'		D-4	GS, AL	SANDY SILT, medium dense, grayish brown, wet, stratified.
15	75	7 13 15 (28) Rec=1.5'		D-5		SANDY SILT, dense, light gray, moist, homogeneous.
		9 11 13 (24) Rec=1.5'		D-6		POORLY GRADED SAND WITH SILT, medium dense, grayish brown, wet, homogeneous.
20	70	11 11 12 (23) Rec=1.5'		D-7	GS, AL	SANDY SILT, medium dense, grayish brown, wet, stratified.
		17 24 34 (58) Rec=1.5'		D-8		SILTY SAND, very dense, grayish brown, wet, homogeneous.
25		19		D-9	GS, AL	SILTY SAND, very dense, grayish brown, wet, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data (See Note 4): Bail test: water at 23.9 ft

As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

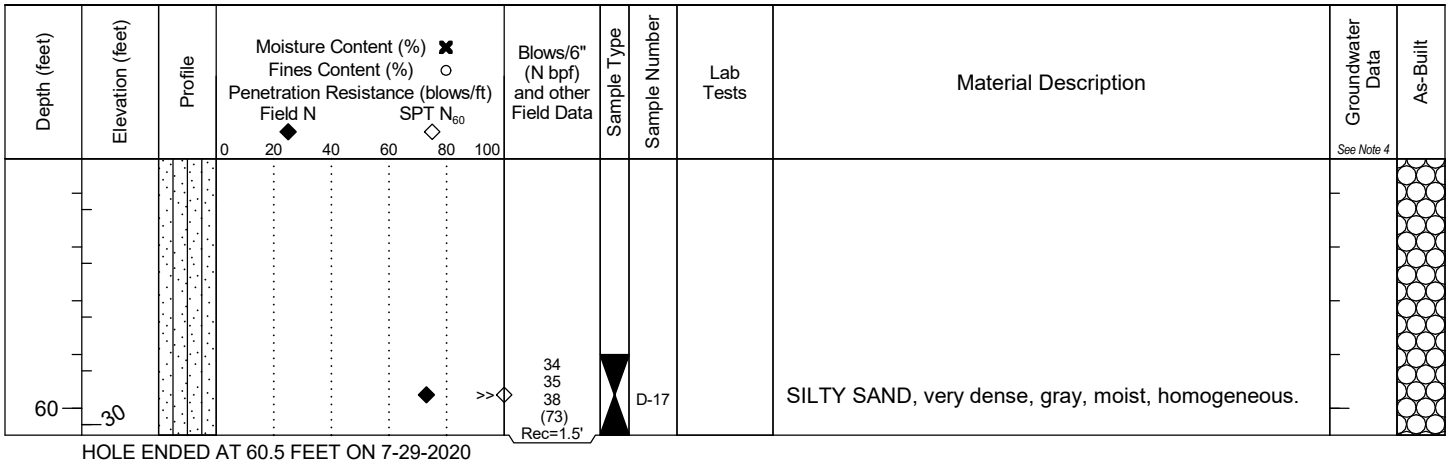
Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
	65			31 30 (61) Rec=1.5'		D-9	GS, AL			
			◆ >>◇	27 34 37 (71) Rec=1.5'		D-10		SILTY SAND, very dense, grayish brown, wet, homogeneous.		
30	60		◆ >>◇	19 37 42 (79) Rec=1.5'		D-11		SILTY SAND, very dense, grayish brown, wet, homogeneous.		
			◆ >>◇	32 43 50/5" (REF) Rec=1.5'		D-12		SILTY SAND, very dense, grayish brown, wet, homogeneous.		
35	55									
			✖ ◆ >>◇	31 39 42 (81) Rec=1.5'		D-13	GS, AL	SILTY SAND, very dense, gray, moist, homogeneous.		
40	50									
			◆ >◇	26 43 47 (90) Rec=1.5'		D-14		SILTY SAND, very dense, gray, moist, homogeneous.		
45	45									
			○ ✖ ◆ >>◆	30 50/6" (REF) Rec=1.0'		D-15	GS, AL	SILTY SAND, very dense, gray, moist, homogeneous.		
50	40									
			◆ >>◆	41 50/3" (REF) Rec=0.8'		D-16		SILTY SAND, very dense, gray, moist, homogeneous.		
55	35									

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 60.5 FEET ON 7-29-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 8/5/2020 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: July 29, 2020
Hole Depth / Casing Depth: 60.5 feet / 49.0 feet
Water Depth Before Bailing: 11.0 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	33.3
5	25.9
10	24.3
15	23.9
20	23.9
30	23.9

WSDOT

LOG OF BORING NE-77p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80
Northing: 286,322.2 feet *Latitude:* 47.776853 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Harvey, Thomas #2599
Easting: 1,306,322.7 feet *Longitude:* -122.192187 deg. *Start Card:* RE19606 *Well Tag:* BMM335 *Instrument:* 1" PVC
Elevation: 96.2 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in
Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ
Started: July 27, 2020 *Completed:* July 28, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%
Remark: Stream 25

Depth (feet)	Elevation (feet)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description
0	96.2					
5	91.2	5 5 8 (13) Rec=0.4'		D-1		SILTY SAND WITH GRAVEL, subrounded, medium dense, brown, moist, homogeneous.
		17 12 15 (27) Rec=1.0'		D-2	GS, AL, HT, SG	SILTY SAND WITH GRAVEL, subrounded, dense, grayish brown, moist, homogeneous.
10	86.2	13 24 42 (66) Rec=1.5'		D-3		SILTY SAND WITH GRAVEL, subrounded, very dense, grayish brown, wet, homogeneous.
		9 13 11 (24) Rec=1.5'		D-4		SILTY SAND WITH GRAVEL, subrounded, medium dense, grayish brown, wet.
15	81.2	7 11 13 (24) Rec=0.8'		D-5	GS, AL, HT, SG	SILTY SAND WITH GRAVEL, subrounded, medium dense, light brown, wet, homogeneous.
		11 15 24 (39) Rec=1.5'		D-6	GS, AL, LOI	SILT WITH SAND, dense, dark grayish brown, moist, blocky, disrupted, with organics.
20	76.2	9 17 31 (48) Rec=1.5'		D-7		SILT WITH SAND, dense, brown, moist, blocky, disrupted, with organics.
		14 25 33 (58) Rec=1.5'		D-8	GS, AL	SANDY SILT, very dense, gray, moist, homogeneous.
25	71.2	17		D-9	GS, AL	SILTY SAND, very dense, gray, wet, homogeneous.

Moisture Content (%) ✖
Fines Content (%) ○
Penetration Resistance (blows/ft)
Field N ◆ SPT N_{60} ◇
0 20 40 60 80 100

Groundwater Data — See Note 4
Bail test: water at 21.7 ft

As-Built

CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				24 32 (56) Rec=1.5'		D-9	GS, AL	SILTY SAND, very dense, gray, wet, homogeneous.		
	70			16 24 28 (52) Rec=1.5'		D-10		POORLY GRADED SAND WITH SILT, very dense, gray, wet, homogeneous.		
30			✖ ◆○ ◇	14 23 32 (55) Rec=1.5'		D-11	GS, AL	SANDY SILT, very dense, olive brown, moist, homogeneous.		
	65									
			>>◆	28 50/6" (REF) Rec=1.0'		D-12		SILTY SAND, very dense, grayish brown, moist, homogeneous.		
35										
	60									
			>>◆	50/5" (REF) Rec=0.5'		D-13		SILTY SAND, very dense, grayish brown, moist, homogeneous.		
40										
	55									
			○ ✖ >>◆	32 50/6" (REF) Rec=1.0'		D-14	GS, AL	SILTY SAND, very dense, grayish brown, moist, homogeneous.		
45										
	50									
			>>◆	44 50/3" (REF) Rec=0.8'		D-15		SILTY SAND, very dense, grayish brown, moist, homogeneous.		
50										
	45									
			◆>◇	32 42		D-16		SILTY SAND, very dense, grayish brown, moist, homogeneous.		
55										

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

CONTINUED NEXT PAGE *(see last page for notes)*

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data	As-Built
	40			47 (89) Rec=1.5'					See Note 4	
60			>>	25 42 50/5" (REF) Rec=1.5'	D-17			SILTY SAND, very dense, grayish brown, moist, homogeneous.		

HOLE ENDED AT 60.5 FEET ON 7-28-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 8/5/2020 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: July 28, 2020
Hole Depth / Casing Depth: 60.5 feet / 50.0 feet
Water Depth Before Bailing: 11.7 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	31.1
2	23.3
5	21.9
10	21.8
15	21.8
20	21.7
30	21.7

WSDOT

LOG OF BORING NE-78p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 286,267.0 feet *Latitude:* 47.776701 deg. *Driller/Inspector:* Anderson, Corey (#3312T) / Shepherd, Robert #2710

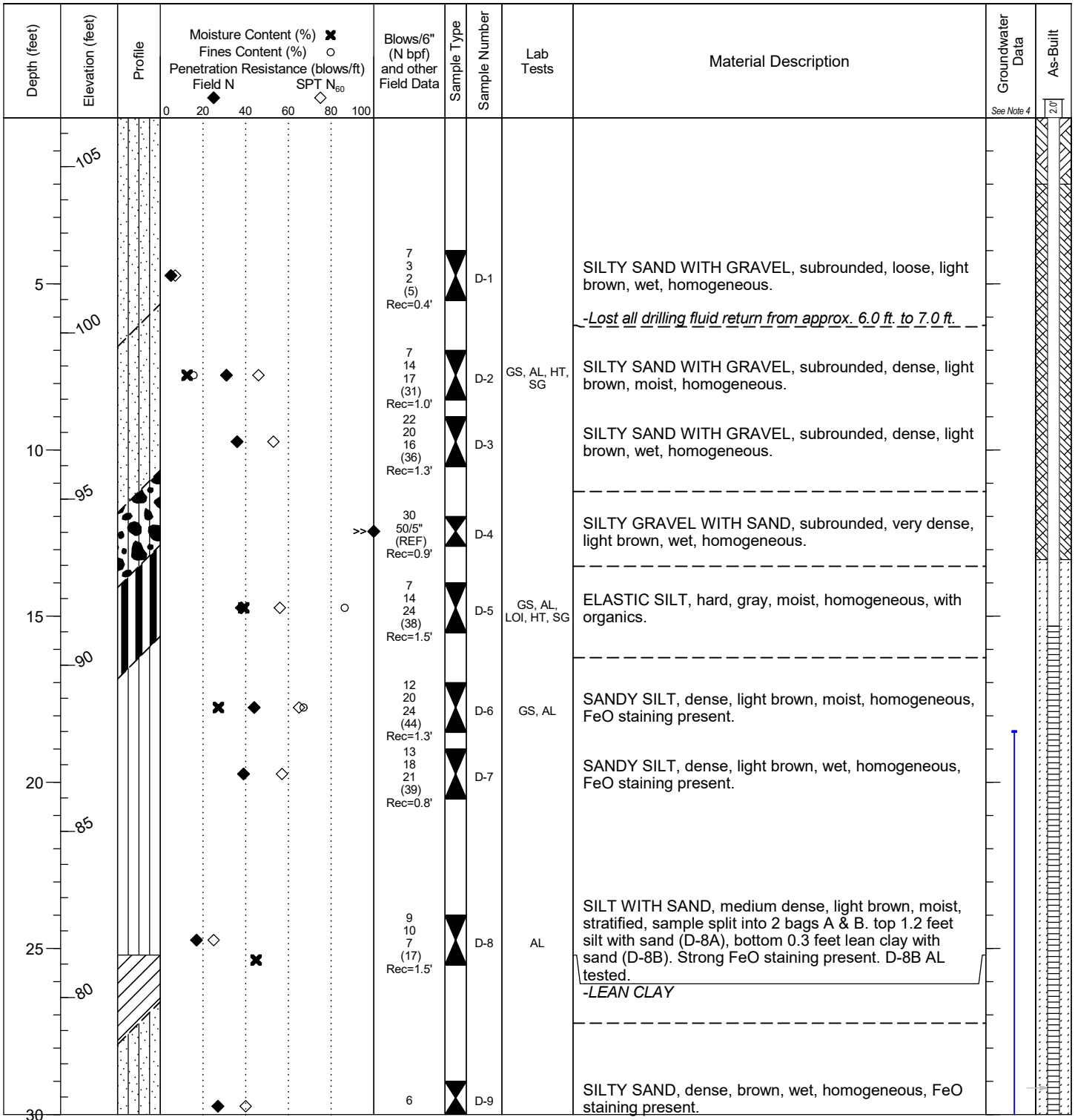
Easting: 1,306,306.8 feet *Longitude:* -122.192248 deg. *Start Card:* RE-19738 *Well Tag:* BMM-339 *Instrument:* 1" PVC

Elevation: 106.5 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ

Started: August 18, 2020 *Completed:* August 19, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%

Remark: Stream 25



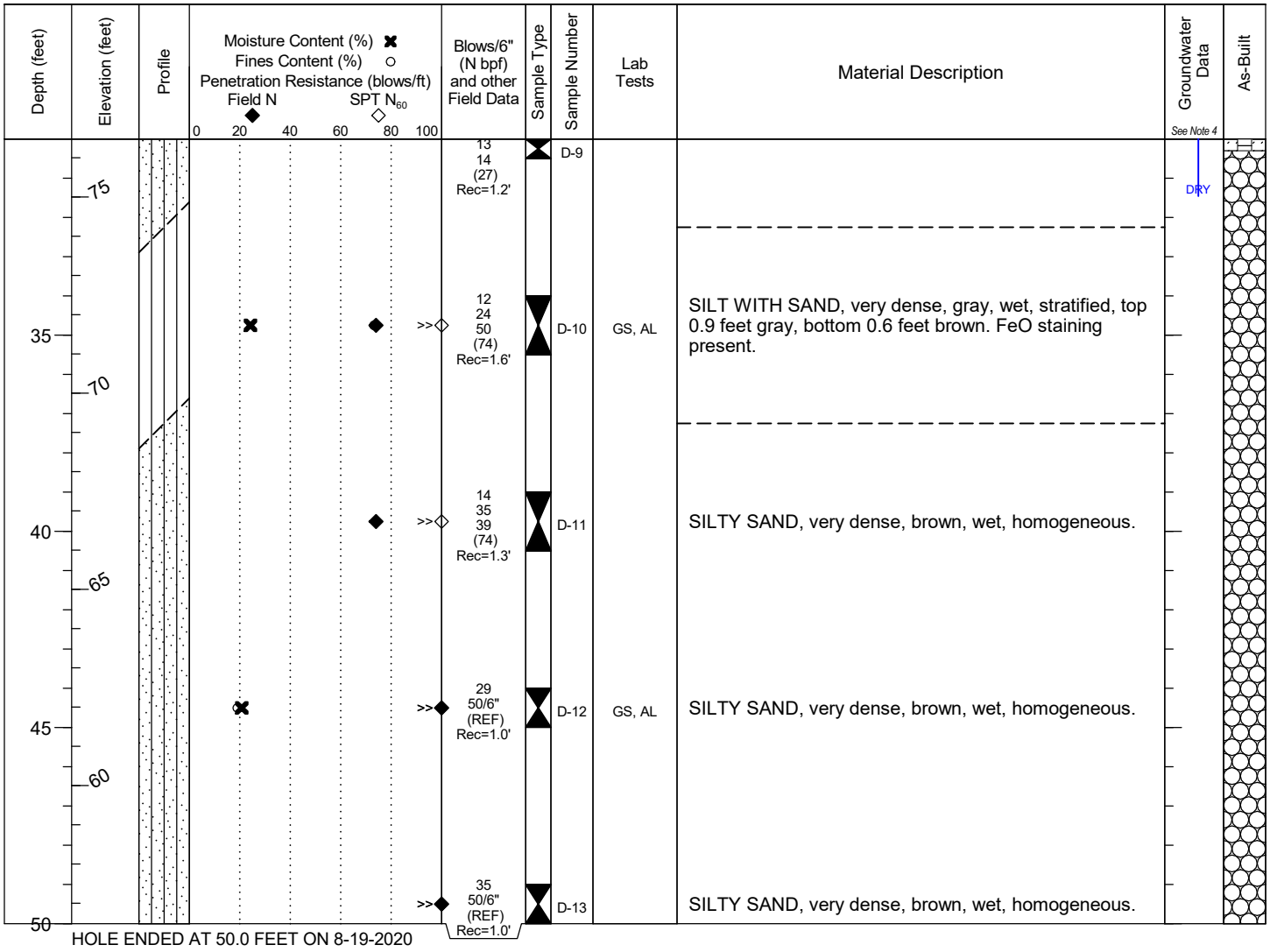
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 9/29/2020 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-79p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 286,169.4 feet *Latitude:* 47.776450 deg. *Driller/Inspector:* Anderson, Corey (#3312T) / Shepherd, Robert #2710

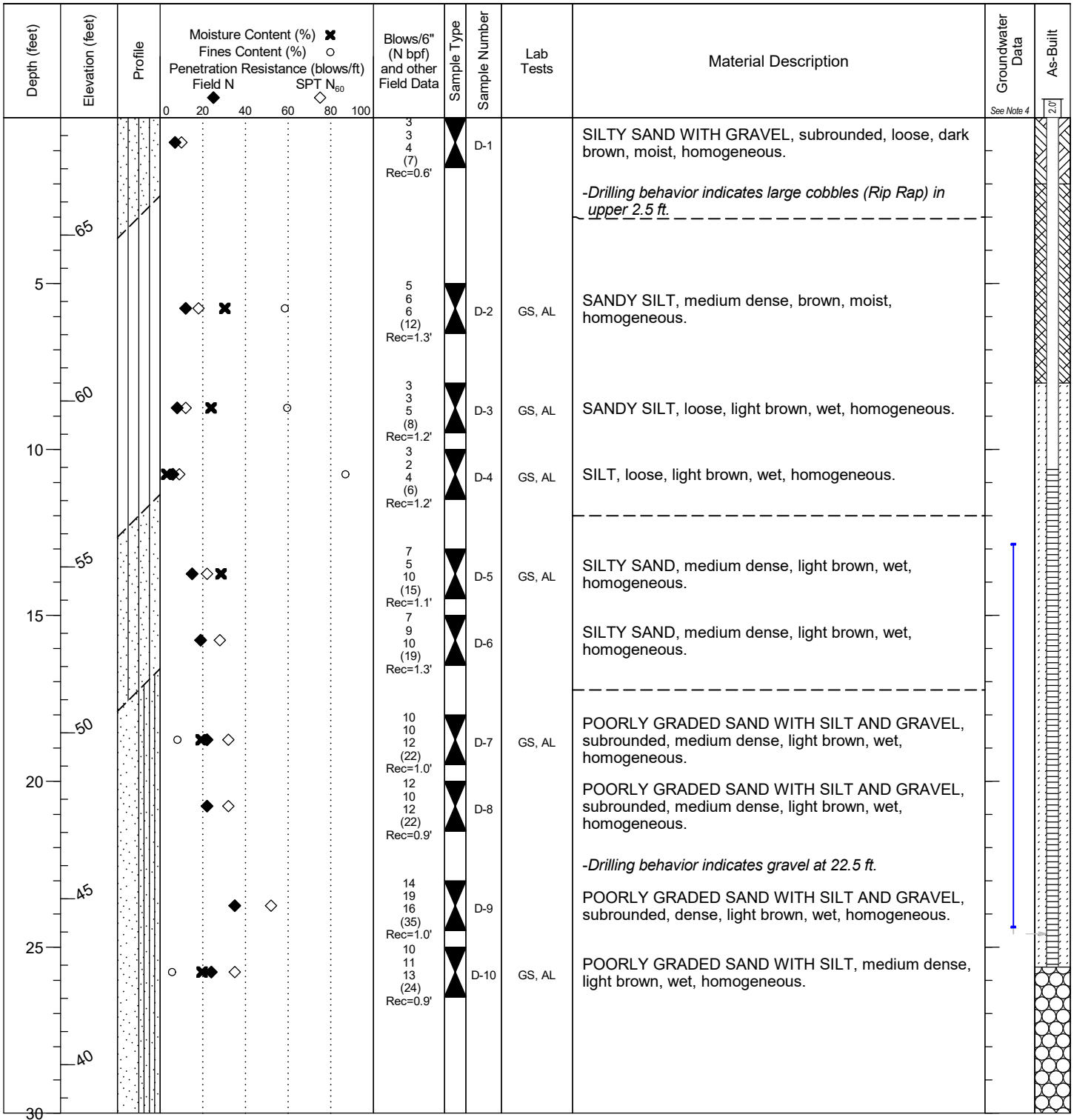
Easting: 1,306,648.3 feet *Longitude:* -122.190852 deg. *Start Card:* RE-19738 *Well Tag:* BMM-343 *Instrument:* 1" PVC

Elevation: 68.5 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 45 (ID:9C4-4) *Rod Type:* AWJ

Started: August 7, 2020 *Completed:* August 7, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 88.3%

Remark: Stream 25



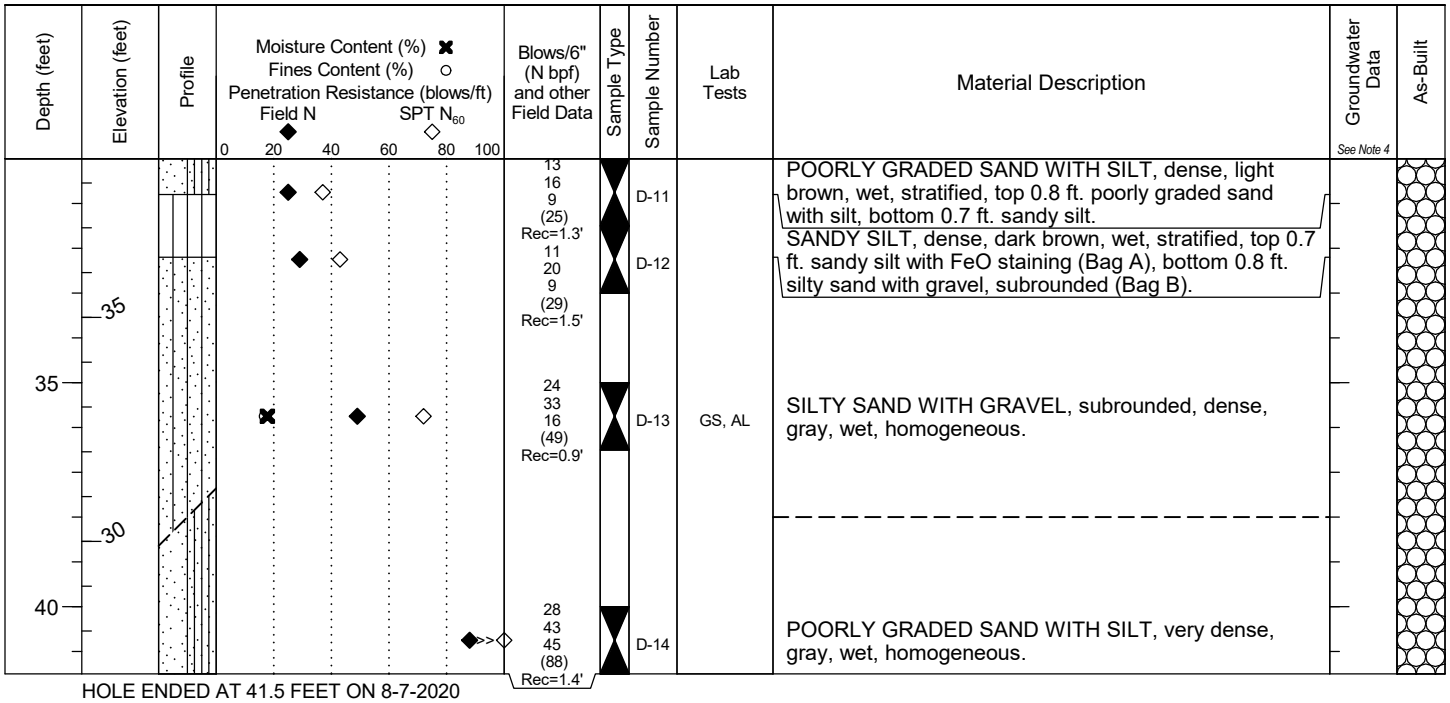
CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/7/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80



HOLE ENDED AT 41.5 FEET ON 8-7-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 9/9/2020 and 11/21/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

WSDOT

LOG OF BORING NE-80p-20

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Northing: 286,023.7 feet *Latitude:* 47.776041 deg. *Driller/Inspector:* Henderson, Ted (#2902) / Harvey, Thomas #2599

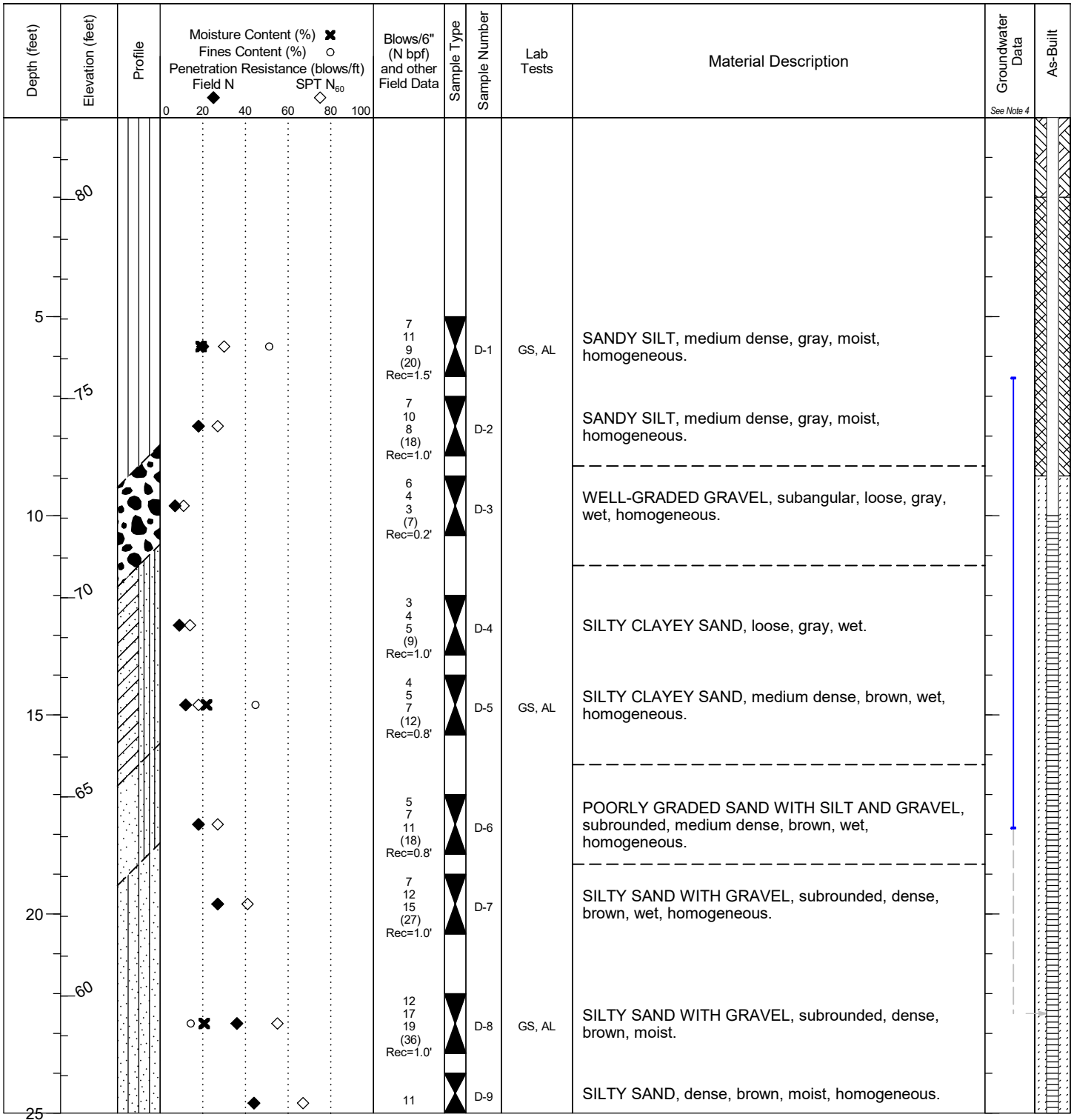
Easting: 1,306,451.8 feet *Longitude:* -122.191641 deg. *Start Card:* RE19738 *Well Tag:* BMM344 *Instrument:* 1" PVC

Elevation: 82.1 feet *Collector:* Region Survey *Drilling Method:* Casing Advancer *Hole Diam.:* 4 in

Horizontal/Vertical Datum: NAD 83/91 HARN, SPN / NAVD88 *Equipment:* CME 55 (ID:9C7-1) *Rod Type:* AWJ

Started: July 29, 2020 *Completed:* July 30, 2020 *Hammer Type:* AutoHammer *Historic Efficiency:* 91.1%

Remark: Stream 25



CONTINUED NEXT PAGE *(see last page for notes)*

VERSION 1
FINAL

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project

Job Number: XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ / Fines Content (%) ○ / Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ (0 20 40 60 80 100)	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data (See Note 4)	As-Built
				19 25 (44) Rec=1.0'		D-9		SILTY SAND, dense, brown, moist, homogeneous.		
	55			22 31 42 (73) Rec=1.0'		D-10		SILTY SAND, very dense, grayish brown, moist, homogeneous.	Bail test: water at 26.2 ft	
30			○ ✖ ◆ ◇	24 37 39 (76) Rec=1.5'		D-11	GS, AL	SILTY SAND, very dense, grayish brown, moist, homogeneous.		
	50									
				21 29 31 (60) Rec=1.0'		D-12		POORLY GRADED SAND WITH SILT, very dense, grayish brown, moist, homogeneous.		
35	45									
				23 35 43 (78) Rec=1.5'		D-13		POORLY GRADED SAND WITH SILT, very dense, gray, moist, homogeneous.		
40	40									
			○ ✖ ◆	21 41 50/5" (REF) Rec=1.5'		D-14	GS, AL	POORLY GRADED SAND WITH SILT, very dense, gray, wet, homogeneous.		
45	35									
				27 50/6" (REF) Rec=1.0'		D-15		POORLY GRADED SAND WITH SILT, very dense, gray, wet, homogeneous.		
50	30									
				34 44		D-16		POORLY GRADED SAND WITH SILT, very dense, gray, wet, homogeneous.		
55										

CONTINUED NEXT PAGE *(see last page for notes)*

STANDARD BORING LOG XL5446 405 SR 522 TO SR 527.GPJ 2020 WSDOT GINT TEMPLATE.GDT 2/8/23

Project: I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project *Job Number:* XL5446 *Route & MP Range:* SR 405 MP 21.60 - 26.80

Depth (feet)	Elevation (feet)	Profile	Moisture Content (%) ✖ Fines Content (%) ○ Penetration Resistance (blows/ft) Field N ◆ SPT N_{60} ◇ 0 20 40 60 80 100	Blows/6" (N bpf) and other Field Data	Sample Type	Sample Number	Lab Tests	Material Description	Groundwater Data	As-Built
	25			50/4" (REF) Rec=1.5'					See Note 4	
60			◆>◇	31 47 44 (91) Rec=1.0'	D-17			POORLY GRADED SAND WITH SILT, very dense, gray, wet, homogeneous.		

HOLE ENDED AT 60.5 FEET ON 7-30-2020

NOTES:

1. This is a summary log of the boring. Soil/rock descriptions are derived from visual field identifications and laboratory test data (where tested). See exploration log legend for explanation of graphics and abbreviations.
2. The implied accuracy of the location information displayed on this log is typically sub-meter(X,Y) when collected using GPS methods by the Geotechnical Office and sub-centimeter (X,Y,Z) when collected by the Region survey crew.
3. Where oversized samplers were used, a correction was made to the N-value per the AASHTO Manual on Subsurface Investigations, 1988. Blow counts per 6-inch increment have not been corrected.
4. The groundwater level range shown on this log represents data collected between 8/5/2020 and 11/16/2022. The blue line extends between the minimum and maximum readings collected during the monitoring period.

BAIL-RECHARGE TEST RESULTS:

Test Date: July 30, 2020
Hole Depth / Casing Depth: 60.5 feet / 49.0 feet
Water Depth Before Bailing: 11.4 feet

ELAPSED TIME (minutes)	WATER DEPTH (feet)
0	31.0
5	27.1
10	26.2
15	26.2
20	26.2
30	26.2

APPENDIX B – PROJECT LABORATORY TEST RESULTS

B-1 CLASSIFICATION TESTS

B-2 LOI TESTS

B-3 PH AND RESISTIVITY TESTS

B-4 CONSOLIDATION TESTS

B-5 STRENGTH TESTS

B-1 CLASSIFICATION TESTS

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
BRICKYD-01-20	D-2	SPT	3.5	278.2	19	28	SM	SILTY SAND	14.5	14	n/a	NP	13	52	35							
BRICKYD-01-20	D-4	SPT	8.5	273.2	101	101	SM	SILTY SAND with GRAVEL	10.1	14	n/a	NP	18	48	35							
BRICKYD-01-20	D-7	SPT	16.5	265.2	101	101	SM	SILTY SAND with GRAVEL	8.5	n/a	n/a	NP	21	43	35							
BRICKYD-01-20	D-11	SPT	33.5	248.2	66	97	SP-SM	POORLY GRADED SAND with SILT	19.5	n/a	n/a	NP	1	90	9							
BRICKYD-01-20	D-12	SPT	38.5	243.2	101	101	SM	SILTY SAND	11.3	n/a	n/a	NP	8	53	39							
BRICKYD-01-20	D-18	SPT	68.5	213.2	101	101	SM	SILTY SAND	13.4	n/a	n/a	NP	14	46	40							
BRICKYD-2p-20	D-2	SPT	4	285.9	9	12	SM	SILTY SAND with GRAVEL	21.8	n/a	n/a	NP	17	55	28							
BRICKYD-2p-20	D-4	SPT	9	280.9	101	101	SM	SILTY SAND with GRAVEL	13.1	n/a	n/a	NP	18	48	34							
BRICKYD-2p-20	D-7	SPT	19	270.9	101	101	SM	SILTY SAND with GRAVEL	13.2	14	n/a	NP	18	41	41							
BRICKYD-2p-20	D-8	SPT	24	265.9	101	101	SM	SILTY SAND	20.9	n/a	n/a	NP	0	88	12							
BRICKYD-2p-20	D-10	SPT	34	255.9	101	101	SM	SILTY SAND with GRAVEL	14.2	n/a	n/a	NP	19	41	40							
NE-01-19	D-3	SPT	7	241.9	52	70	SW-SM	WELL-GRADED SAND with SILT and GRAVEL	9.4	n/a	n/a	NP	33	56	10							
NE-01-19	D-6	SPT	14	234.9	40	54	GW-GM	WELL-GRADED GRAVEL with SILT and SAND	9.4	n/a	n/a	NP	46	46	8							
NE-01-19	D-9	SPT	22	226.9	19	26	SM	SILTY SAND	15.1	n/a	n/a	NP	9	74	16							
NE-01-19	D-14	SPT	34	214.9	4	5	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	22	n/a	n/a	NP	21	73	6							
NE-02p-19	D-5	SPT	12	229	17	25	SM	SILTY SAND with GRAVEL	6.8	n/a	n/a	NP	21	61	18							
NE-02p-19	D-12	SPT	29	212	28	41	ML	SILT with GRAVEL	26.1	31	24	7	9	9	81							
NE-02p-19	D-14	SPT	34	207	46	67	SM	SILTY SAND	20.8	n/a	n/a	NP	7	68	26							
NE-02p-19	D-16	SPT	39	202	69	101	SM	SILTY SAND	21	n/a	n/a	NP	0	82	18							
NE-02p-19	D-19	SPT	47	194	66	97	ML	SILT	23.5	29	25	4	0	4	96							
NE-02p-19	D-23	SPT	64	177	47	69	ML	SILT	25.7	26	23	3	0	11	89							
NE-02p-19	D-25	SPT	74	167	101	101	ML	SANDY SILT	22.7	n/a	n/a	NP	0	45	55							
NE-03-19	D-2	SPT	5	209.6	5	7	SM	SILTY SAND with GRAVEL	30.5	23	n/a	NP	20	45	36							
NE-03-19	D-6	SPT	14.5	200.1	46	68	SC-SM	SILTY, CLAYEY SAND	9.7	19	13	6	9	50	41							
NE-03-19	D-11	SPT	26.5	188.1	15	22	SM	SILTY SAND	21.9	n/a	n/a	NP	4	80	16							
NE-03-19	D-13	SPT	32.3	182.3	27	40	ML	SANDY SILT	30.2	36	n/a	NP	5	31	64							
NE-04vw-19	D-3	SPT	7	155	9	13	CL-ML	SANDY SILTY CLAY	22.7	22	18	4	2	36	62							
NE-04vw-19	D-8	SPT	19	143	6	9	SM	SILTY SAND	32.3	n/a	n/a	NP	4	64	32							
NE-04vw-19	D-13	SPT	32	130	37	54	CH	SANDY FAT CLAY	32.5	57	28	29	0	39	61							
NE-04vw-19	D-15	SPT	37	125	101	101	SM	SILTY SAND with GRAVEL	11	19	n/a	NP	27	51	22							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-04vw-19	D-18	SPT	44.7	117.3	58	85	--	--See Note 3--	81	n/a	n/a	NP							34.6			
NE-04vw-19	D-19	SPT	47	115	57	84	SM	SILTY SAND	16.4	n/a	n/a	NP	0	81	19							
NE-05-19	D-2	SPT	7	112.3	12	18	ML	SANDY SILT	16.5	18	n/a	NP	3	45	53							
NE-05-19	D-6	SPT	17	102.3	6	9	SM	SILTY SAND with Organics	22.7	n/a	n/a	NP	5	69	26							
NE-05-19	D-8	SPT	22	97.3	3	4	SW-SM	WELL-GRADED SAND with SILT	21.2	n/a	n/a	NP	5	83	12							
NE-05-19	D-11	SPT	29	90.3	101	101	SM	SILTY SAND with GRAVEL	18.2	n/a	n/a	NP	27	59	13							
NE-05-19	D-13	SPT	34	85.3	26	38	SM	SILTY SAND	20.2	15	n/a	NP	14	43	44							
NE-05-19	D-17	SPT	49	70.3	71	101	SM	SILTY SAND	13.6	n/a	n/a	NP	1	86	12							
NE-07si-19	D-3	SPT	7		14	19	SM	SILTY SAND	22.5	n/a	n/a	NP	0	70	29							
NE-07si-19	D-5	SPT	12		28	38	SM	SILTY SAND	20.9	16	n/a	NP	1	51	49							
NE-07si-19	D-7	SPT	17		49	66	SM	SILTY SAND	12.7	n/a	n/a	NP	0	80	19							
NE-07si-19	D-11	SPT	27		101	101	SC-SM	SILTY, CLAYEY SAND with GRAVEL	13.2	22	15	7	18	48	33							
NE-07si-19	D-17	SPT	54		101	101	ML	SANDY SILT	25.7	21	n/a	NP	1	42	58							
NE-07si-19	D-20	SPT	69		101	101	SM	SILTY SAND	15.6	n/a	n/a	NP	1	80	19							
NE-07si-19	D-22	SPT	79		50	68	ML	SILT with SAND	34.8	31	28	3	2	24	74							
NE-07si-19	D-24a	SPT	89.5		101	101	--	--See Note 3--	68										34.6			
NE-08-19	D-4	SPT	10	117.1	19	28	SM	SILTY SAND	23.4	n/a	n/a	NP	1	56	43							
NE-08-19	D-7	SPT	18	109.1	13	19	ML	SANDY SILT	22.1	22	n/a	NP	1	30	69							
NE-08-19	D-10	SPT	25	102.1	5	7	SM	SILTY SAND	20.8	n/a	n/a	NP	0	67	33							
NE-08-19	D-12	SPT	30	97.1	3	4	SC-SM	SILTY, CLAYEY SAND	28.4	26	19	7	8	44	48							
NE-08-19	D-15	SPT	38	89.1	27	40	CL	LEAN CLAY with SAND	22	48	21	27	1	17	82							
NE-09si-19	D-2	SPT	5	206.6	8	11	ML	SANDY SILT	24.1	23	20	3	8	33	60							
NE-09si-19	D-3	SPT	8	203.6	15	20	SM	SILTY SAND	18.3	n/a	n/a	NP	8	51	41							
NE-09si-19	D-5	SPT	13	198.6	35	47	SM	SILTY SAND	15.8	n/a	n/a	NP	0	75	25							
NE-09si-19	D-12	SPT	30	181.6	74	100	SP-SM	POORLY GRADED SAND with SILT	21.8	n/a	n/a	NP	0	91	9							
NE-09si-19	D-14	SPT	40	171.6	45	61	ML	SILT	24.4	21	n/a	NP	0	10	90							
NE-09si-19	D-17	SPT	55	156.6	68	92	CL	SANDY LEAN CLAY	27	27	19	8	1	32	68							
NE-09si-19	D-20	SPT	70	141.6	38	51	ML	SILT with SAND	28.4	21	n/a	NP	0	28	72							
NE-09si-19	D-25	SPT	95	116.6	15	20	CL	LEAN CLAY	30.7	39	22	17	0	12	88							
NE-09si-19	D-29	SPT	130	81.6	20	27	--	--See Note 3--	29.6	33	23	10										

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-11-19	D-2	SPT	4	101.6	10	15	SC	CLAYEY SAND with GRAVEL	29.3	34	20	14	18	36	47							
NE-11-19	D-4	SPT	9	96.6	7	11	CL	SANDY LEAN CLAY	40.4	46	25	21	2	31	67							
NE-11-19	D-6	SPT	14	91.6	11	17	CL	LEAN CLAY	26.8	31	22	9	5	5	90							
NE-11-19	D-12	SPT	29	76.6	21	32	--	--See Note 3--	28.4	36	23	13										
NE-11-19	D-13	SPT	34	71.6	18	27	CL	LEAN CLAY	34.3	41	21	20	0	12	88							
NE-11-19	D-14	SPT	39	66.6	28	43	--	--See Note 3--	32.2	38	23	15										
NE-11-19	D-15	SPT	44	61.6	28	43	CL	LEAN CLAY with SAND	23.1	30	21	9	4	16	80							
NE-11-19	D-18	SPT	59	46.6	17	26	CL	LEAN CLAY	30.3	32	21	11	0	8	92							
NE-11-19	D-22	SPT	79	26.6	22	33	ML	SANDY SILT	19.3	17	n/a	NP	0	49	51							
NE-11-19	D-27	SPT	104	1.6	12	18	CL	LEAN CLAY	33.6	43	20	23	0	14	86							
NE-11-19	D-32	SPT	129	-23.4	23	35	--	--See Note 3--	29.7	44	21	23										
NE-11-19	D-36	SPT	149	-43.4	21	32	CL	LEAN CLAY	25.8	37	19	18	2	10	88							
NE-12p-19	D-2	SPT	4.5	100	7	9	ML	SILT	33.5	37	25	12	7	6	87							
NE-12p-19	D-4	SPT	9.5	95	2	3	--	--See Note 3--	38.4	35	22	13										
NE-12p-19	D-7	SPT	17.5	87	21	28	CL	LEAN CLAY	30.4	38	24	14	0	4	96							
NE-12p-19	D-11	SPT	27.5	77	17	23	--	--See Note 3--	31.9	42	23	19										
NE-12p-19	D-12	SPT	29.5	75	23	31	--	--See Note 3--	33.6	43	22	21										
NE-12p-19	D-13	SPT	32.5	72	23	31	--	--See Note 3--	27	39	20	19										
NE-12p-19	D-14	SPT	34.5	70	28	38	CL	LEAN CLAY	38.8	34	21	13	0	4	96	76	20	2.76				
NE-12p-19	D-15	SPT	37.5	67	17	23	--	--See Note 3--	26.6	53	23	30										
NE-12p-19	D-18	SPT	44.5	60	23	31	CL	LEAN CLAY with SAND	22.3	27	19	8	0	19	81							
NE-12p-19	D-21	SPT	54.5	50	15	20	CL	LEAN CLAY	32.6	42	23	19	0	8	92							
NE-12p-19	D-25	SPT	74.5	30	18	24	CL-ML	SILTY CLAY with SAND	22.4	23	18	5	0	26	74							
NE-12p-19	D-28	SPT	89.5	15	14	19	--	--See Note 3--	27.3	25	19	6										
NE-12p-19	D-33	SPT	114.5	-10	47	64	ML	SILT	25.3	31	23	8	0	3	97							
NE-12p-19	D-37	SPT	134.5	-30	17	23	--	--See Note 3--	29.4	35	21	14										
NE-13p-19	D-3	SPT	6.5	47.2	8	12	CL	LEAN CLAY with SAND	29.3	38	24	14	2	14	83							
NE-13p-19	D-4	SPT	8.5	45.2	5	8	--	--See Note 3--	37.7	38	24	14										
NE-13p-19	S-5	SHELBY (3	11.5	42.2			CL	LEAN CLAY	34.2	34	22	12	0	8	92	68	24	2.64			88	Direct Shear
NE-13p-19	D-6	SPT	12	41.7	19	29	--	--See Note 3--	24.1	32	20	12										

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-13p-19	D-9	SPT	18.5	35.2	17	26	CL	LEAN CLAY	32.8	34	21	13	0	4	96	62	35	2.76				
NE-13p-19	D-11	SPT	23.5	30.2	17	26	--	--See Note 3--	28.8	31	22	9										
NE-13p-19	D-13	SPT	28.5	25.2	17	26	CL	LEAN CLAY with SAND	23.9	29	18	11	0	16	84	58	26	2.73				
NE-13p-19	D-17	SPT	38.5	15.2	17	26	CL	LEAN CLAY	25.2	31	19	12	0	12	88							
NE-13p-19	D-25	SPT	68.5	-14.8	22	33	CL	LEAN CLAY	26.5	34	20	14	0	14	86							
NE-13p-19	D-27	SPT	78.5	-24.8	26	39	CL	SANDY LEAN CLAY	18.1	29	15	14	11	34	55							
NE-13p-19	D-29	SPT	88.5	-34.8	40	61	CL	LEAN CLAY with SAND	23.6	29	20	9	13	16	71							
NE-14p-19	D-1	SPT	0	61.2	8		ML	SANDY SILT	35.6	46	28	18	9	24	67							
NE-14p-19	D-3	SPT	8	53.2	11		CL	LEAN CLAY	36.3	48	24	24	1	5	94							
NE-14p-19	D-9	SPT	23	38.2	13		CL	LEAN CLAY	35.1	35	21	14	1	10	89							
NE-14p-19	D-14	SPT	35	26.2	21		SM	SILTY SAND	18.1	15	n/a	NP	0	55	45							
NE-14p-19	D-17	SPT	43	18.2	17		CL-ML	SILTY CLAY with SAND	21	24	17	7	0	26	74							
NE-14p-19	D-21	SPT	55	6.2	16		ML	SILT	30	30	23	7	0	2	98							
NE-14p-19	D-24	SPT	70	-8.8	18		CL	LEAN CLAY	29.4	34	19	15	0	8	92							
NE-14p-19	D-26	SPT	80	-18.8	24		GC	CLAYEY GRAVEL with SAND	23	27	16	11	35	22	43							
NE-15p-19	D-3	SPT	8	49.4	6	8	CL	LEAN CLAY with SAND	32.4	39	21	18	1	20	79							
NE-15p-19	D-4	SPT	10	47.4	5	7	CL	LEAN CLAY	39.2	36	21	15	0	13	87							
NE-15p-19	D-6	SPT	14	43.4	24	33	GC	CLAYEY GRAVEL with SAND	15.8	33	18	15	47	26	26							
NE-15p-19	D-9	SPT	23	34.4	16	22	CL	LEAN CLAY with SAND	23.4	29	19	10	5	15	80							
NE-15p-19	D-13	SPT	33	24.4	16	22	CL	LEAN CLAY	31.7	37	21	16	0	6	94							
NE-15p-19	D-18	SPT	50	7.4	14	19	CL	LEAN CLAY	30.6	39	20	19	0	10	89							
NE-15p-19	D-22	SPT	70	-12.6	15	20	CL	LEAN CLAY	32.6	33	23	10	0	3	97							
NE-15p-19	D-26	SPT	90	-32.6	39	53	ML	SILT	26.8	22	n/a	NP	0	4	96							
NE-15p-19	D-30	SPT	110	-52.6	28	38	ML	SANDY SILT with GRAVEL	17.2	20	n/a	NP	17	24	58							
NE-15p-19	D-32	SPT	120	-62.6	21	28	CL-ML	SILTY CLAY with SAND	22	24	17	7	0	29	71							
NE-15p-19	D-34	SPT	130	-72.6	97	101	SC-SM	SILTY, CLAYEY SAND with GRAVEL	16	19	14	5	27	57	16							
NE-16p-19	D-2	SPT	4	50.2	6	9	--	--See Note 3--	37	44	26	18										
NE-16p-19	P-3	PISTON	7.5	46.7			CL	LEAN CLAY	35.1	39	22	17	0	6	94	68	26	2.71			89	Consolidation
NE-16p-19	D-5	SPT	12	42.2	14	21	CL	LEAN CLAY	31.4	34	21	13	0	5	95	66	29	2.75				
NE-16p-19	P-6	PISTON	15.5	38.7			CL	LEAN CLAY	31.8	37	20	17	5	6	88	64	24	2.7			98	Ring Shear

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-16p-19	D-8	SPT	19	35.2	15	22	--	--See Note 3--	33.3	40	25	15										
NE-16p-19	P-12	PISTON	29.3	24.9			ML	SANDY SILT	16.2	19	16	3	0	41	59	54	5	2.76			117	Direct Shear
NE-16p-19	D-13	SPT	31	23.2	20	29	ML	SANDY SILT	19.9	17	n/a	NP	0	46	54							
NE-16p-19	D-14	SPT	34	20.2	17	25	--	--See Note 3--	31.6	32	19	13										
NE-16p-19	D-16	SPT	44	10.2	19	28	--	--See Note 3--	25.3	29	20	9										
NE-16p-19	D-18	SPT	54	0.2	16	23	CL	LEAN CLAY	31.2	36	23	13	0	2	98	73	25	2.78				
NE-16p-19	D-25	SPT	89	-34.8	101	101	ML	SILT with SAND	29.7	21	n/a	NP	1	20	78							
NE-17p-19	D-4	SPT	9	30.1	8	12	ML	SILT with SAND	35.6	35	25	10	1	14	85							
NE-17p-19	D-7	SPT	17	22.1	9	13	CH	FAT CLAY with SAND	38	53	25	28	0	19	80							
NE-17p-19	S-8	HELBY (3	19.5	19.6			CL	LEAN CLAY	35.4	45	24	21	0	4	96	69	28	2.72			86	Direct Shear
NE-17p-19	D-9	SPT	21	18.1	9	13	ML	SILT	32.1	31	23	8	0	13	87							
NE-17p-19	D-11	SPT	27	12.1	11	16	--	--See Note 3--	39.9	31	21	10										
NE-17p-19	D-13	SPT	32	7.1	31	45	CL-ML	SANDY SILTY CLAY	19.6	22	17	5	2	28	70							
NE-17p-19	D-21	SPT	54	-14.9	16	23	CL	LEAN CLAY	30.5	37	20	17	0	10	90							
NE-17p-19	D-29	SPT	94	-54.9	18	26	CL	LEAN CLAY	25.7	37	21	16	0	6	94							
NE-17p-19	D-37	SPT	134	-94.9	35	51	SM	SILTY SAND	21.4	n/a	n/a	NP	3	66	31							
NE-17p-19	D-40	SPT	149	-109.9	101	101	SM	SILTY SAND	22.8	n/a	n/a	NP	0	74	25							
NE-18p-19	D-2	SPT	4	51.9	26	35	SM	SILTY SAND with GRAVEL	15.2	17	14	3	15	40	45							
NE-18p-19	D-5	SPT	12	43.9	10	14	ML	SANDY SILT	19.7	20	17	3	14	23	62							
NE-18p-19	D-8	SPT	19	36.9	25	34	SM	SILTY SAND with GRAVEL	18.1	n/a	n/a	NP	29	37	33							
NE-18p-19	D-10	SPT	24	31.9	51	69	SM	SILTY SAND with GRAVEL	11.3	n/a	n/a	NP	32	44	24							
NE-18p-19	D-12	SPT	29	26.9	11	15	SM	SILTY SAND	25.5	n/a	n/a	NP	2	81	17							
NE-18p-19	D-15	SPT	37	18.9	12	16	SM	SILTY SAND	30.1	n/a	n/a	NP	8	76	16							
NE-18p-19	D-16	SPT	39	16.9	9	12	--	--See Note 3--	49.9	n/a	n/a	NP							5.6			
NE-18p-19	D-18	SPT	44	11.9	21	28	SW-SM	WELL-GRADED SAND with SILT	22.2	n/a	n/a	NP	0	93	6							
NE-18p-19	D-20	SPT	49	6.9	40	54	SM	SILTY SAND	22.5	n/a	n/a	NP	0	87	13							
NE-18p-19	D-22	SPT	59	-3.1	21	28	ML	SANDY SILT	25.8	n/a	n/a	NP	0	37	63							
NE-18p-19	D-24	SPT	69	-13.1	28	38	SM	SILTY SAND	26.2	n/a	n/a	NP	0	88	12							
NE-18p-19	D-26	SPT	79	-23.1	37	50	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	18.2	n/a	n/a	NP	23	67	10							
NE-18p-19	D-28	SPT	89	-33.1	16	22	CL	LEAN CLAY with SAND	28.7	42	22	20	0	19	81							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-18p-19	D-31	SPT	104	-48.1	24	33	CL-ML	SANDY SILTY CLAY	21.1	20	15	5	0	38	62							
NE-18p-19	D-34	SPT	119	-63.1	17	23	--	--See Note 3--	24.4	27	19	8										
NE-18p-19	D-36	SPT	129	-73.1	19	26	CL-ML	SILTY CLAY with SAND	22.9	24	18	6	0	25	75							
NE-19p-19	D-3	SPT	9.5	23.1	4	5	SM	SILTY SAND	51.8	n/a	n/a	NP	0	80	20							
NE-19p-19	D-4	SPT	12.5	20.1	1	1	--	--See Note 3--	75.4	n/a	n/a	NP							7.7			
NE-19p-19	D-6	SPT	17.5	15.1	27	37	SP-SM	POORLY GRADED SAND with SILT	18.2	n/a	n/a	NP	0	91	9							
NE-19p-19	D-12	SPT	32.5	0.1	23	31	ML	SANDY SILT	26.1	n/a	n/a	NP	0	32	68							
NE-19p-19	D-15	SPT	39.5	-6.9	25	34	SM	SILTY SAND	23.5	n/a	n/a	NP	0	88	12							
NE-19p-19	D-22	SPT	64.5	-31.9	63	85	ML	SANDY SILT	20.7	15	14	1	12	37	51							
NE-19p-19	D-24	SPT	74.5	-41.9	18	24	CL	LEAN CLAY with SAND	25.7	36	19	17	0	20	80							
NE-19p-19	D-28	SPT	94.5	-61.9	18	24	CL-ML	SILTY CLAY with SAND	23.8	26	19	7	0	15	85							
NE-19p-19	D-34	SPT	124.5	-91.9	42	57	CL	SANDY LEAN CLAY	25.1	23	14	9	0	39	61							
NE-19p-19	D-38	SPT	144.5	-111.9	20	27	CL-ML	SILTY CLAY with SAND	26.6	21	15	6	0	30	70							
NE-19p-19	D-41	SPT	159.5	-126.9	35	47	CL	LEAN CLAY	28.6	49	22	27	0	8	92							
NE-20vw-19	D-2	SPT	4	28.6	5	8	SM	SILTY SAND with GRAVEL	13.4	n/a	n/a	NP	22	50	28							
NE-20vw-19	D-5	SPT	12	20.6	7	11	SM	SILTY SAND	38.4	n/a	n/a	NP	0	88	12	11	1	2.66				
NE-20vw-19	D-7	SPT	17	15.6	17	26	SP-SM	POORLY GRADED SAND with SILT and Organics	25.8	n/a	n/a	NP	0	94	6							
NE-20vw-19	D-11	SPT	27	5.6	17	26	SP-SM	POORLY GRADED SAND with SILT	22.1	n/a	n/a	NP	1	91	9							
NE-20vw-19	D-13	SPT	34	-1.4	17	26	SP-SM	POORLY GRADED SAND with SILT and Organics	30	n/a	n/a	NP	0	89	11							
NE-20vw-19	D-16	SPT	49	-16.4	25	38	ML	SANDY SILT with Organics	27.3	n/a	n/a	NP	0	44	56							
NE-20vw-19	D-17	SPT	54	-21.4	39	60	SP-SM	POORLY GRADED SAND with SILT and Organics	25.7	n/a	n/a	NP	0	92	8							
NE-20vw-19	D-20	SPT	69	-36.4	29	44	CL	LEAN CLAY with SAND	24.6	37	21	16	2	17	81							
NE-20vw-19	D-25	SPT	94	-61.4	21	32	CL	LEAN CLAY	25.4	32	20	12	0	8	92	78	14	2.74				
NE-20vw-19	D-27	SPT	104	-71.4	20	31	CL	LEAN CLAY	25.6	26	13	13	0	10	90	80	9	2.86				
NE-20vw-19	D-34	SPT	139	-106.4	22	34	CL-ML	SILTY CLAY with SAND	23	24	17	7	0	25	75							
NE-21p-19	D-2	SPT	4	32.9	27	40	SM	SILTY SAND with GRAVEL	12.8	15	n/a	NP	32	35	33							
NE-21p-19	D-3	SPT	7	29.9	15	22	CL-ML	SANDY SILTY CLAY	15.5	21	17	4	14	29	57							
NE-21p-19	D-8	SPT	19	17.9	28	42	SP-SM	POORLY GRADED SAND with SILT	20.9	n/a	n/a	NP	0	93	7							
NE-21p-19	S-14	SHELBY (2	35.5	1.4			CL-ML	SILTY CLAY	33.8	21	17	4	0	9	91	75	16	2.75			89	Consolidation
NE-21p-19	D-15	SPT	37	-0.1	1	1	--	--See Note 3--	40.3	31	19	12										

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-21p-19	S-18	HELBY (2	45.5	-8.6			CL	LEAN CLAY	35.9	33	20	13	0	3	97	72	24	2.81			86	Direct Shear
NE-21p-19	D-19	SPT	47	-10.1	0	0	--	--See Note 3--	38.5	33	20	13										
NE-21p-19	D-23	SPT	57	-20.1	0	0	--	--See Note 3--	35.8	32	19	13										
NE-21p-19	D-25	SPT	62	-25.1	12	18	--	--See Note 3--	41.8	39	22	17										
NE-21p-19	D-26	SPT	64	-27.1	24	36	SM	SILTY SAND	27	n/a	n/a	NP	0	65	35							
NE-21p-19	D-29	SPT	79	-42.1	27	40	ML	SANDY SILT	28.6	n/a	n/a	NP	0	46	54							
NE-21p-19	D-30	SPT	84	-47.1	9	13	--	--See Note 3--	27	25	22	3										
NE-21p-19	S-34	HELBY (2	100.5	-63.6			CL	LEAN CLAY	33.8	36	21	15	0	1	99	73	27	2.82			91	
NE-21p-19	S-36	HELBY (2	105	-68.1			CL	LEAN CLAY	32.7	40	21	19	0	1	99	74	24	2.76			93	Direct Shear
NE-21p-19	D-37	SPT	107	-70.1	5	7	--	--See Note 3--	35.1	36	21	15										
NE-21p-19	D-39	SPT	112	-75.1	9	13	--	--See Note 3--	30.6	29	21	8										
NE-21p-19	D-41	SPT	117	-80.1	6	9	CL	LEAN CLAY	34.3	35	20	15	0	11	89							
NE-21p-19	D-50	SPT	154	-117.1	101	101	SM	SILTY SAND	14.4	n/a	n/a	NP	8	61	31							
NE-22p-19	D-3	SPT	7	24.6	8	12	MH	SANDY ELASTIC SILT with organics	77	60	n/a	NP	8	25	68							
NE-22p-19	D-4	SPT	9	22.6	4	6	--	--See Note 3--	61	38	n/a	NP							5.7			
NE-22p-19	D-5	SPT	12	19.6	3	4	--	--See Note 3--	112.8	n/a	n/a	NP							13			
NE-22p-19	D-10	SPT	22	9.6	34	50	SM	SILTY SAND	20.4	n/a	n/a	NP	4	73	23							
NE-22p-19	D-14	SPT	32	-0.4	5	7	CL	LEAN CLAY	36.1	29	18	11	0	12	88							
NE-22p-19	D-18	SPT	42	-10.4	32	47	SM	SILTY SAND	24.6	n/a	n/a	NP	1	85	14							
NE-23-19	D-2	SPT	4	29.9	48	73	SM	SILTY SAND with GRAVEL	6.5	n/a	n/a	NP	38	41	21							
NE-23-19	D-4	SPT	9	24.9	3	5	ML	SANDY SILT	39	26	22	4	5	29	65	51	14	2.64				
NE-23-19	D-8	SPT	19	14.9	18	28	SM	SILTY SAND with Organics	22.4	n/a	n/a	NP	0	85	15					5.3 / 3300		
NE-23-19	D-12	SPT	29	4.9	35	53	SM	SILTY SAND	21.5	n/a	n/a	NP	0	73	27							
NE-23-19	D-15	SPT	44	-10.1	60	92	SM	SILTY SAND with Organics	25.1	n/a	n/a	NP	0	82	18							
NE-24-19	D-2	SPT	4	29.1	4	6	SM	SILTY SAND	14.4	n/a	n/a	NP	11	51	37							
NE-24-19	D-8	SPT	19	14.1	10	15	SP-SM	POORLY GRADED SAND with SILT	27.5	n/a	n/a	NP	0	93	7							
NE-24-19	D-11	SPT	27	6.1	25	38	ML	SANDY SILT	29.2	n/a	n/a	NP	0	46	54							
NE-24-19	D-12	SPT	29	4.1	22	34	ML	SILT with SAND	26.2	n/a	n/a	NP	0	28	72							
NE-25p-19	D-2	SPT	4	31.3	6	9	SM	SILTY SAND with GRAVEL	11.4	n/a	n/a	NP	20	52	28							
NE-25p-19	D-3	SPT	7	28.3	2	3	--	--See Note 3--	57.5	n/a	n/a	NP							7.7			

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-25p-19	S-4	HELBY (2	10.7	24.6			ML	SILT	27.8	30	26	4	0	7	93						94	
NE-25p-19	D-6	SPT	14	21.3	2	3	--	--See Note 3--	28	n/a	n/a	NP								5.1 / 3900		
NE-25p-19	D-8	SPT	19	16.3	1	2	SP-SM	POORLY GRADED SAND with SILT	23.8	n/a	n/a	NP	0	92	8							
NE-25p-19	D-10	SPT	24	11.3	12	18	SM	SILTY SAND	23.5	n/a	n/a	NP	0	87	13							
NE-25p-19	D-11	SPT	27	8.3	13	20	ML	SANDY SILT	25.6	n/a	n/a	NP	0	50	50							
NE-26-19	D-2	SPT	4	29	4	6	SM	SILTY SAND	21	n/a	n/a	NP	10	70	20							
NE-26-19	D-9	SPT	22	11	25	38	SP	POORLY GRADED SAND	26.3	n/a	n/a	NP	0	96	4							
NE-26-19	D-13	SPT	34	-1	23	35	SM	SILTY SAND	26.4	n/a	n/a	NP	0	74	26							
NE-28p-19	D-1	SPT	2	36.7	64	97	SM	SILTY SAND with GRAVEL	10.6	n/a	n/a	NP	21	40	39							
NE-28p-19	D-6	SPT	14	24.7	37	56	SM	SILTY SAND with GRAVEL	13.8	n/a	n/a	NP	16	66	18							
NE-28p-19	D-8	SPT	19	19.7	3	5	MH	ELASTIC SILT	99.4	83	n/a	NP	0	5	95	75	19	2.47				
NE-28p-19	D-9	SPT	22	16.7	3	5	CL-ML	SILTY CLAY with SAND	39.6	21	17	4	0	24	76							
NE-28p-19	D-10	SPT	24	14.7	2	3	CL	LEAN CLAY	41.4	27	19	8	0	8	92							
NE-28p-19	D-13	SPT	30	8.7	0	0	SM	SILTY SAND	27.3	n/a	n/a	NP	0	82	18							
NE-29-19	D-6	SPT	15	45.8	37	50	SM	SILTY SAND with GRAVEL	9.5	n/a	n/a	NP	23	57	20							
NE-29-19	D-12	SPT	30	30.8	48	65	SM	SILTY SAND with GRAVEL	12.2	n/a	n/a	NP	30	43	27							
NE-29-19	D-15	SPT	38	22.8	46	62	--	--See Note 3--	80.8										11.5			
NE-29-19	D-15	SPT	38.5	22.3	46	62	SM	SILTY SAND	21.3	n/a	n/a	NP	0	73	27							
NE-29-19	D-18	SPT	45	15.8	25	34	SP-SM	POORLY GRADED SAND with SILT	25.2	n/a	n/a	NP	0	90	10							
NE-29-19	D-19	SPT	50	10.8	11	15	MH	SANDY ELASTIC SILT	73.3	57	42	15	0	40	59							
NE-29-19	D-23	SPT	70	-9.2	5	7	CL	LEAN CLAY	33.8	34	20	14	0	6	94							
NE-30vw-19	D-5	SPT	13	23.1	9	12	ML	SANDY SILT	45	37	27	10	3	30	67							
NE-30vw-19	D-9	SPT	23	13.1	3	4	MH	SANDY ELASTIC SILT	63.6	51	42	9	1	48	51							
NE-30vw-19	S-12	HELBY (3	31.5	4.6			CL-ML	SILTY CLAY	30	24	18	6	0	9	91	75	16	2.76			94	Consolidation
NE-30vw-19	S-14	HELBY (3	36.8	-0.7			--	--See Note 3--	44.5	32	19	13										
NE-30vw-19	D-15	SPT	37	-0.9	0	0	CL	LEAN CLAY	50.6	32	20	12	0	2	98							
NE-30vw-19	S-16	HELBY (3	40	-3.9			--	--See Note 3--	42.3	32	20	12										
NE-30vw-19	D-24	SPT	80	-43.9	27	37	SM	SILTY SAND	22.6	n/a	n/a	NP	0	68	32							
NE-31p-19	D-3	SPT	7	32.5	45	68	SM	SILTY SAND	13.9	n/a	n/a	NP	15	54	31							
NE-31p-19	D-5	SPT	12	27.5	43	65	SW-SM	WELL-GRADED SAND with SILT	15.6	n/a	n/a	NP	13	80	7							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-31p-19	D-7	SPT	17	22.5	7	11	--	--See Note 3--	73	n/a	n/a	NP							10.2			
NE-31p-19	D-8	SPT	19	20.5	5	8	CL	LEAN CLAY with SAND	39.9	44	21	23	0	15	85							
NE-31p-19	D-9	SPT	22	17.5	15	23	SP-SM	POORLY GRADED SAND with SILT	26.9	n/a	n/a	NP	0	91	9							
NE-31p-19	D-10	SPT	24	15.5	2	3	MH	SANDY ELASTIC SILT with organics	79.1	51	43	8	1	34	65				5.9			
NE-31p-19	D-13	SPT	32.5	7	0	0	CL	LEAN CLAY	42.4	28	20	8	0	4	96							
NE-31p-19	D-20	SPT	59	-19.5	20	30	--	--See Note 3--	32.4	24	20	4										
NE-31p-19	D-21	SPT	64	-24.5	17	26	SM	SILTY SAND	32.5	n/a	n/a	NP	0	65	35							
NE-32p-19	D-2	SPT	4	31.5	11	15	GM	SILTY GRAVEL with SAND	12	n/a	n/a	NP	36	21	43							
NE-32p-19	D-5	SPT	12	23.5	9	12	--	--See Note 3--	48.7	45	37	8										
NE-32p-19	D-6	SPT	14	21.5	3	4	--	--See Note 3--	43.4	38	21	17										
NE-32p-19	S-7	HELBY (3	17.7	17.8			--	--See Note 3--	95	75	56	19									46	
NE-32p-19	S-10	HELBY (3	25.7	9.8			CL	LEAN CLAY	43.9	27	17	10	0	13	87	62	26	2.76			73	Consolidation
NE-32p-19	D-11	SPT	26	9.5	0	0	CL	LEAN CLAY	44.4	35	22	13	0	0	100	76	24	2.76				
NE-32p-19	D-13	SPT	31	4.5	0	0	--	--See Note 3--	47.5	36	21	15										
NE-32p-19	D-16	SPT	39	-3.5	25	34	SM	SILTY SAND	23.8	n/a	n/a	NP	0	60	40							
NE-32p-19	D-19	SPT	54	-18.5	17	23	ML	SILT with SAND	28.3	n/a	n/a	NP	0	26	74							
NE-32p-19	D-20	SPT	59	-23.5	32	43	SM	SILTY SAND	21.4	n/a	n/a	NP	0	52	48							
NE-32p-19	D-22	SPT	69	-33.5	22	30	--	--See Note 3--	24.4	n/a	n/a	NP										
NE-33-19	D-3	SPT	8	20.4	3	4	--	--See Note 3--	106.3	78	58	20										
NE-33-19	S-4	HELBY (3	11.7	16.7			--	--See Note 3--	238.6	n/a	n/a	NP							29.8		20	
NE-33-19	D-5	SPT	12	16.4	1	1	--	--See Note 3--	100.8	62	43	19										
NE-33-19	S-6	HELBY (3	16.7	11.7			--	--See Note 3--	52.9	32	20	12									60	
NE-33-19	D-8	SPT	20	8.4	27	37	ML	SANDY SILT	30.3	n/a	n/a	NP	0	43	57							
NE-33-19	D-11	SPT	28	0.4	29	39	SM	SILTY SAND	29.6	n/a	n/a	NP	0	51	49							
NE-33-19	D-14	SPT	40	-11.6	34	46	SM	SILTY SAND	27.1	n/a	n/a	NP	0	81	19							
NE-34p-19	D-2	SPT	4	42.7	13	19	SM	SILTY SAND	14.9	n/a	n/a	NP	4	82	15							
NE-34p-19	D-5	SPT	12	34.7	18	26	SW-SM	WELL-GRADED SAND with SILT	18.6	n/a	n/a	NP	12	77	12	10	2	2.71				
NE-34p-19	D-8	SPT	19	27.7	23	34	SW-SM	WELL-GRADED SAND with SILT	15.6	n/a	n/a	NP	7	83	10							
NE-34p-19	D-10	SPT	24	22.7	24	35	SP-SM	POORLY GRADED SAND with SILT	21.2	n/a	n/a	NP	11	82	7							
NE-34p-19	D-12	SPT	29	17.7	29	42	SP-SM	POORLY GRADED SAND with SILT	20.7	n/a	n/a	NP	0	93	7							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-34p-19	D-14	SPT	34	12.7	38	56	SP-SM	POORLY GRADED SAND with SILT	20.9	n/a	n/a	NP	1	91	9							
NE-34p-19	D-17	SPT	42	4.7	46	67	SM	SILTY SAND with GRAVEL	6.2	n/a	n/a	NP	19	59	22							
NE-35p-19	D-4	SPT	9	88.2	32	47	SM	SILTY SAND with GRAVEL	20.1	n/a	n/a	NP	38	48	14							
NE-35p-19	D-7	SPT	17	80.2	22	32	SM	SILTY SAND	22	n/a	n/a	NP	2	67	31							
NE-35p-19	D-9	SPT	22	75.2	48	70	ML	SILT with SAND	29.2	23	n/a	NP	0	18	82							
NE-35p-19	D-12	SPT	29	68.2	43	63	ML	SANDY SILT	26.7	n/a	n/a	NP	0	44	55							
NE-35p-19	D-15	SPT	37	60.2	101	101	SM	SILTY SAND	20.2	n/a	n/a	NP	1	77	22							
NE-35p-19	D-18	SPT	44	53.2	101	101	SM	SILTY SAND	24.1	n/a	n/a	NP	0	81	19							
NE-36p-19	D-2	SPT	4	148.2	7	10	CL	SANDY LEAN CLAY with organics	25.7	28	20	8	3	30	67							
NE-36p-19	D-5	SPT	12	140.2	8	12	CL	SANDY LEAN CLAY with organics	26.2	29	20	9	10	32	58							
NE-36p-19	D-7	SPT	17	135.2	7	10	SM	SILTY SAND	14.3	n/a	n/a	NP	13	71	16							
NE-36p-19	D-11	SPT	27	125.2	6	9	CL-ML	SANDY SILTY CLAY	22.5	22	17	5	3	39	58							
NE-36p-19	D-13	SPT	32	120.2	80	101	SM	SILTY SAND with GRAVEL with organics	14.5	n/a	n/a	NP	16	54	30							
NE-36p-19	D-19	SPT	54.6	97.6	56	82	MH	SANDY ELASTIC SILT with organics	37.8	52	36	16	2	31	68				9			
NE-36p-19	D-21	SPT	64	88.2	101	101	ML	SILT with SAND with organics	54.2	40	31	9	0	29	70							
NE-37-19	D-4	SPT	9	184.6	2	3	SM	SILTY SAND with GRAVEL	31.1	23	n/a	NP	21	48	31							
NE-37-19	D-5	SPT	12	181.6	6	8	SM	SILTY SAND with Organics	29.5	24	n/a	NP	14	47	39							
NE-37-19	D-8	SPT	19	174.6	5	7	SM	SILTY SAND with GRAVEL and Organics	33.9	n/a	n/a	NP	29	50	21							
NE-37-19	D-12	SPT	29	164.6	26	35	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	17.8	n/a	n/a	NP	22	69	9							
NE-37-19	D-17	SPT	42	151.6	42	57	SM	SILTY SAND	24.5	n/a	n/a	NP	0	81	19							
NE-37-19	D-20	SPT	54	139.6	85	101	SM	SILTY SAND	20.7	n/a	n/a	NP	13	66	21							
NE-37-19	D-22	SPT	64	129.6	101	101	SM	SILTY SAND	15.8	n/a	n/a	NP	5	50	45							
NE-38-19	D-2	SPT	3.5	166.7	58	85	CL-ML	SANDY SILTY CLAY	21.4	21	16	5	9	40	52							
NE-38-19	D-5	SPT	11.5	158.7	59	86	SM	SILTY SAND	18.9	n/a	n/a	NP	5	74	21							
NE-38-19	D-7	SPT	16.5	153.7	38	56	SM	SILTY SAND	24.5	n/a	n/a	NP	0	59	41							
NE-38-19	D-9	SPT	21.5	148.7	52	76	CL-ML	SILTY CLAY	24.2	28	22	6	1	14	85							
NE-39-19	D-1	SPT	0	145	13	18	SM	SILTY SAND with GRAVEL and Organics	18.6	n/a	n/a	NP	18	51	31							
NE-39-19	D-5	SPT	13	132	101	101	SM	SILTY SAND with GRAVEL	15.5	15	n/a	NP	36	40	24							
NE-39-19	D-8	SPT	25	120	101	101	ML	SANDY SILT with GRAVEL	19.9	21	19	2	17	31	52							
NE-39-19	D-9	SPT	30	115	101	101	SC-SM	SILTY, CLAYEY SAND with GRAVEL	10.6	21	16	5	21	30	49							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-40-19	D-4	SPT	9	122.6	40	54	SM	SILTY SAND with GRAVEL	16.5	18	n/a	NP	26	46	28							
NE-40-19	D-7	SPT	17	114.6	64	87	SM	SILTY SAND with GRAVEL	11.8	17	n/a	NP	37	48	15							
NE-40-19	D-8	SPT	19	112.6	60	81	SM	SILTY SAND	14.6	16	n/a	NP	14	52	34							
NE-41-19	D-2	SPT	4	126.7	23	31	SM	SILTY SAND with GRAVEL	11.4	n/a	n/a	NP	20	60	20							
NE-41-19	D-5	SPT	12	118.7	22	30	SM	SILTY SAND with GRAVEL	14	n/a	n/a	NP	18	64	19							
NE-41-19	D-8	SPT	19	111.7	21	28	SM	SILTY SAND with GRAVEL	12.1	n/a	n/a	NP	25	52	23							
NE-41-19	D-9	SPT	22	108.7	77	101	SM	SILTY SAND	12.5	n/a	n/a	NP	11	49	40							
NE-41-19	D-15	SPT	37	93.7	76	101	SM	SILTY SAND	24	n/a	n/a	NP	0	74	26							
NE-42p-19	D-3	SPT	7	116.5	12	16	SM	SILTY SAND with GRAVEL	32.2	18	n/a	NP	20	51	29							
NE-42p-19	D-4	SPT	9	114.5	5	7	SM	SILTY SAND with GRAVEL	18.6	n/a	n/a	NP	22	54	24							
NE-42p-19	D-7	SPT	17	106.5	27	37	SM	SILTY SAND with GRAVEL	16.9	16	n/a	NP	16	57	27							
NE-42p-19	D-10	SPT	24	99.5	34	46	SM	SILTY SAND with GRAVEL with organics	12.4	n/a	n/a	NP	20	64	16							
NE-42p-19	D-13	SPT	32	91.5	40	54	SM	SILTY SAND	20.9	n/a	n/a	NP	6	81	14							
NE-42p-19	D-15	SPT	37	86.5	101	101	SM	SILTY SAND with GRAVEL	9.2	n/a	n/a	NP	30	47	23							
NE-43-19	D-3	SPT	8	110.1	26	35	SM	SILTY SAND with GRAVEL	11.1	15	n/a	NP	19	54	26							
NE-43-19	D-6	SPT	15	103.1	40	54	SM	SILTY SAND with GRAVEL	14.9	n/a	n/a	NP	16	67	18							
NE-43-19	D-8	SPT	20	98.1	28	38	SM	SILTY SAND with GRAVEL	15.9	n/a	n/a	NP	19	61	20							
NE-43-19	D-9	SPT	23	95.1	28	38	SM	SILTY SAND	24.3	n/a	n/a	NP	9	74	17							
NE-44p-19	D-3	SPT	7	108.7	101	101	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10.3	n/a	n/a	NP	27	62	11							
NE-44p-19	D-6	SPT	14	101.7	18	24	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	12.2	n/a	n/a	NP	36	57	8							
NE-44p-19	D-9	SPT	22	93.7	33	45	SM	SILTY SAND	20	n/a	n/a	NP	5	79	17							
NE-44p-19	D-10	SPT	24	91.7	37	50	SM	SILTY SAND	19.8	n/a	n/a	NP	6	81	14							
NE-44p-19	D-11	SPT	27	88.7	101	101	SM	SILTY SAND with GRAVEL	15.7	n/a	n/a	NP	28	42	30							
NE-44p-19	D-14	SPT	39	76.7	101	101	SM	SILTY SAND with GRAVEL	13.4	n/a	n/a	NP	16	41	43							
NE-45-19	D-4	SPT	9	103.4	15	22	SP-SM	POORLY GRADED SAND with SILT	21.4	n/a	n/a	NP	2	88	10							
NE-45-19	D-7	SPT	17	95.4	34	51	SM	SILTY SAND	14.8	n/a	n/a	NP	11	50	39							
NE-45-19	D-9	SPT	22	90.4	27	40	SM	SILTY SAND with GRAVEL	11.4	n/a	n/a	NP	28	42	30							
NE-45-19	D-13	SPT	32	80.4	42	63	CL-ML	SILTY CLAY with SAND	20.7	24	18	6	0	18	82							
NE-45-19	D-17	SPT	42	70.4	70	101	--	--See Note 3--	17.8	20	17	3										
NE-46p-19	D-4	SPT	9	105.5	10	14	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	15.6	n/a	n/a	NP	28	67	6							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-46p-19	D-6	SPT	14	100.5	23	31	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	22.1	n/a	n/a	NP	16	74	10							
NE-46p-19	D-9	SPT	22	92.5	47	64	SM	SILTY SAND	17.3	n/a	n/a	NP	11	48	40							
NE-46p-19	D-10	SPT	24	90.5	42	57	SM	SILTY SAND	15.2	n/a	n/a	NP	12	50	39							
NE-46p-19	D-12	SPT	29	85.5	64	87	ML	SANDY SILT	20	n/a	n/a	NP	1	33	65							
NE-46p-19	D-15	SPT	44	70.5	101	101	ML	SANDY SILT	16.4	18	16	2	7	31	61							
NE-47-19	D-3	SPT	8	110.7	13	18	SP-SM	POORLY GRADED SAND with SILT	25.2	n/a	n/a	NP	3	90	7							
NE-47-19	D-5	SPT	13	105.7	24	33	SM	SILTY SAND	25.4	n/a	n/a	NP	1	69	31							
NE-47-19	D-8	SPT	20	98.7	28	38	SM	SILTY SAND	10.7	n/a	n/a	NP	15	45	40							
NE-47-19	D-11	SPT	28	90.7	38	51	SM	SILTY SAND with GRAVEL	13.3	n/a	n/a	NP	22	40	38							
NE-47-19	D-14	SPT	35	83.7	101	101	SM	SILTY SAND with GRAVEL	13.1	14	n/a	NP	16	39	45							
NE-48vw-19	D-3	SPT	8	111.1	11	15	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	16.5	n/a	n/a	NP	18	73	9							
NE-48vw-19	D-9	SPT	23	96.1	23	31	ML	SANDY SILT	18.5	15	n/a	NP	7	35	58							
NE-48vw-19	D-11	SPT	28	91.1	41	56	ML	SILT with SAND	19.2	18	16	2	5	22	74							
NE-48vw-19	D-15	SPT	40	79.1	29	39	ML	SILT	26.1	24	21	3	1	9	90							
NE-48vw-19	D-19	SPT	60	59.1	58	79	ML	SANDY SILT	19.4	20	18	2	5	26	70							
NE-49vw-19	D-4	SPT	9	112.1	34	52	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	20.1	n/a	n/a	NP	18	72	10							
NE-49vw-19	D-7	SPT	17	104.1	22	33	SP-SM	POORLY GRADED SAND with SILT	24.6	n/a	n/a	NP	0	91	9							
NE-49vw-19	D-9	SPT	22	99.1	27	41	ML	SANDY SILT	25.1	n/a	n/a	NP	0	41	59							
NE-49vw-19	D-12	SPT	29	92.1	39	59	SM	SILTY SAND with GRAVEL	13.8	n/a	n/a	NP	18	53	28							
NE-49vw-19	D-18	SPT	59	62.1	41	62	ML	SILT	25.2	28	23	5	2	4	94							
NE-50-19	D-4	SPT	9	108.3	17	25	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	14.4	n/a	n/a	NP	36	58	5							
NE-50-19	D-6	SPT	14	103.3	16	23	SP-SM	POORLY GRADED SAND with SILT	24.7	n/a	n/a	NP	11	81	8							
NE-50-19	D-8	SPT	19	98.3	20	29	SM	SILTY SAND	25.4	n/a	n/a	NP	0	60	40							
NE-50-19	D-13	SPT	34	83.3	85	101	ML	SILT	25	26	n/a	NP	0	3	97	90	7	2.74				
NE-51vw-19	D-3	SPT	7	106.7	27	41	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	14	n/a	n/a	NP	35	56	9							
NE-51vw-19	D-8	SPT	19	94.7	54	82	SM	SILTY SAND with GRAVEL	9.4	n/a	n/a	NP	16	48	36							
NE-51vw-19	D-10	SPT	29	84.7	56	85	ML	SILT	19.6	21	n/a	NP	0	15	85							
NE-53-19	D-3	SPT	7	114.8	7	11	ML	SILT with SAND	31.8	n/a	n/a	NP	0	23	77							
NE-53-19	D-5	SPT	12	109.8	20	30	SP	POORLY GRADED SAND	29.2	n/a	n/a	NP	2	93	5							
NE-53-19	D-7	SPT	17	104.8	25	38	SM	SILTY SAND with GRAVEL	15.9	n/a	n/a	NP	21	50	29							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-53-19	D-11	SPT	27	94.8	93	101	SM	SILTY SAND with GRAVEL	17.7	n/a	n/a	NP	17	46	37							
NE-53-19	D-13	SPT	34	87.8	101	101	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	11.1	n/a	n/a	NP	31	60	9							
NE-53-19	D-19	SPT	64	57.8	58	88	CL-ML	SILTY CLAY	26.2	25	20	5	0	11	89							
NE-54-19	D-2	SPT	4	120	16	22	SP-SM	POORLY GRADED SAND with SILT	27.5	n/a	n/a	NP	0	88	12							
NE-54-19	D-3	SPT	7	117	12	16	SM	SILTY SAND	25.8	n/a	n/a	NP	0	58	42							
NE-54-19	D-7	SPT	17	107	39	53	SM	SILTY SAND with GRAVEL	15.2	n/a	n/a	NP	24	59	16							
NE-54-19	D-11	SPT	27	97	101	101	SM	SILTY SAND with GRAVEL	15	n/a	n/a	NP	27	45	28							
NE-55p-19	D-3	SPT	7	148.2	20	29	ML	SANDY SILT	25.8	n/a	n/a	NP	1	35	64	63	1	2.76				
NE-55p-19	D-4	SPT	9	146.2	9	13	ML	SILT	33	n/a	n/a	NP	0	8	91	90	2	2.72				
NE-55p-19	D-6	SPT	14	141.2	14	20	SM	SILTY SAND	28.1	n/a	n/a	NP	0	88	12							
NE-55p-19	D-7	SPT	17	138.2	11	16	SM	SILTY SAND	27.8	n/a	n/a	NP	0	52	48							
NE-55p-19	D-8	SPT	19	136.2	7	10	ML	SILT	34.2	22	n/a	NP	0	12	88							
NE-55p-19	D-9	SPT	22	133.2	26	38	SP-SM	POORLY GRADED SAND with SILT	28.6	n/a	n/a	NP	2	89	9							
NE-55p-19	D-10	SPT	24	131.2	21	31	SM	SILTY SAND	27.4	n/a	n/a	NP	0	55	45							
NE-56p-19	D-4	SPT	9	131.5	27	37	SW-SM	WELL-GRADED SAND with SILT and GRAVEL	15.1	n/a	n/a	NP	16	72	12							
NE-56p-19	D-11	SPT	27	113.5	48	65	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	12	n/a	n/a	NP	38	56	5							
NE-56p-19	D-13	SPT	34	106.5	32	43	SM	SILTY SAND	21.3	n/a	n/a	NP	0	76	24							
NE-56p-19	D-16	SPT	44	96.5	34	46	SM	SILTY SAND	15.5	n/a	n/a	NP	13	43	45							
NE-57-19	D-2	SPT	4	168.2	27	41	SM	SILTY SAND	16.5	n/a	n/a	NP	10	72	19							
NE-57-19	D-3	SPT	7	165.2	20	30	SM	SILTY SAND with GRAVEL	14.5	17	14	3	22	50	28							
NE-57-19	D-5	SPT	12	160.2	5	8	--	--See Note 3--												6.4 / 8000		
NE-57-19	D-8	SPT	19	153.2	29	44	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10.6	n/a	n/a	NP	29	64	6							
NE-57-19	D-9	SPT	22	150.2	26	39	SM	SILTY SAND with GRAVEL	19.7	n/a	n/a	NP	16	68	16							
NE-57-19	D-11	SPT	27	145.2	18	27	SM	SILTY SAND with GRAVEL	10.2	n/a	n/a	NP	21	48	30							
NE-57-19	D-16	SPT	49	123.2	47	71	CL	LEAN CLAY with SAND	22.8	30	20	10	3	17	80							
NE-60-19	D-3	SPT	7	288.3	21	32	SM	SILTY SAND	15.7	n/a	n/a	NP	8	63	30							
NE-60-19	D-5	SPT	12	283.3	7	11	ML	SANDY SILT	24.8	21	18	3	3	39	58							
NE-60-19	D-6	SPT	14	281.3	12	18	SM	SILTY SAND	20.7	18	n/a	NP	10	48	41							
NE-60-19	D-12	SPT	29	266.3	41	62	ML	SANDY SILT	34	n/a	n/a	NP	5	35	60							
NE-60-19	D-14	SPT	39	256.3	59	90	SP-SM	POORLY GRADED SAND with SILT	27.5	n/a	n/a	NP	0	91	9							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-61vw-19	D-3	SPT	7	253.4	35	53	SM	SILTY SAND	19.3	15	n/a	NP	14	42	44							
NE-61vw-19	D-6	SPT	14	246.4	28	43	ML	SANDY SILT	25	n/a	n/a	NP	11	35	54					6.7 / 8000		
NE-61vw-19	D-9	SPT	22	238.4	52	79	SM	SILTY SAND	23.9	n/a	n/a	NP	4	72	24							
NE-61vw-19	D-13	SPT	39	221.4	56	85	ML	SILT	33.2	26	n/a	NP	0	13	87							
NE-62p-19	D-2	SPT	4	262.2	13	20	SM	SILTY SAND with GRAVEL	15.8	n/a	n/a	NP	27	53	20							
NE-62p-19	D-8	SPT	19	247.2	23	35	SM	SILTY SAND with GRAVEL	18.6	n/a	n/a	NP	24	49	28					6.8 / 8000		
NE-62p-19	D-9	SPT	22	244.2	26	39	SM	SILTY SAND	22.1	n/a	n/a	NP	2	69	30							
NE-62p-19	D-10	SPT	24	242.2	44	67	SM	SILTY SAND	24.7	n/a	n/a	NP	1	81	18							
NE-62p-19	D-13	SPT	39	227.2	43	65	SM	SILTY SAND	23.8	n/a	n/a	NP	0	78	22							
NE-62p-19	D-14	SPT	44	222.2	72	101	SM	SILTY SAND with GRAVEL	14.4	n/a	n/a	NP	23	59	18							
NE-64p-19	D-2	SPT	4	120.6	37	50	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	7.7	n/a	n/a	NP	36	55	9							
NE-64p-19	D-10	SPT	24	100.6	79	101	SC-SM	SILTY, CLAYEY SAND with GRAVEL	17.3	20	15	5	16	39	45							
NE-64p-19	D-12	SPT	29	95.6	61	83	ML	SANDY SILT	18.9	19	n/a	NP	2	42	56							
NE-64p-19	D-13	SPT	34	90.6	62	84	SM	SILTY SAND	13.7	20	17	3	8	71	21							
NE-64p-19	D-15	SPT	44.5	80.1	39	53	--	--See Note 3--	32.5	35	26	9										
NE-65p-19	D-7	SPT	17	130.4	47	64	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	13.7	n/a	n/a	NP	30	61	10							
NE-65p-19	D-9	SPT	22	125.4	101	101	SM	SILTY SAND with GRAVEL	12.1	16	n/a	NP	31	46	24							
NE-65p-19	D-13	SPT	34	113.4	101	101	SM	SILTY SAND with GRAVEL	11.7	20	n/a	NP	35	48	16							
NE-65p-19	D-15	SPT	44	103.4	39	53	--	--See Note 3--	25.7	22	19	3										
NE-67p-20	D-2	SPT	4	287.4	101		SC-SM	SILTY, CLAYEY SAND with GRAVEL	11.3	21	14	7	16	51	33							
NE-67p-20	D-3	SPT	7	284.4	38		SM	SILTY SAND with GRAVEL	17	18	n/a	NP	22	64	14							
NE-67p-20	D-5	SPT	14	277.4	101		SW-SM	WELL-GRADED SAND with SILT and GRAVEL	9	n/a	n/a	NP	33	56	11							
NE-67p-20	D-7	SPT	24	267.4	101		SW-SM	WELL-GRADED SAND with SILT and GRAVEL	9.1	n/a	n/a	NP	45	46	10							
NE-67p-20	D-9	SPT	34	257.4	40		SM	SILTY SAND	16.5	n/a	n/a	NP	3	83	13							
NE-68-20	D-2	SPT	9	45.8	33	49	SM	SILTY SAND with GRAVEL	11.4	n/a	n/a	NP	19	52	30							
NE-68-20	D-3	SPT	14	40.8	20	29	SM	SILTY SAND	16.4	n/a	n/a	NP	12	45	43							
NE-68-20	D-6	SPT	22	32.8	15	22	SM	SILTY SAND with GRAVEL	12.9	n/a	n/a	NP	22	46	32							
NE-68-20	D-8	SPT	27	27.8	29	43	SM	SILTY SAND with GRAVEL	13.2	18	n/a	NP	29	35	36							
NE-68-20	PS-11	PISTON	35	19.8			CL-ML	SANDY SILTY CLAY	30	26	19	7	0	42	58	44	14	2.67			90	
NE-68-20	D-14	SPT	41	13.8	2	3	CL	LEAN CLAY	39.6	42	22	20	0	2	98							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay					
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-68-20	D-17	SPT	49	5.8	2	3	CL	LEAN CLAY	40.6	43	23	20	0	14	86							
NE-68-20	D-18	SPT	54	0.8	50	74	SM	SILTY SAND	22.8	n/a	n/a	NP	0	87	13							
NE-69p-20	D-2	SPT	7	75	8	12	CL	LEAN CLAY	25.8	32	23	9	2	13	85							
NE-69p-20	D-3	SPT	9	73	4	6	SM	SILTY SAND with GRAVEL	26.4	33	n/a	NP	20	41	39							
NE-69p-20	D-4	SPT	12	70	4	6	SM	SILTY SAND with GRAVEL	21.1	n/a	n/a	NP	34	48	17							
NE-69p-20	D-6	SPT	17	65	8	12	CH	FAT CLAY with SAND	34.2	50	26	24	1	24	75							
NE-69p-20	D-8	SPT	22	60	17	26	SM	SILTY SAND	24.9	n/a	n/a	NP	0	67	33							
NE-69p-20	D-9	SPT	24	58	25	38	ML	SILT with SAND	30.1	30	n/a	NP	0	17	83							
NE-69p-20	D-12	SPT	34	48	55	84	SM	SILTY SAND	20.4	n/a	n/a	NP	0	87	13							
NE-70p-20	D-2	SPT	7	78	22	32	SW-SM	WELL-GRADED SAND with SILT	18.9	n/a	n/a	NP	14	77	9							
NE-70p-20	D-3	SPT	9	76	8	12	SM	SILTY SAND with GRAVEL	16.9	19	n/a	NP	22	54	24							
NE-70p-20	D-6	SPT	17	68	10	15	SM	SILTY SAND with GRAVEL	13.7	n/a	n/a	NP	22	61	17							
NE-70p-20	D-9	SPT	24	61	11	16	ML	SANDY SILT	27.8	27	n/a	NP	0	32	68							
NE-70p-20	D-10	SPT	27	58	30	44	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	20.1	n/a	n/a	NP	32	58	10							
NE-70p-20	D-14	SPT	37	48	38	56	CL	SANDY LEAN CLAY	30.4	36	22	14	12	34	54							
NE-70p-20	D-15	SPT	39	46	61	90	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	11.7	n/a	n/a	NP	42	50	8							
NE-72p-20	D-1	SPT	5	134.3	16	24	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	11.9	n/a	n/a	NP	16	75	10							
NE-72p-20	D-3	SPT	10	129.3	4	6	CL	SANDY LEAN CLAY	15.3	31	22	9	7	42	50							
NE-72p-20	D-4	SPT	13	126.3	10	15	SM	SILTY SAND	6.5	20	n/a	NP	12	42	46							
NE-72p-20	D-9	SPT	30	109.3	75	101	SM	SILTY SAND	16.2	n/a	n/a	NP	6	71	23							
NE-73p-20	D-1	SPT	1	123.4	19	29	SM	SILTY SAND with GRAVEL	14.3	n/a	n/a	NP	18	69	14							
NE-73p-20	D-4	SPT	9	115.4	21	32	SM	SILTY SAND	23	n/a	n/a	NP	1	66	33	33	1	2.72				
NE-73p-20	D-6	SPT	14	110.4	29	44	GP	POORLY GRADED GRAVEL with SAND	6.9	n/a	n/a	NP	67	31	3							
NE-73p-20	D-8	SPT	24	100.4	101	101	SM	SILTY SAND with GRAVEL	9.1	n/a	n/a	NP	36	46	18							
NE-73p-20	D-10	SPT	34	90.4	101	101	ML	SILT with SAND	25.2	n/a	n/a	NP	0	23	77							
NE-74p-20	D-4	SPT	8.5	172.9	3	5	SM	SILTY SAND with GRAVEL	12.7	n/a	n/a	NP	30	56	14							
NE-74p-20	D-5	SPT	11.5	169.9	12	18	SM	SILTY SAND	24.8	n/a	n/a	NP	10	72	18							
NE-74p-20	D-8	SPT	18.5	162.9	25	38	SW-SM	WELL-GRADED SAND with SILT and GRAVEL	16.1	n/a	n/a	NP	16	73	12							
NE-74p-20	D-11	SPT	33.5	147.9	22	33	SM	SILTY SAND with GRAVEL	12.5	n/a	n/a	NP	30	47	23							
NE-75-20	D-3	SPT	7	148.4	17	26	SP	POORLY GRADED SAND with GRAVEL	7.8	n/a	n/a	NP	37	59	3							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-75-20	D-5	SPT	12	143.4	10	15	SP-SM	POORLY GRADED SAND with SILT	22.5	n/a	n/a	NP	1	94	5							
NE-75-20	D-7	SPT	17	138.4	9	14	SM	SILTY SAND	30.8	n/a	n/a	NP	0	74	26							
NE-75-20	D-8	SPT	19	136.4	20	30	SP-SM	POORLY GRADED SAND with SILT	24.7	n/a	n/a	NP	0	89	11							
NE-75-20	D-11	SPT	29	126.4	12	18	SM	SILTY SAND with GRAVEL	9.9	n/a	n/a	NP	20	47	33							
NE-75-20	D-12	SPT	34	121.4	28	43	SM	SILTY SAND with GRAVEL	10.8	n/a	n/a	NP	33	42	25							
NE-76p-20	D-1	SPT	4	86.3	20	30	SM	SILTY SAND with GRAVEL	12.8	n/a	n/a	NP	18	60	21							
NE-76p-20	D-3	SPT	9	81.3	19	29	ML	SANDY SILT	23.6	28	n/a	NP	10	39	50	44	6	2.73				
NE-76p-20	D-4	SPT	12	78.3	21	32	ML	SANDY SILT	32.4	n/a	n/a	NP	2	31	67							
NE-76p-20	D-7	SPT	19	71.3	23	35	ML	SANDY SILT	29.7	25	n/a	NP	0	39	61							
NE-76p-20	D-9	SPT	24	66.3	61	93	SM	SILTY SAND	20.3	n/a	n/a	NP	0	81	19							
NE-76p-20	D-13	SPT	39	51.3	81	101	SM	SILTY SAND	21.9	n/a	n/a	NP	0	79	21							
NE-76p-20	D-15	SPT	49	41.3	101	101	SM	SILTY SAND	21.1	n/a	n/a	NP	1	87	12							
NE-77p-20	D-2	SPT	7	89.2	27	41	SM	SILTY SAND with GRAVEL	11.3	n/a	n/a	NP	27	59	14	12	2	2.72				
NE-77p-20	D-5	SPT	14	82.2	24	36	SM	SILTY SAND with GRAVEL	11.1	n/a	n/a	NP	29	44	27	22	5	2.73				
NE-77p-20	D-6	SPT	17	79.2	39	59	ML	SILT with SAND and organics	43	46	36	10	1	26	73				8.7			
NE-77p-20	D-8	SPT	22	74.2	58	88	ML	SANDY SILT	31.1	38	27	11	1	37	62							
NE-77p-20	D-9	SPT	24	72.2	56	85	SM	SILTY SAND	25.7	n/a	n/a	NP	0	52	48							
NE-77p-20	D-11	SPT	29	67.2	55	84	ML	SANDY SILT	37	44	29	15	2	38	60							
NE-77p-20	D-14	SPT	44	52.2	101	101	SM	SILTY SAND	22.9	n/a	n/a	NP	0	85	15							
NE-78p-20	D-2	SPT	7	99.5	31	46	SM	SILTY SAND with GRAVEL	12.6	n/a	n/a	NP	17	68	16	12	3	2.73				
NE-78p-20	D-5	SPT	14	92.5	38	56	MH	ELASTIC SILT with Organics	39.1	55	39	16	1	13	86	57	29	2.56	8.8			
NE-78p-20	D-6	SPT	17	89.5	44	65	ML	SANDY SILT	27.2	n/a	n/a	NP	3	30	67							
NE-78p-20	D-8	SPT	25.2	81.3	17	25	--	--See Note 3--	44.9	43	26	17										
NE-78p-20	D-10	SPT	34	72.5	74	101	ML	SILT with SAND	24.2	n/a	n/a	NP	0	27	73							
NE-78p-20	D-12	SPT	44	62.5	101	101	SM	SILTY SAND	20.7	n/a	n/a	NP	0	81	19							
NE-79p-20	D-2	SPT	5	63.5	12	18	ML	SANDY SILT	30.3	42	29	13	0	41	58							
NE-79p-20	D-3	SPT	8	60.5	8	12	ML	SANDY SILT	23.9	23	n/a	NP	0	40	60							
NE-79p-20	D-4	SPT	10	58.5	6	9	ML	SILT	3.1	34	28	6	0	13	87							
NE-79p-20	D-5	SPT	13	55.5	15	22	SM	SILTY SAND	28.5	n/a	n/a	NP	5	80	15							
NE-79p-20	D-7	SPT	18	50.5	22	32	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	19.2	n/a	n/a	NP	24	68	8							

Table B-1 - Laboratory Test Result Summary

Exploration Name	Sample Information				Field Blow Count[1] [RQD]	N60[2] [FF]	USCS[3] [ASTM D2487]	USCS Group Name or Rock Type[3,4] [ASTM D2487]	Moisture Content [AASHTO T265]	Atterberg Limits (Plasticity) [AASHTO T89, T90]			Grain Size Distribution/Hydrometer[5] (% of Sample by Weight) [AASHTO T11, T27, T88]					Specific Gravity [AASHTO T100]	LOI Organic Content [AASHTO T267]	pH/ Resistivity [WSDOT T417 & AASHTO T289]	Total Unit Weight [ASTM D7012]	Other Tests Performed[6]
	No.	Type	Depth	Elevation						LL	PL	PI	Gravel	Sand	Fines	Silt	Clay				
			(feet)	(feet)	(bpf)	(bpf)			(%)				(%)	(%)	(%)	(%)	(%)		(%)	(/ohms-cm)	(pcf)	
NE-79p-20	D-10	SPT	25	43.5	24	35	SP-SM	POORLY GRADED SAND with SILT	19.7	n/a	n/a	NP	4	90	6							
NE-79p-20	D-13	SPT	35	33.5	49	72	SM	SILTY SAND with GRAVEL	17.8	n/a	n/a	NP	31	52	17							
NE-80p-20	D-1	SPT	5	77.1	20	30	ML	SANDY SILT	19.2	17	n/a	NP	10	39	51							
NE-80p-20	D-5	SPT	14	68.1	12	18	SC-SM	SILTY, CLAYEY SAND	21.7	25	19	6	12	43	45							
NE-80p-20	D-8	SPT	22	60.1	36	55	SM	SILTY SAND with GRAVEL	20.7	n/a	n/a	NP	17	68	14							
NE-80p-20	D-11	SPT	29	53.1	76	101	SM	SILTY SAND	22	n/a	n/a	NP	0	87	13							
NE-80p-20	D-14	SPT	44	38.1	101	101	SP-SM	POORLY GRADED SAND with SILT	23.7	n/a	n/a	NP	0	90	10							

NOTES:

1. Blow count listed represents the field measured blows per foot (bpf) based on Standard Penetration Test (SPT) methods. The values show have not been corrected for SPT hammer energy or other factors. Values have been corrected for sampler size. For core samples, RQD (%) is listed instead of the field
2. N_{60} is the SPT field N-value that has been corrected for the drill rig hammer energy, normalized to a 60% energy. See boring logs in Appendix A for hammer energies used. For core samples, FF (#/foot) is listed insteda of N_{60}.
3. USCS Symbol and Group Name are listed only for those samples where sufficient laboratory testing was performed to determine the USCS group (e.g. Atterberg Limits and Grain Size Distribution).
4. Rock type is based on visual observations only. Where rock type is shown in brackets, the USCS description is based on the portion of the sample that breaks down into soil (weathered rock).
5. Gravel, sand, and fines represents particle sizes greater than 4.75 mm, between 0.075 and 4.75 mm, and smaller than 0.075 mm, respectively. Silt and clay represents particle sizes between 0.075 and 0.002 mm and smaller than 0.002 mm, respectively. Fines = Silt + Clay.
6. See Exploration Log Legend in Appendix A for abbreviations of different test types.

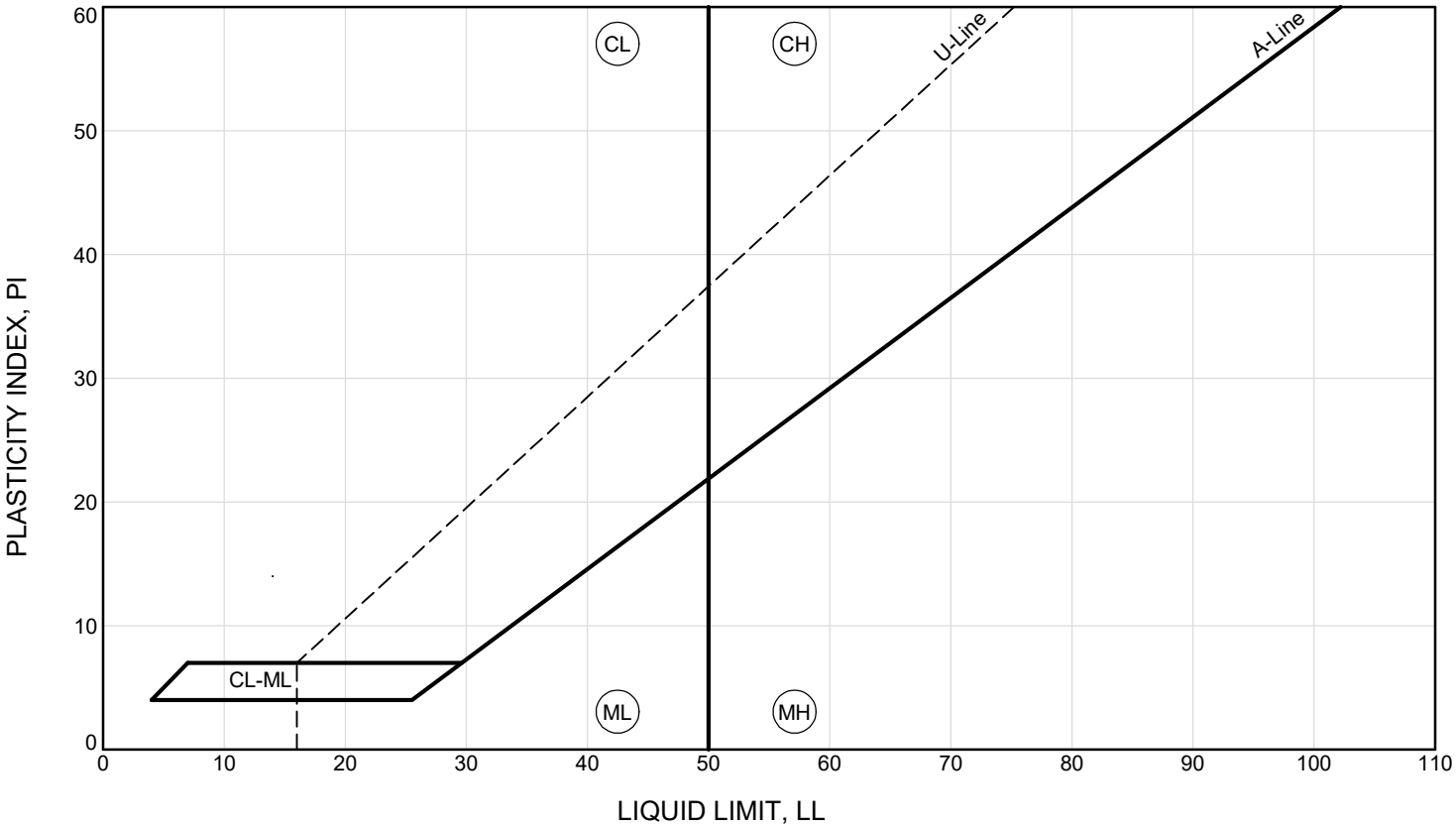
Acronyms: RQD = rock quality designation; FF = fracture frequency; USCS = Unified Soil Classification System; LL = liquid limit; PL = plastic limit; PI = plasticity index; n/a = not tested or not applicable; NP = nonplastic; AASHTO - American Association of State Highway Transportation Officials;

Units: bpf = blows per foot; psi = pounds per square inch; pcf = pounds per cubic foot; psf = pounds per square foot

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL6138**
Project: **I-405/BRT Brickyard Park & Ride In Line Freeway Station**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	BRICKYD-01-20	3.5	D-2	SM	SILTY SAND		14	14	n/a	NP	35.2		
	BRICKYD-01-20	8.5	D-4	SM	SILTY SAND with GRAVEL		10	14	n/a	NP	34.7		
	BRICKYD-01-20	16.5	D-7	SM	SILTY SAND with GRAVEL		9	n/a	n/a	NP	35.3		
	BRICKYD-01-20	33.5	D-11	SP-SM	POORLY GRADED SAND with SILT		19	n/a	n/a	NP	9.4		
	BRICKYD-01-20	38.5	D-12	SM	SILTY SAND		11	n/a	n/a	NP	38.9		
	BRICKYD-01-20	68.5	D-18	SM	SILTY SAND		13	n/a	n/a	NP	40.4		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL6138 405 BRTBRICKYARDP&RIDE.GPJ XL5105 167.005TO161-STAGE2_MASTER.GPJ 12/14/22

Job No. **XL6138** Date **October 15, 2020**

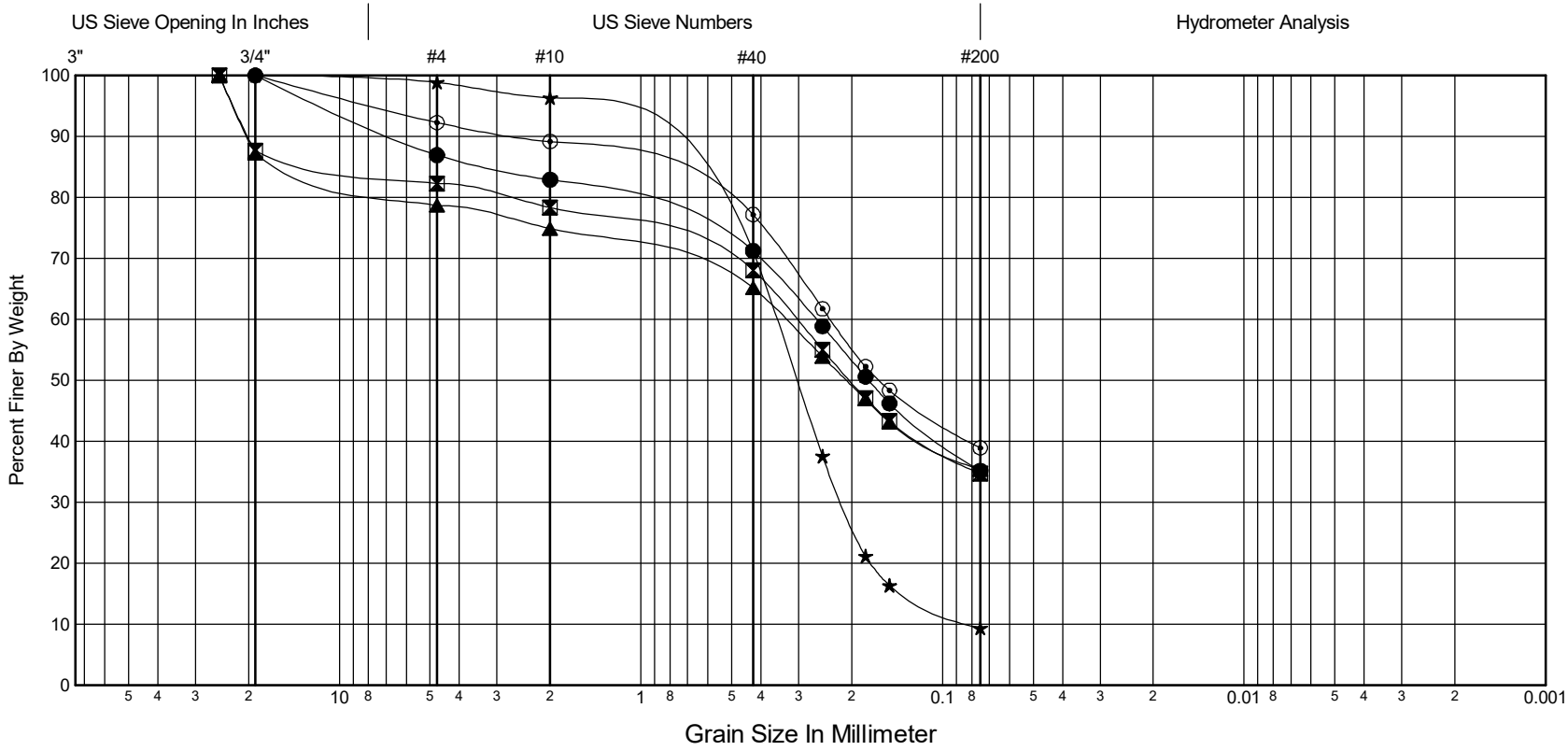
Hole No. **BRICKYD-01-20** Sheet **1**

Project **I-405/BRT Brickyard Park & Ride In Line Freeway Station**

Laboratory Summary

WSDOT

	Depth (ft)	Sample No.	USCS	Description	MC%	LL	PL	PI	Moist Density (lbs/ft³)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	Cc	Cu	D60	D50	D30	D20	D10
●	3.5	D-2	SM	SILTY SAND	14	14	NP	NA			13.1	51.8	35.2			0.262	0.18			
⊠	8.5	D-4	SM	SILTY SAND with GRAVEL	10	14	NP	NA			17.8	47.6	34.7			0.306	0.20			
▲	16.5	D-7	SM	SILTY SAND with GRAVEL	9	NA	NP	NA			21.3	43.3	35.3			0.333	0.21			
★	33.5	D-11	SP-SM	POORLY GRADED SAND with SILT	19	NA	NP	NA			1.1	89.5	9.4	1.6	4.5	0.356	0.30	0.21	0.17	0.080
⊙	38.5	D-12	SM	SILTY SAND	11	NA	NP	NA			7.7	53.4	38.9			0.235	0.16			



Gravel	Sand			Silt			Clay
	Coarse	Medium	Fine	Coarse	Medium	Fine	

XL6138 405 BRT BRICKYARDPK&RIDE.GPJ PUBLIC-COMMON LIBRARY.GLB 10/15/20

Job No. **XL6138** Date **October 15, 2020**

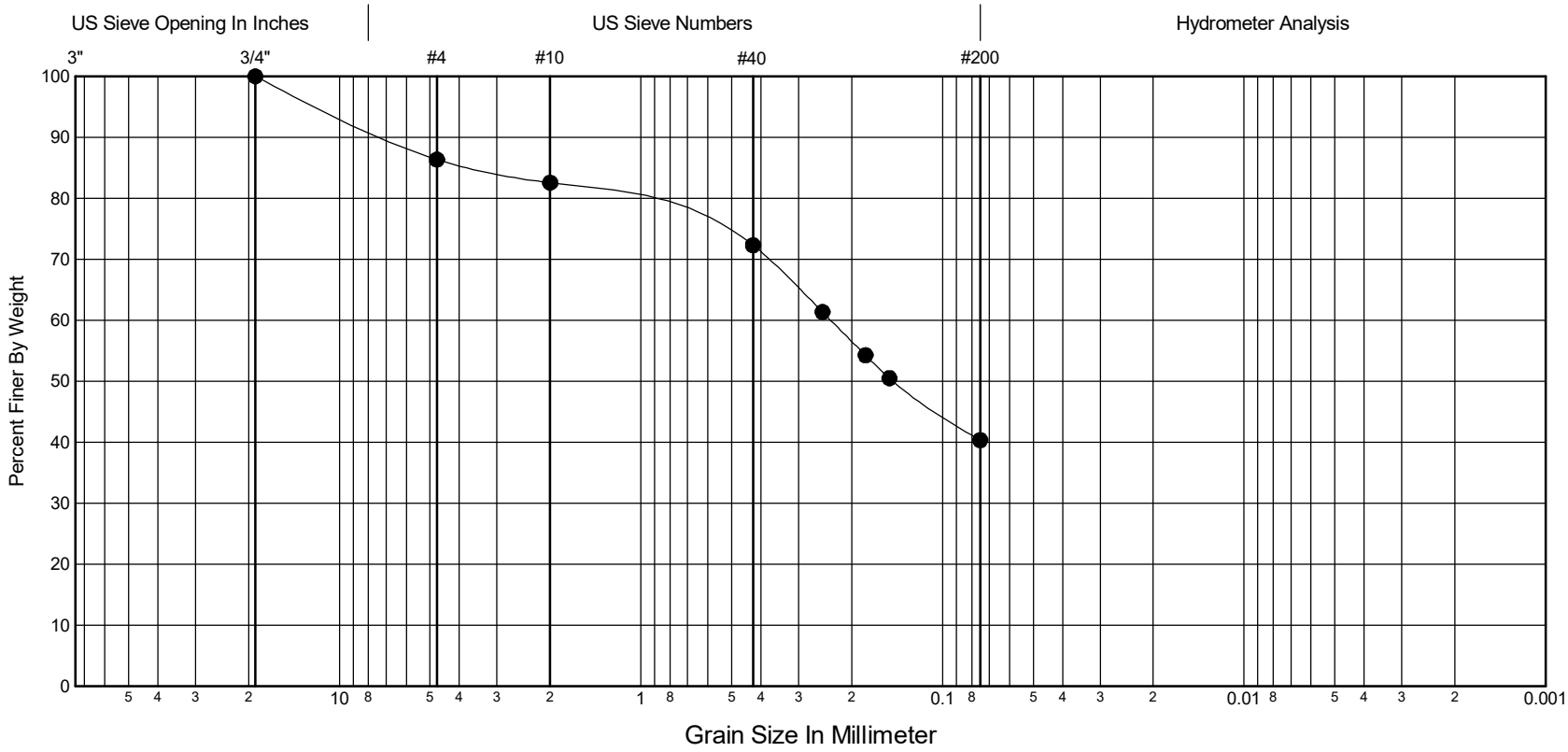
Hole No. **BRICKYD-01-20** Sheet **2**

Project **I-405/BRT Brickyard Park & Ride In Line Freeway Station**

Laboratory Summary

WSDOT

	Depth (ft)	Sample No.	USCS	Description	MC%	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	Cc	Cu	D60	D50	D30	D20	D10
●	**68.5**	**D-18**	**SM**	**SILTY SAND**	**13**	**NA**	**NP**	**NA**			**13.6**	**46.0**	**40.4**			**0.235**	**0.14**			



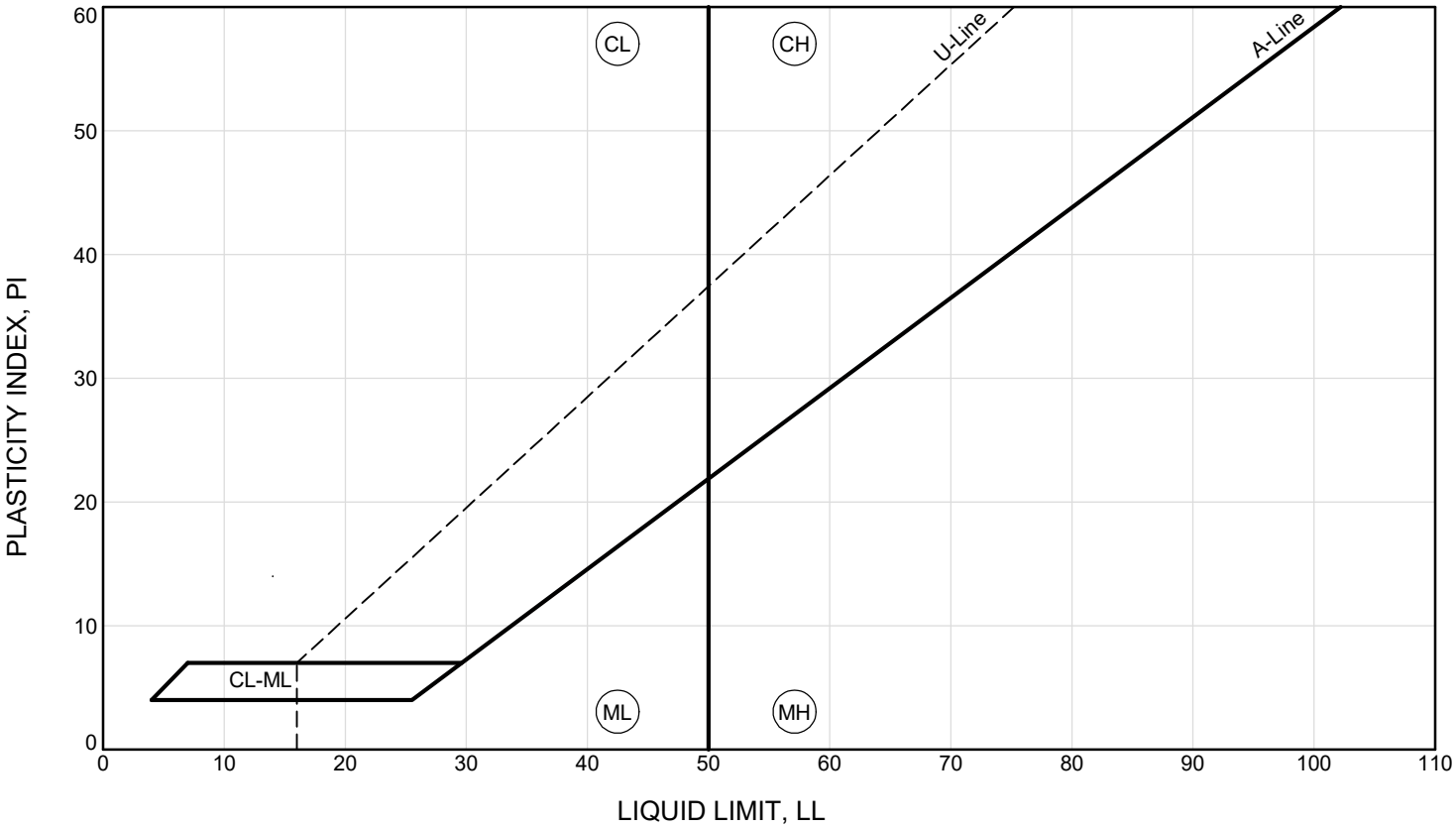
Gravel	Sand			Silt			Clay
	Coarse	Medium	Fine	Coarse	Medium	Fine	

XL6138 405 BRT BRICKYARDPK&RIDE.GPJ PUBLIC-COMMON LIBRARY.GLB 10/15/20

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL6138**
Project: **I-405/BRT Brickyard Park & Ride In Line Freeway Station**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	BRICKYD-2p-20	4.0	D-2	SM	SILTY SAND with GRAVEL		22	n/a	n/a	NP	27.8		
	BRICKYD-2p-20	9.0	D-4	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	34.0		
	BRICKYD-2p-20	19.0	D-7	SM	SILTY SAND with GRAVEL		13	14	n/a	NP	41.3		
	BRICKYD-2p-20	24.0	D-8	SM	SILTY SAND		21	n/a	n/a	NP	12.3		
	BRICKYD-2p-20	34.0	D-10	SM	SILTY SAND with GRAVEL		14	n/a	n/a	NP	39.8		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL6138 405 BRTBRICKYARDP&RIDE.GPJ XL5105 167.005TO161-STAGE2_MASTER.GPJ 12/14/22

Job No. **XL6138** Date **October 15, 2020**

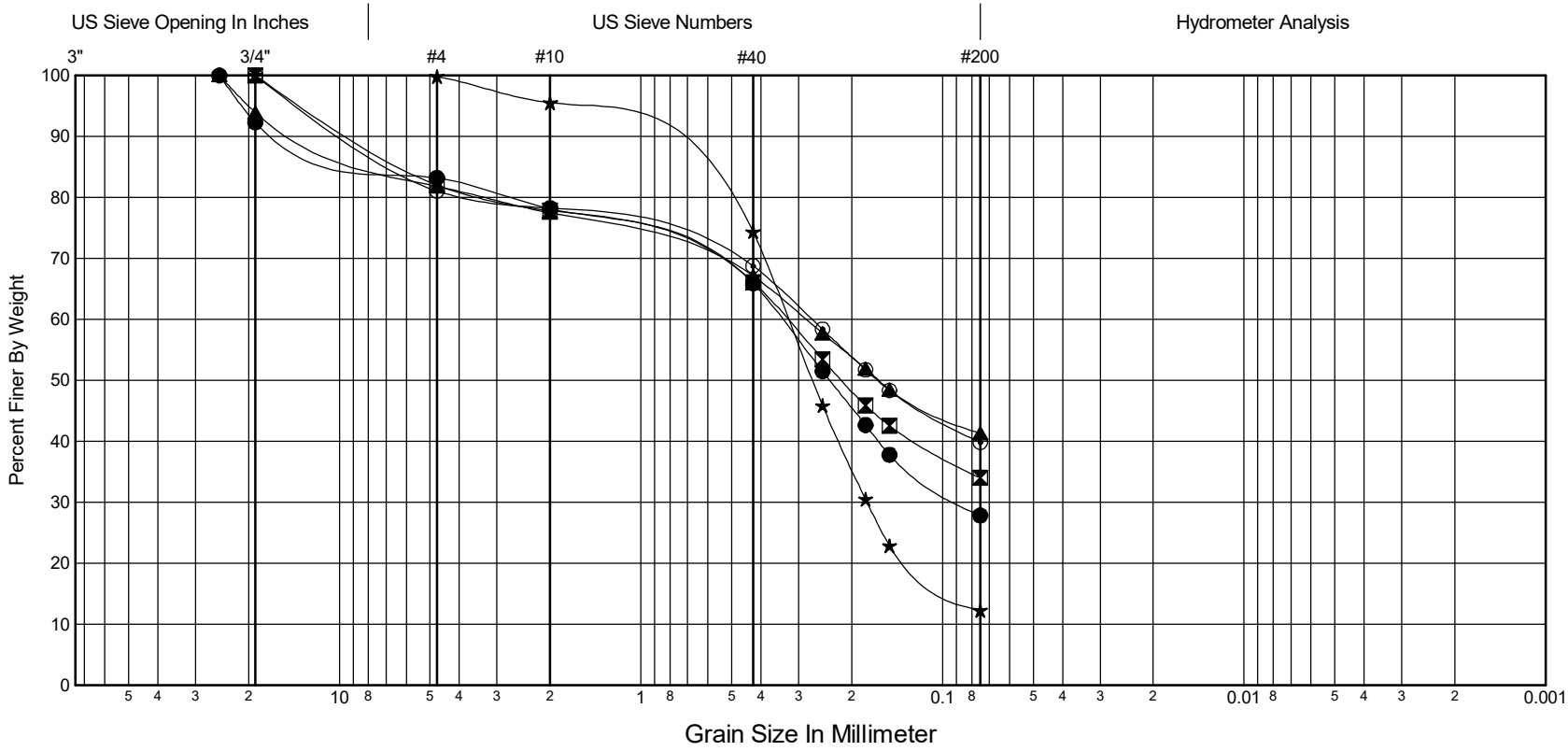
Hole No. **BRICKYD-2p-20** Sheet **1**

Project **I-405/BRT Brickyard Park & Ride In Line Freeway Station**

Laboratory Summary

WSDOT

	Depth (ft)	Sample No.	USCS	Description	MC%	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	Cc	Cu	D60	D50	D30	D20	D10
●	4.0	D-2	SM	SILTY SAND with GRAVEL	22	NA	NP	NA			16.8	55.4	27.8			0.342	0.24	0.09		
⊠	9.0	D-4	SM	SILTY SAND with GRAVEL	13	NA	NP	NA			18.0	48.0	34.0			0.329	0.22			
▲	19.0	D-7	SM	SILTY SAND with GRAVEL	13	14	NP	NA			18.2	40.5	41.3			0.284	0.16			
★	24.0	D-8	SM	SILTY SAND	21	NA	NP	NA			0.2	87.6	12.3	1.5	5.0	0.325	0.27	0.18	0.12	
⊙	34.0	D-10	SM	SILTY SAND with GRAVEL	14	NA	NP	NA			18.9	41.2	39.8			0.272	0.16			



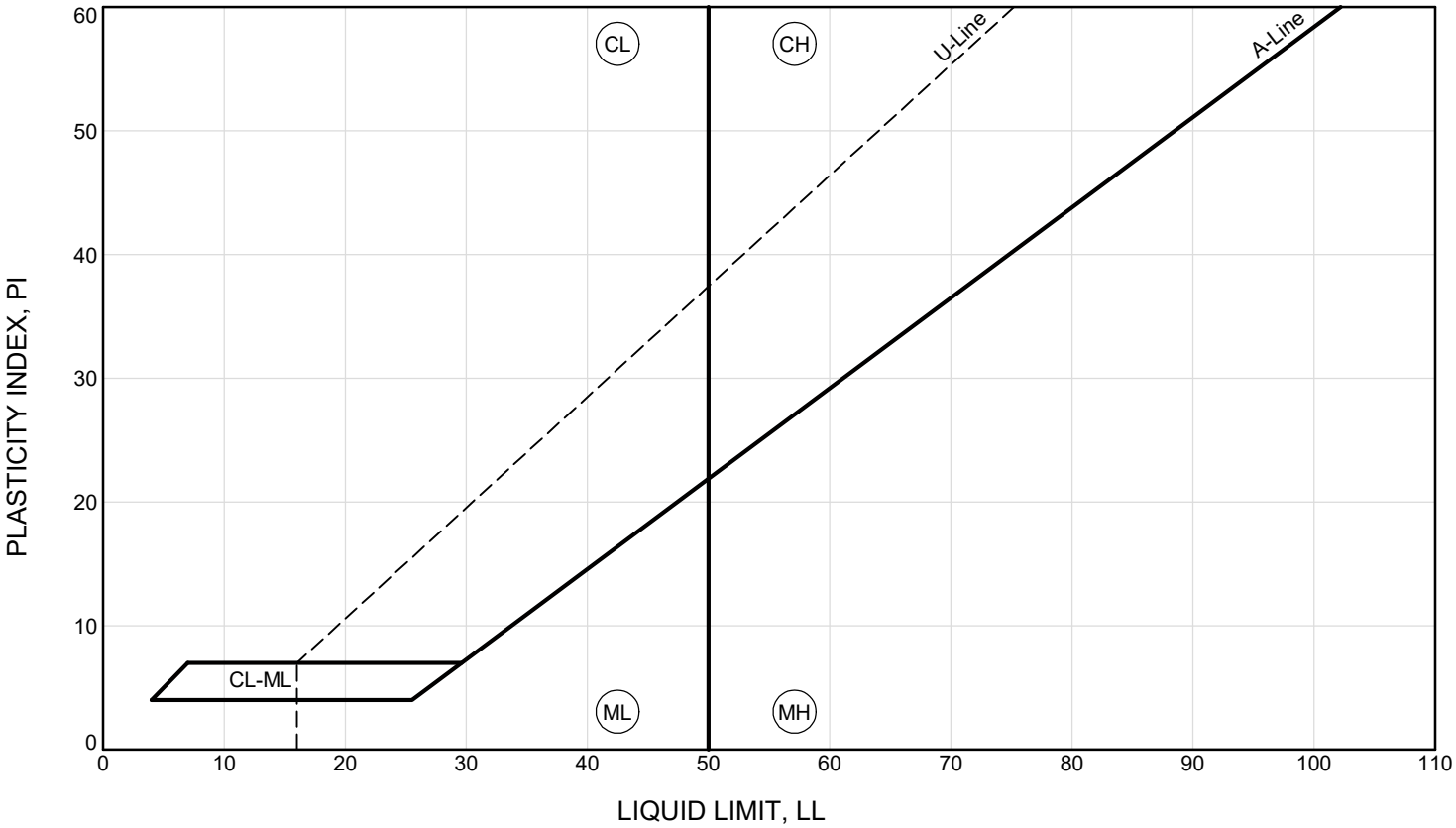
Gravel	Sand			Silt			Clay
	Coarse	Medium	Fine	Coarse	Medium	Fine	

XL6138 405 BRT BRICKYARDPK&RIDE.GPJ PUBLIC-COMMON LIBRARY.GLB 10/15/20

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-01-19	7.0	D-3	SW-SM	WELL-GRADED SAND with SILT and GRAVEL		9	n/a	n/a	NP	10.2		
	NE-01-19	14.0	D-6	GW-GM	WELL-GRADED GRAVEL with SILT and SAND		9	n/a	n/a	NP	8.1		
	NE-01-19	22.0	D-9	SM	SILTY SAND		15	n/a	n/a	NP	16.4		
	NE-01-19	34.0	D-14	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		22	n/a	n/a	NP	6.3		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

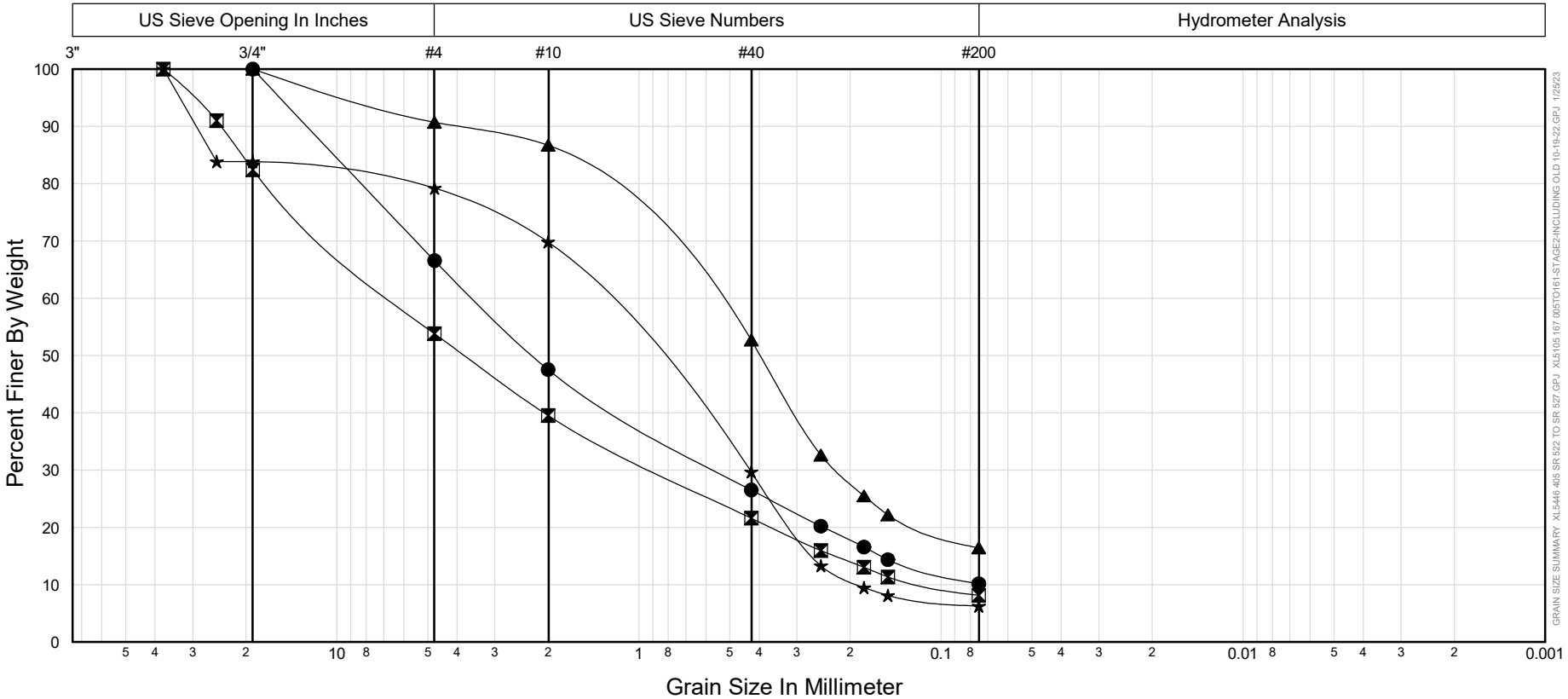
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-01-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SW-SM	WELL-GRADED SAND with SILT and GRAVEL	6-5-19	9	n/a	n/a	NP			33.4	56.4	10.2	1.2	48	12.551	3.524	2.236	0.549	0.245	
⊠	14.0	D-6	GW-GM	WELL-GRADED GRAVEL with SILT and SAND	6-5-19	9	n/a	n/a	NP			46.2	45.7	8.1	1.1	57	24.218	6.411	3.772	0.878	0.366	0.112
▲	22.0	D-9	SM	SILTY SAND	6-5-19	15	n/a	n/a	NP			9.3	74.3	16.4			4.070	0.592	0.396	0.221	0.115	
★	34.0	D-14	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	6-5-19	22	n/a	n/a	NP			20.8	72.9	6.3	0.7	7	29.173	1.369	0.930	0.430	0.310	0.188

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

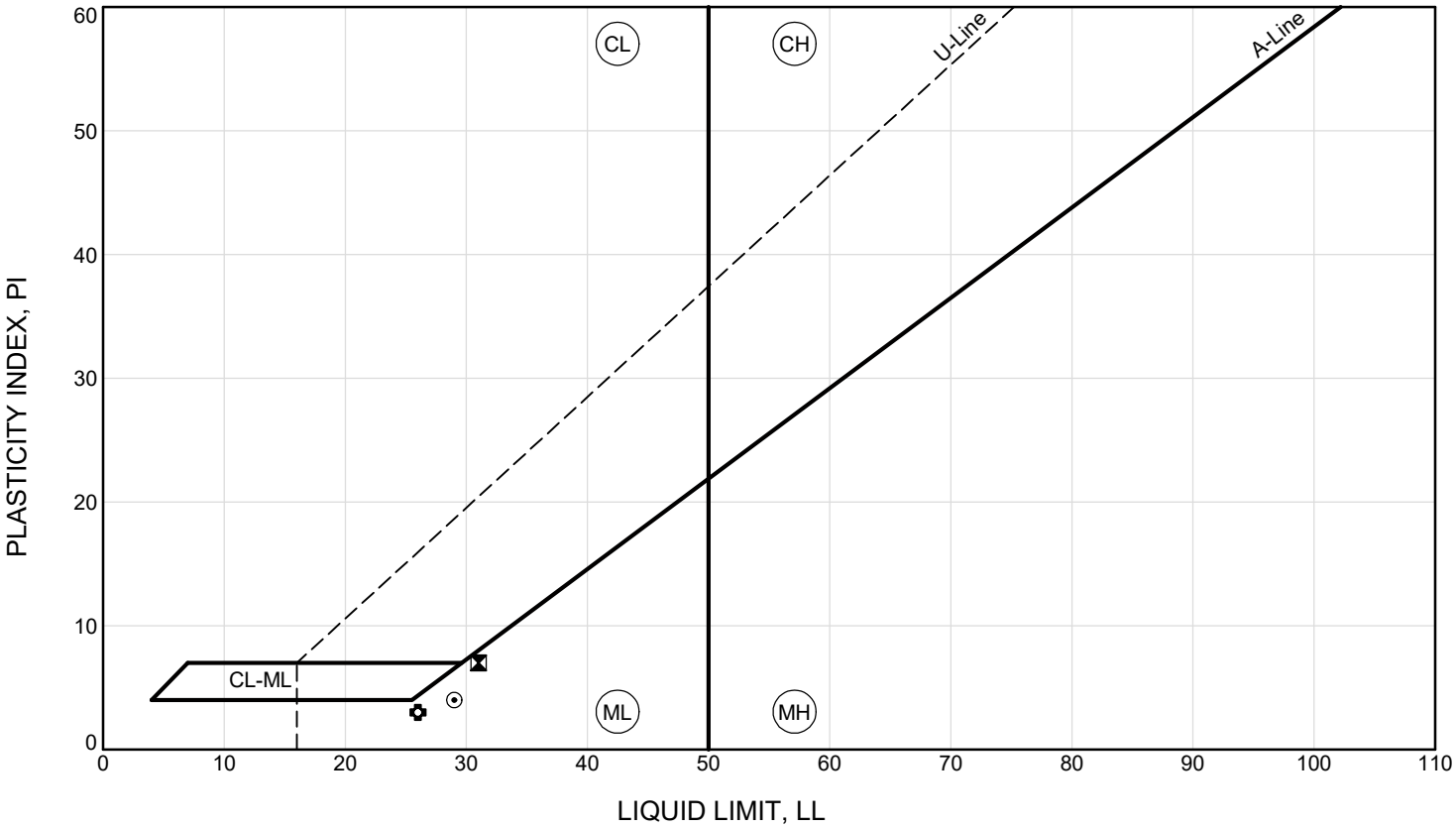


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-02p-19	12.0	D-5	SM	SILTY SAND with GRAVEL		7	n/a	n/a	NP	17.7		
⊠	NE-02p-19	29.0	D-12	ML	SILT with GRAVEL		26	31	24	7	81.5		
	NE-02p-19	34.0	D-14	SM	SILTY SAND		21	n/a	n/a	NP	25.9		
	NE-02p-19	39.0	D-16	SM	SILTY SAND		21	n/a	n/a	NP	17.7		
⊙	NE-02p-19	47.0	D-19	ML	SILT		24	29	25	4	96.1		
✿	NE-02p-19	64.0	D-23	ML	SILT		26	26	23	3	89.3		
	NE-02p-19	74.0	D-25	ML	SANDY SILT		23	n/a	n/a	NP	55.1		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

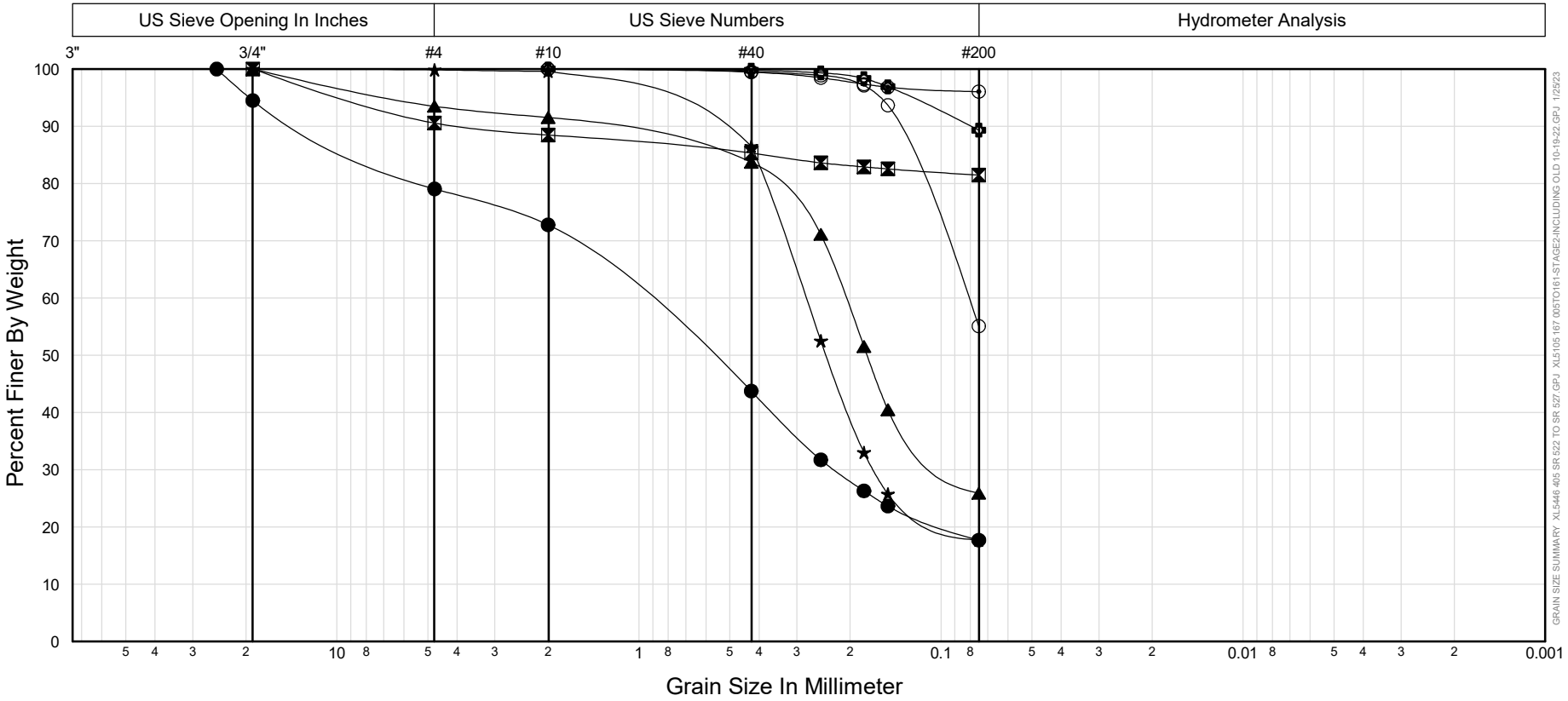
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-02p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	12.0	D-5	SM	SILTY SAND with GRAVEL	6-21-19	7	n/a	n/a	NP			20.9	61.4	17.7			12.695	1.011	0.593	0.225	0.098	
⊠	29.0	D-12	ML	SILT with GRAVEL	6-21-19	26	31	24	7			9.4	9.1	81.5			3.769					
▲	34.0	D-14	SM	SILTY SAND	6-21-19	21	n/a	n/a	NP			6.5	67.6	25.9			1.476	0.207	0.176	0.091		
★	39.0	D-16	SM	SILTY SAND	6-21-19	21	n/a	n/a	NP			0.1	82.2	17.7			0.642	0.281	0.240	0.167	0.091	
⊙	47.0	D-19	ML	SILT	6-21-19	24	29	25	4			0.0	3.9	96.1								
✿	64.0	D-23	ML	SILT	6-21-19	26	26	23	3			0.0	10.7	89.3			0.080					
○	74.0	D-25	ML	SANDY SILT	6-21-19	23	n/a	n/a	NP			0.0	44.9	55.1			0.140	0.082				

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

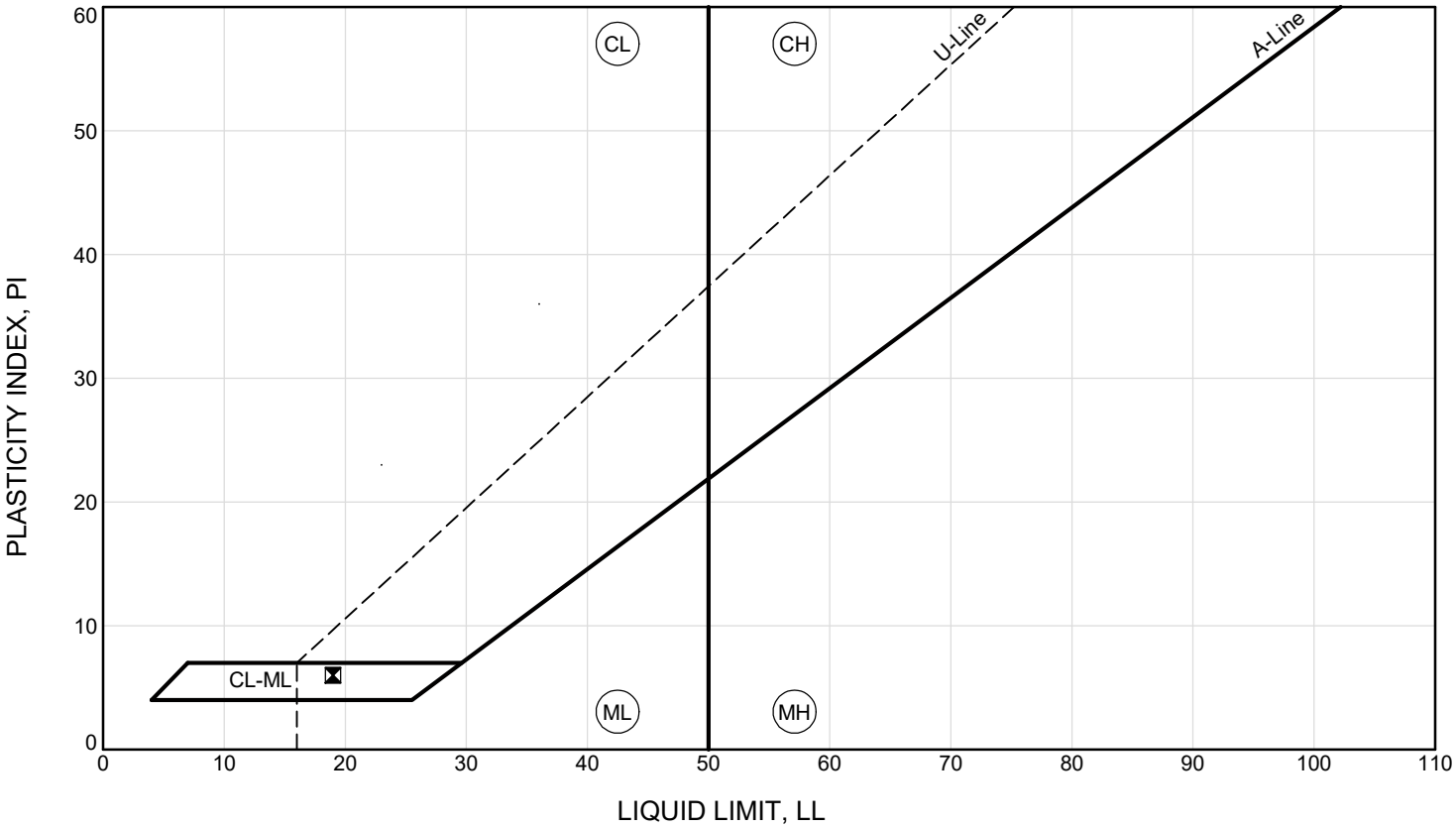


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-03-19	5.0	D-2	SM	SILTY SAND with GRAVEL		31	23	n/a	NP	35.6		
☒	NE-03-19	14.5	D-6	SC-SM	SILTY, CLAYEY SAND		10	19	13	6	40.8		
	NE-03-19	26.5	D-11	SM	SILTY SAND		22	n/a	n/a	NP	15.8		
	NE-03-19	32.3	D-13B	ML	SANDY SILT		30	36	n/a	NP	63.8		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

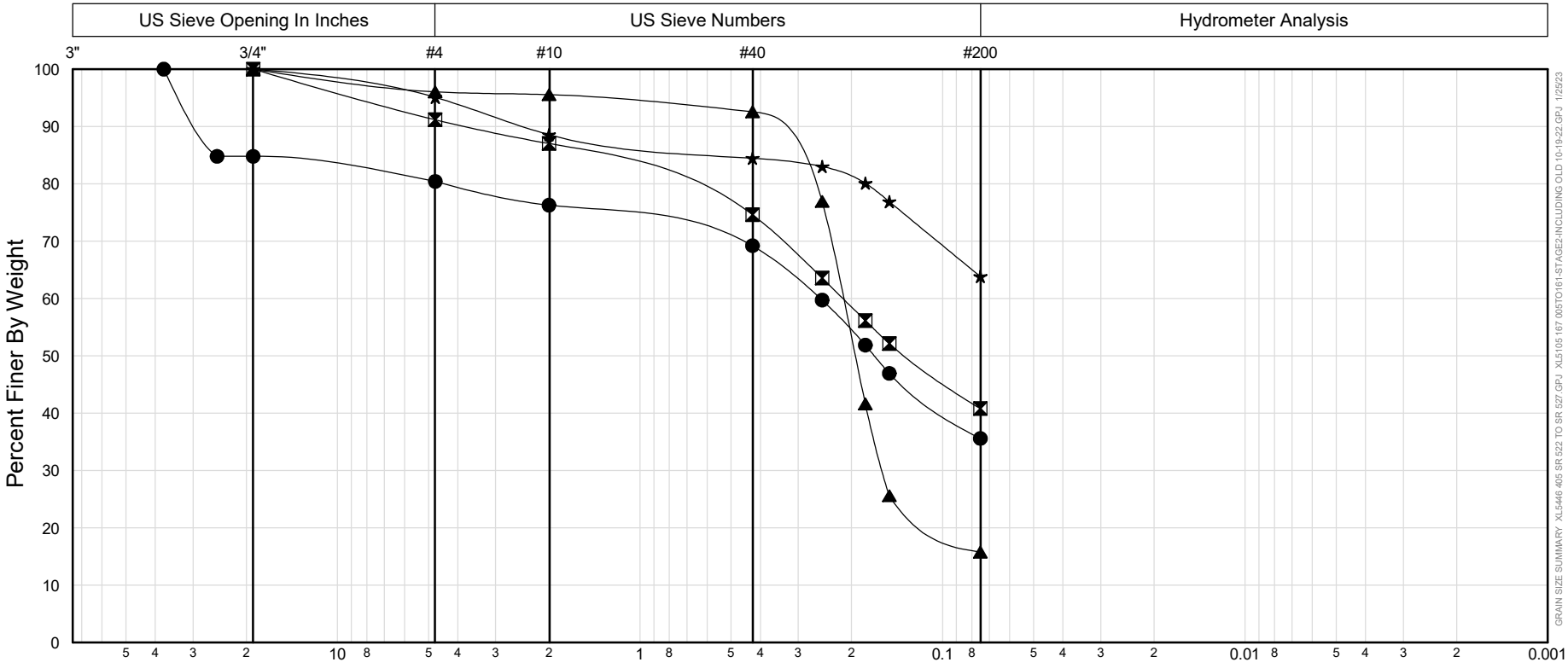
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-03-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	5.0	D-2	SM	SILTY SAND with GRAVEL	5-8-19	31	23	n/a	NP			19.6	44.8	35.6			28.725	0.254	0.168			
⊠	14.5	D-6	SC-SM	SILTY, CLAYEY SAND	5-8-19	10	19	13	6			8.8	50.4	40.8			3.715	0.214	0.132			
▲	26.5	D-11	SM	SILTY SAND	5-8-19	22	n/a	n/a	NP			4.0	80.3	15.8			0.390	0.214	0.195	0.158	0.101	
★	32.3	D-13B	ML	SANDY SILT	5-8-19	30	36	n/a	NP			4.9	31.2	63.8			2.419					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

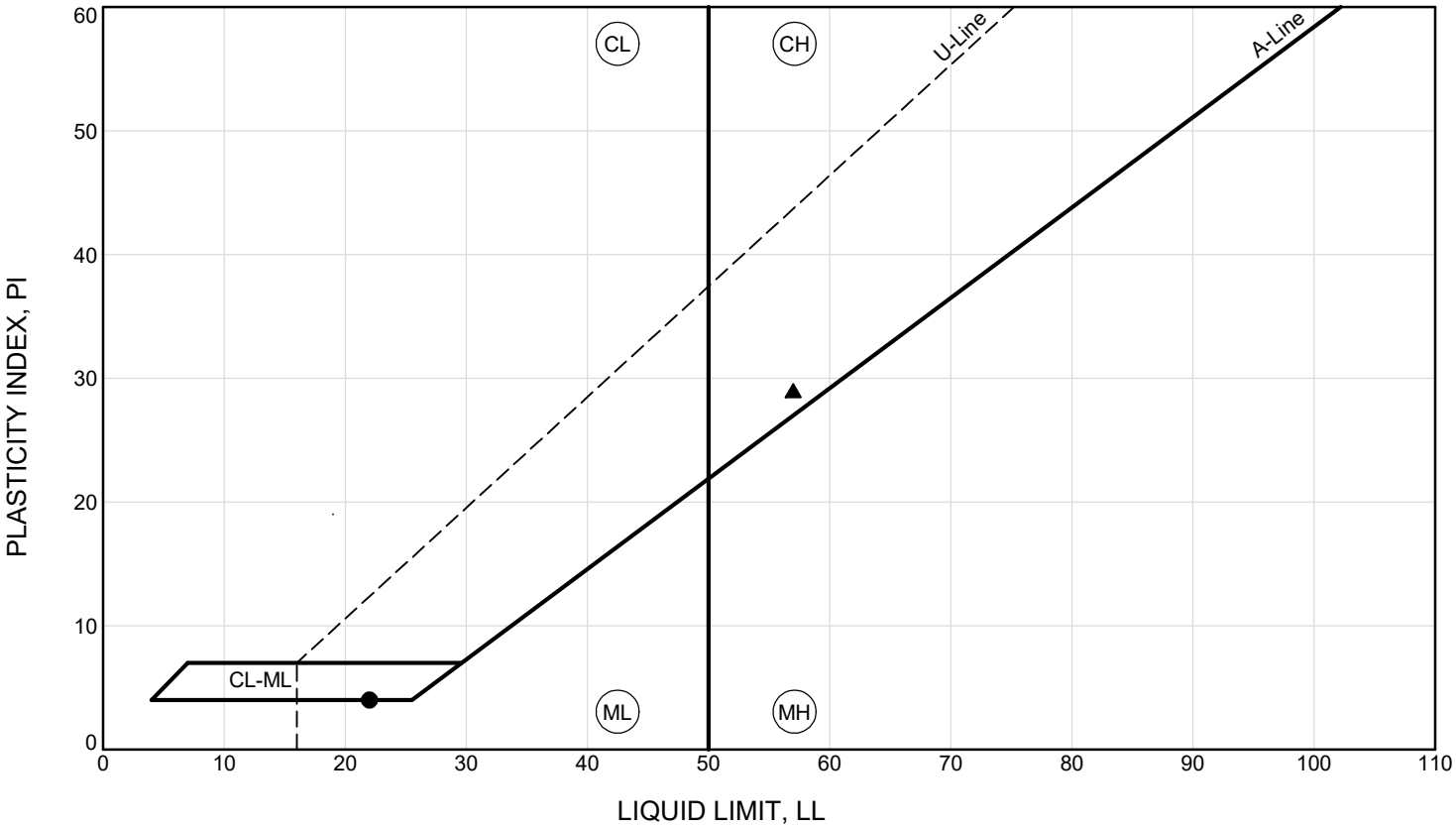


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-04vw-19	7.0	D-3	CL-ML	SANDY SILTY CLAY		23	22	18	4	62.1		
	NE-04vw-19	19.0	D-8	SM	SILTY SAND		32	n/a	n/a	NP	32.2		
▲	NE-04vw-19	32.0	D-13A	CH	SANDY FAT CLAY		32	57	28	29	61.4		
	NE-04vw-19	37.0	D-15	SM	SILTY SAND with GRAVEL		11	19	n/a	NP	21.9		
	NE-04vw-19	44.7	D-18B		MC and LOI Only		81	n/a	n/a	NP			
	NE-04vw-19	47.0	D-19	SM	SILTY SAND		16	n/a	n/a	NP	18.6		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

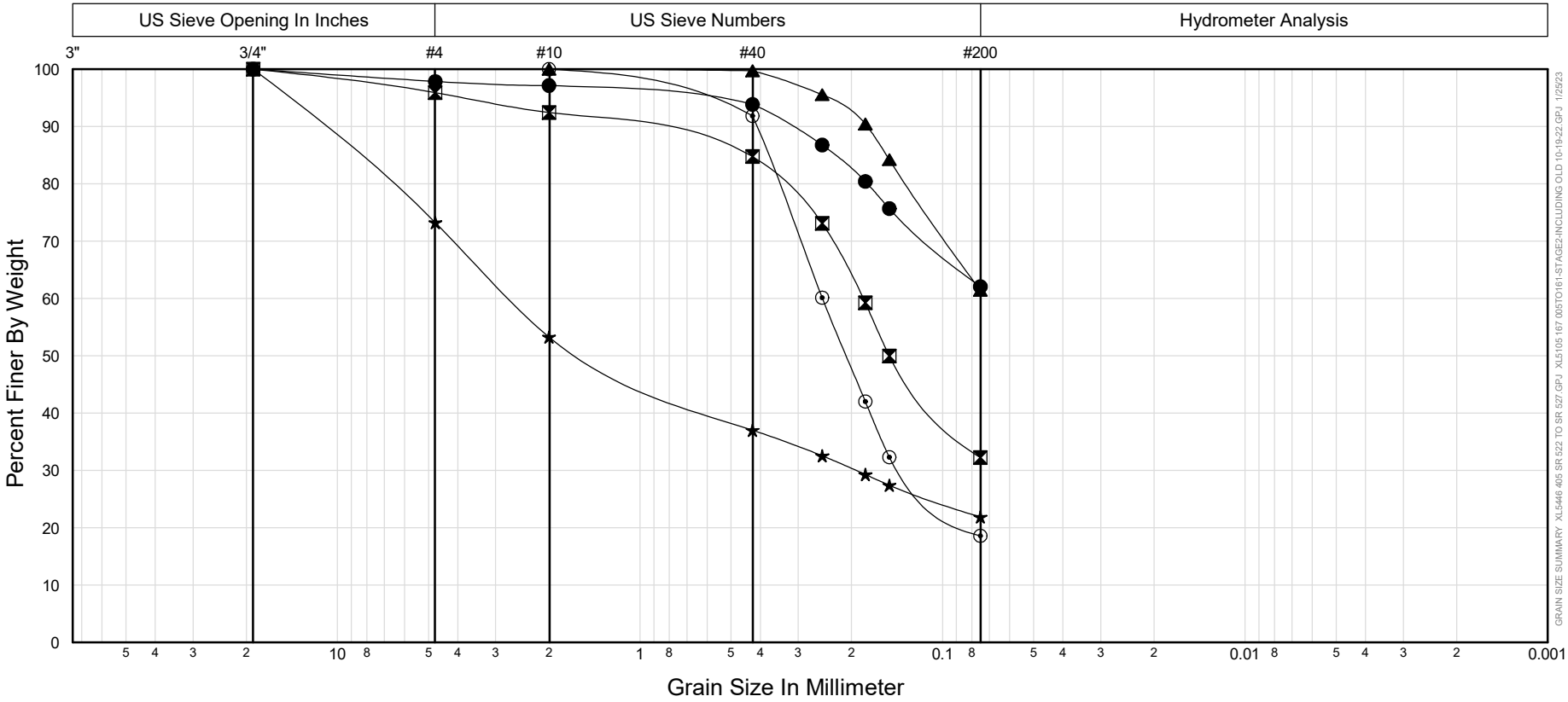
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-04vw-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	CL-ML	SANDY SILTY CLAY	5-8-19	23	22	18	4			2.2	35.8	62.1			0.319					
⊠	19.0	D-8	SM	SILTY SAND	5-8-19	32	n/a	n/a	NP			4.1	63.7	32.2			1.226	0.183	0.150			
▲	32.0	D-13A	CH	SANDY FAT CLAY	5-8-19	32	57	28	29			0.0	38.6	61.4			0.178					
★	37.0	D-15	SM	SILTY SAND with GRAVEL	5-8-19	11	19	n/a	NP			26.8	51.4	21.9			11.318	2.678	1.466	0.193		
⊙	47.0	D-19	SM	SILTY SAND	5-8-19	16	n/a	n/a	NP			0.0	81.4	18.6			0.412	0.249	0.208	0.134	0.081	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

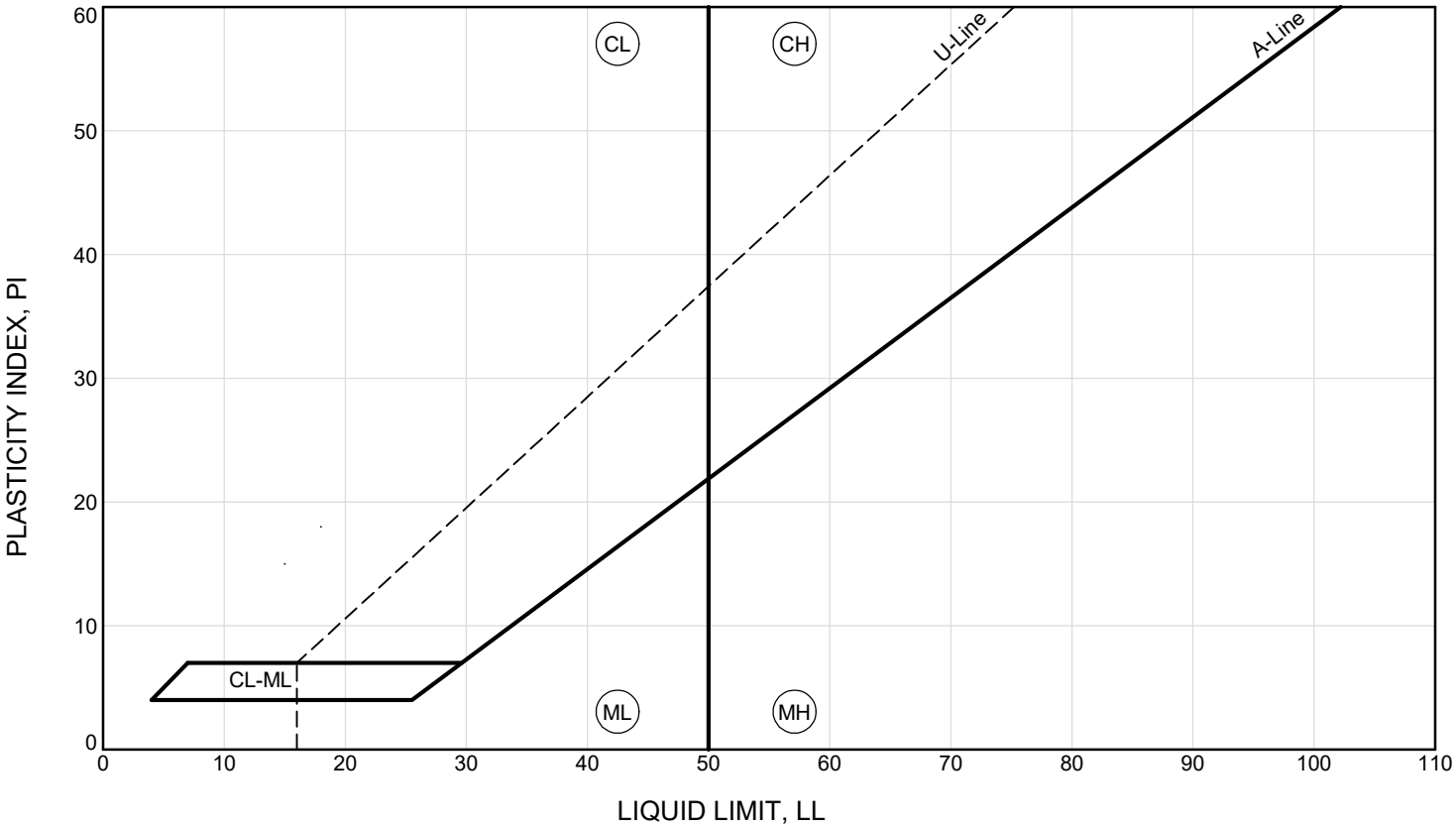


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-05-19	7.0	D-2	ML	SANDY SILT		17	18	n/a	NP	52.8		
	NE-05-19	17.0	D-6	SM	with Organics		23	n/a	n/a	NP	26.3		
	NE-05-19	22.0	D-8	SW-SM	WELL-GRADED SAND with SILT		21	n/a	n/a	NP	11.8		
	NE-05-19	29.0	D-11	SM	SILTY SAND with GRAVEL		18	n/a	n/a	NP	13.4		
	NE-05-19	34.0	D-13	SM	SILTY SAND		20	15	n/a	NP	43.9		
	NE-05-19	49.0	D-17	SM	SILTY SAND		14	n/a	n/a	NP	12.4		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

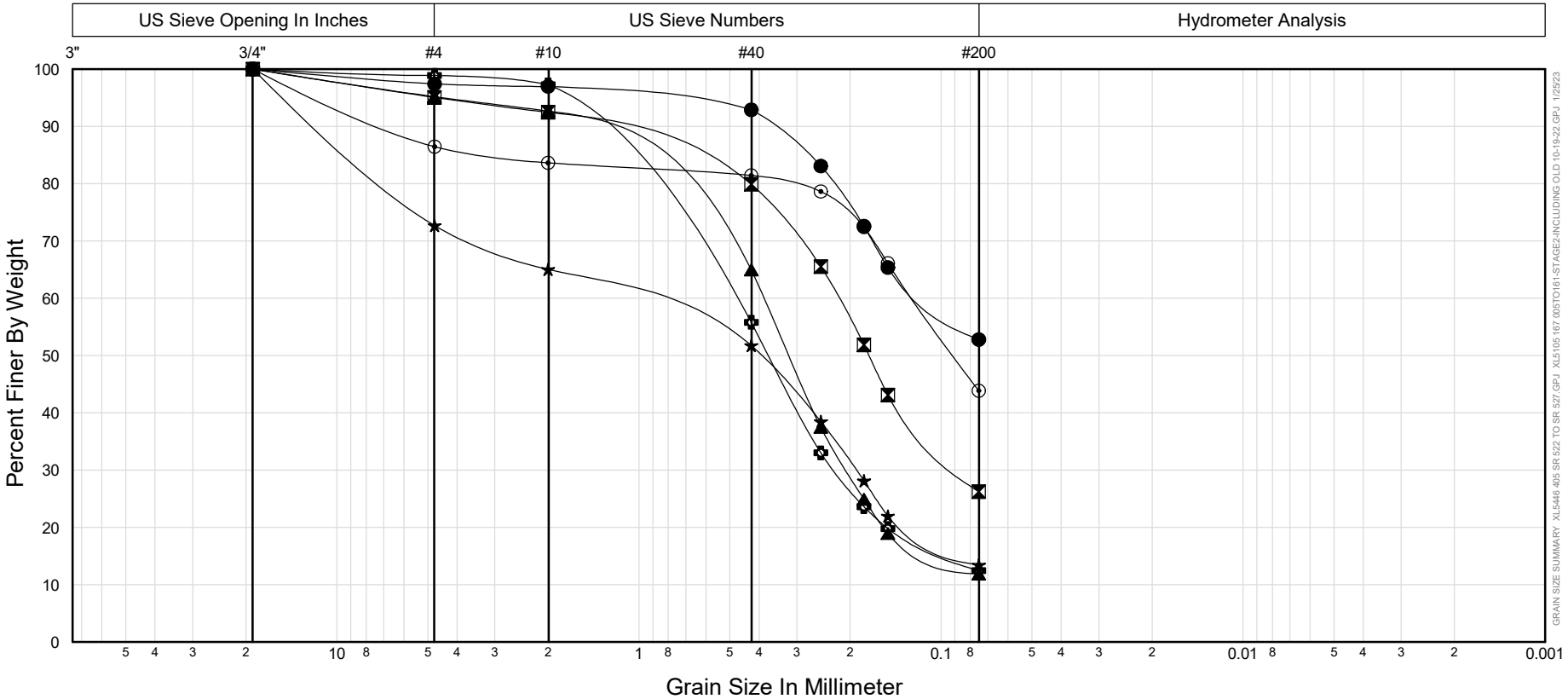
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-05-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-2	ML	SANDY SILT	5-8-19	17	18	n/a	NP			2.6	44.6	52.8			0.363	0.112				
⊠	17.0	D-6	SM	SILTY SAND with Organics	5-8-19	23	n/a	n/a	NP			4.9	68.8	26.3			1.478	0.219	0.173	0.087		
▲	22.0	D-8	SW-SM	WELL-GRADED SAND with SILT	5-8-19	21	n/a	n/a	NP			4.8	83.3	11.8	1.7	6	1.721	0.386	0.318	0.206	0.155	
★	29.0	D-11	SM	SILTY SAND with GRAVEL	5-8-19	18	n/a	n/a	NP			27.3	59.3	13.4			11.436	1.111	0.396	0.191	0.128	
⊙	34.0	D-13	SM	SILTY SAND	5-8-19	20	15	n/a	NP			13.5	42.6	43.9			6.821	0.124	0.091			
✿	49.0	D-17	SM	SILTY SAND	5-8-19	14	n/a	n/a	NP			1.1	86.5	12.4	1.7	8	1.525	0.497	0.371	0.225	0.151	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

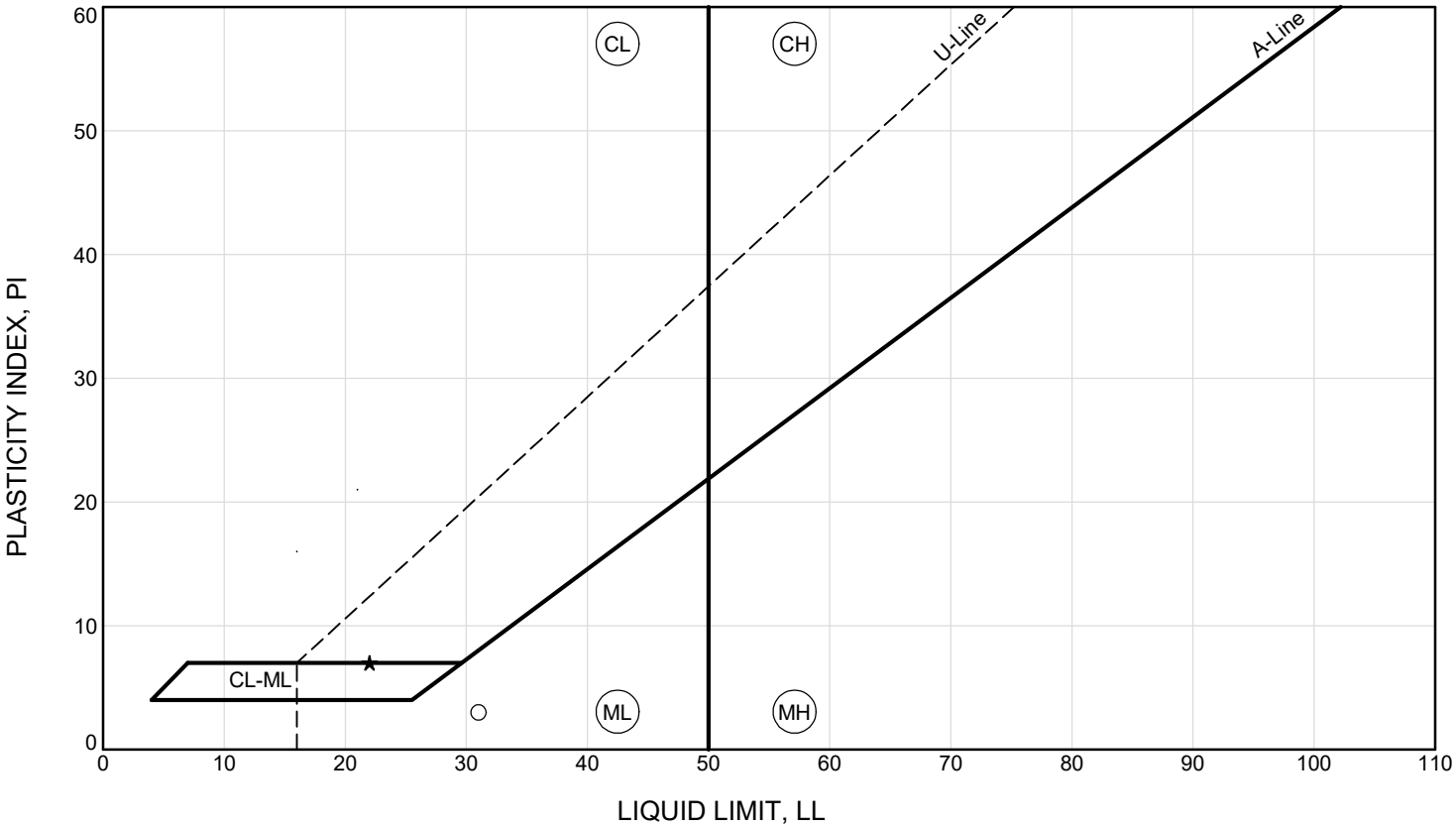


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-07si-19	7.0	D-3	SM	SILTY SAND		22	n/a	n/a	NP	29.4		
	NE-07si-19	12.0	D-5A	SM	SILTY SAND		21	16	n/a	NP	48.6		
	NE-07si-19	17.0	D-7	SM	SILTY SAND		13	n/a	n/a	NP	19.4		
★	NE-07si-19	27.0	D-11	SC-SM	SILTY, CLAYEY SAND with GRAVEL		13	22	15	7	33.3		
	NE-07si-19	54.0	D-17	ML	SANDY SILT		26	21	n/a	NP	57.6		
	NE-07si-19	69.0	D-20	SM	SILTY SAND		16	n/a	n/a	NP	18.6		
○	NE-07si-19	79.0	D-22	ML	SILT with SAND		35	31	28	3	73.8		
	NE-07si-19	89.5	D-24B		MC and LOI Only		68	n/a	n/a	NP			

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR 522 TO SR 527.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 1/25/23

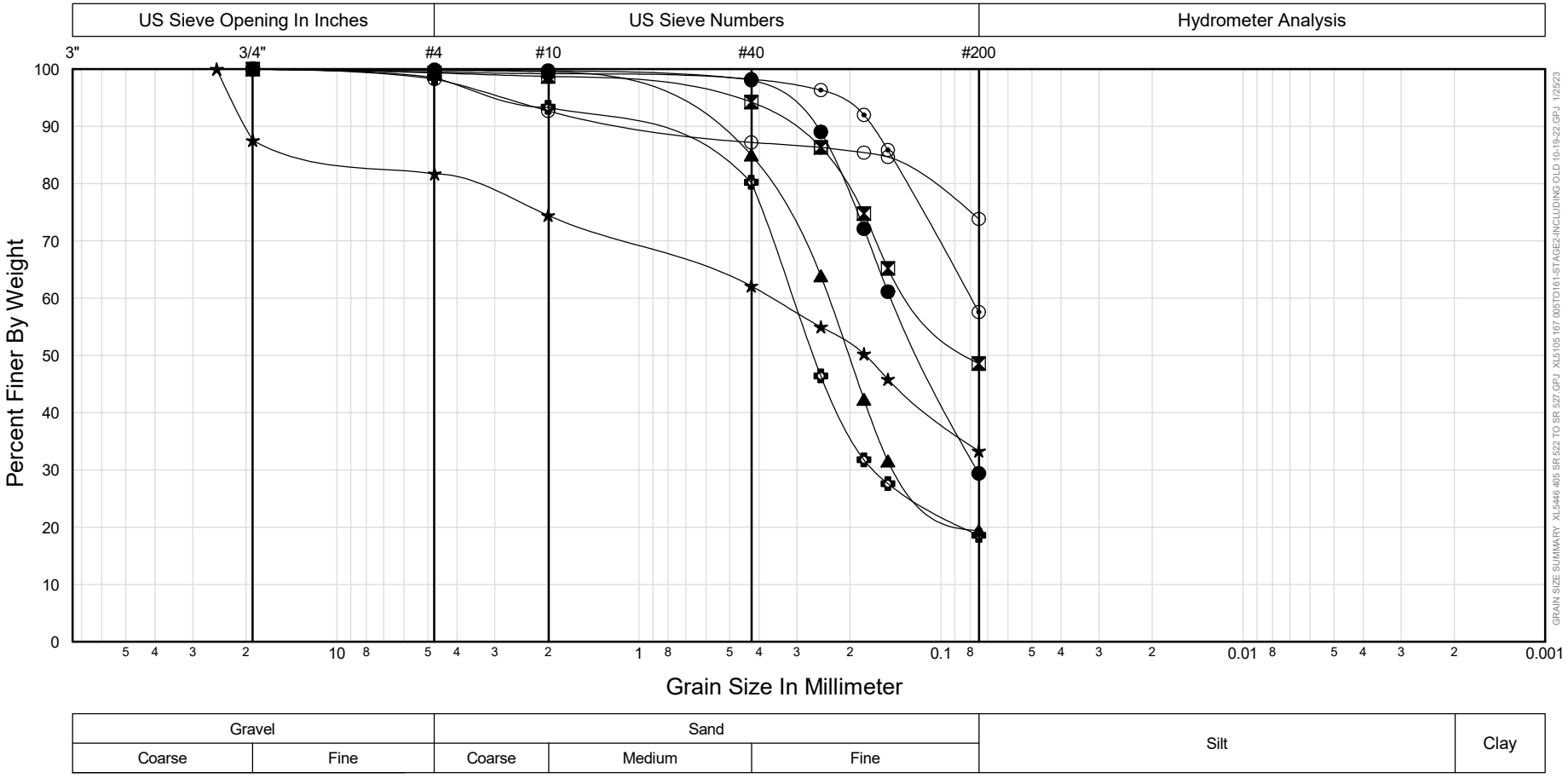
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-07si-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SM	SILTY SAND	7-22-19	22	n/a	n/a	NP			0.1	70.5	29.4			0.265	0.146	0.118	0.076		
⊠	12.0	D-5A	SM	SILTY SAND	7-22-19	21	16	n/a	NP			0.7	50.8	48.6			0.320	0.121	0.080			
▲	17.0	D-7	SM	SILTY SAND	7-22-19	13	n/a	n/a	NP			0.3	80.3	19.4			0.725	0.236	0.202	0.137	0.078	
★	27.0	D-11	SC-SM	SILTY, CLAYEY SAND with GRAVEL	7-22-19	13	22	15	7			18.3	48.4	33.3			20.060	0.363	0.178			
⊙	54.0	D-17	ML	SANDY SILT	7-22-19	26	21	n/a	NP			0.5	41.9	57.6			0.170	0.080				
✿	69.0	D-20	SM	SILTY SAND	7-22-19	16	n/a	n/a	NP			1.5	79.9	18.6			1.348	0.309	0.264	0.167	0.084	
○	79.0	D-22	ML	SILT with SAND	7-22-19	35	31	28	3			1.7	24.4	73.8			0.936					

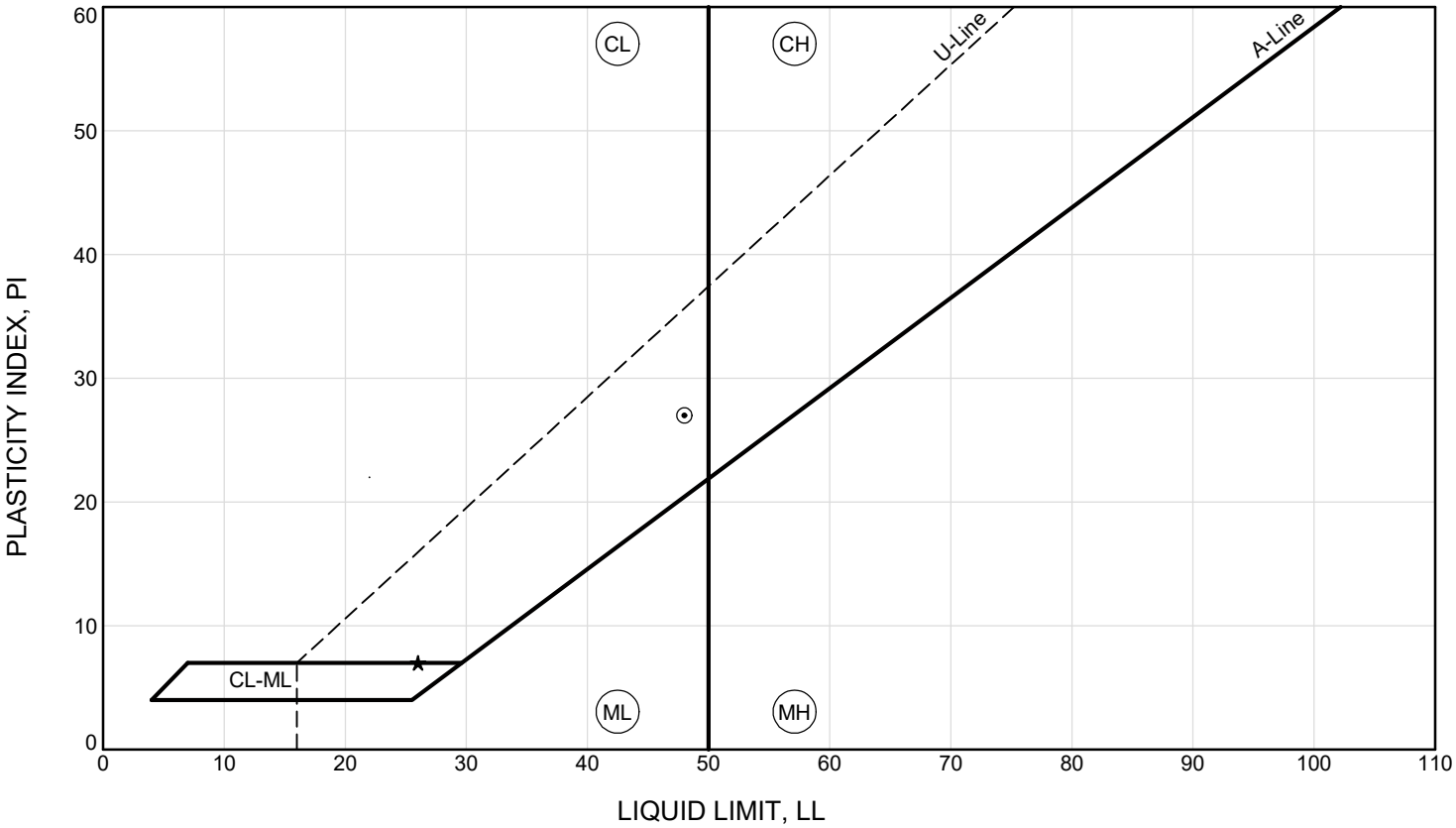
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-08-19	10.0	D-4	SM	SILTY SAND		23	n/a	n/a	NP	42.9		
	NE-08-19	18.0	D-7A	ML	SANDY SILT		22	22	n/a	NP	69.0		
	NE-08-19	25.0	D-10	SM	SILTY SAND		21	n/a	n/a	NP	33.1		
★	NE-08-19	30.0	D-12	SC-SM	SILTY, CLAYEY SAND		28	26	19	7	47.8		
⊙	NE-08-19	38.0	D-15	CL	LEAN CLAY with SAND		22	48	21	27	82.1		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

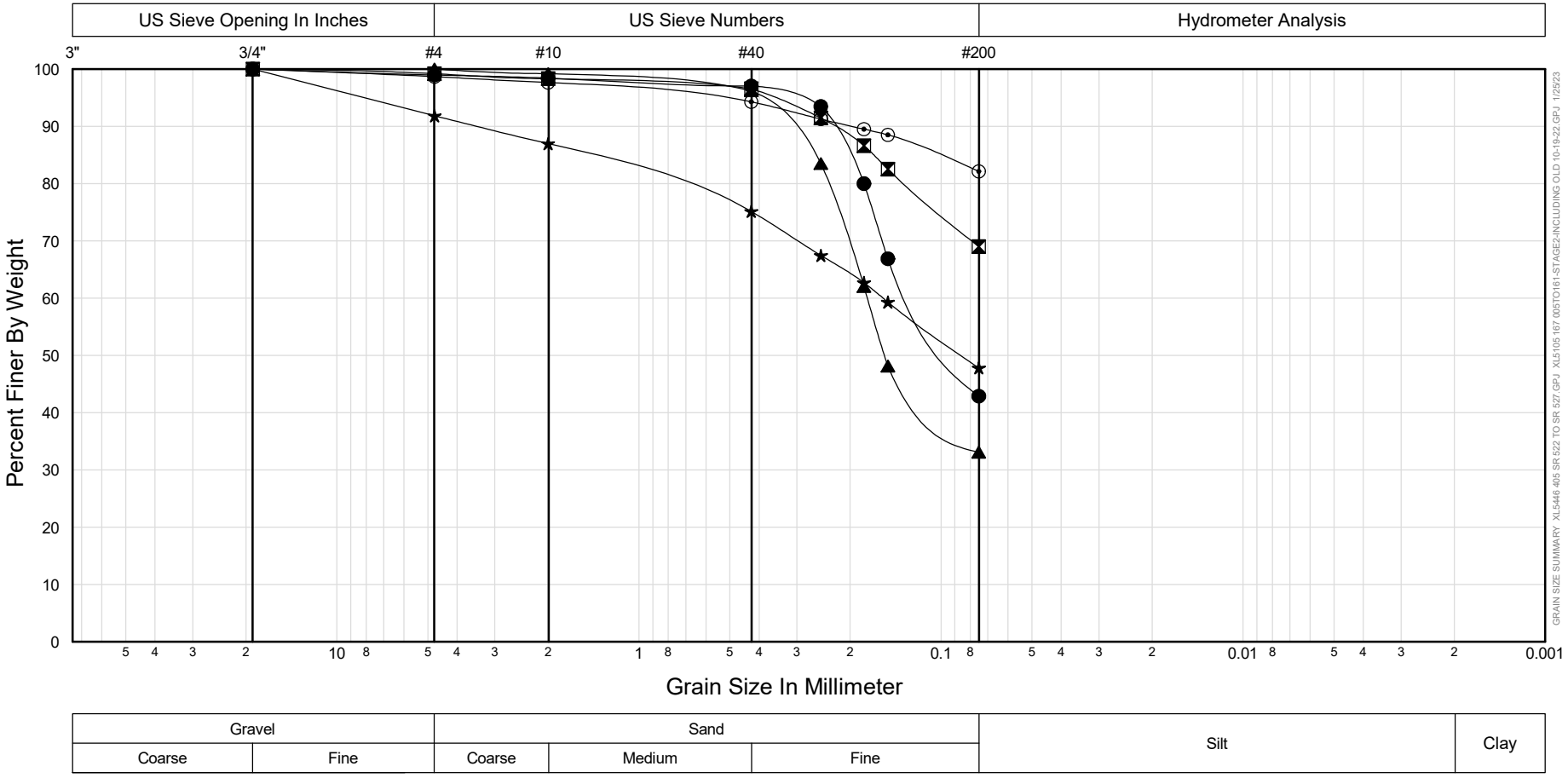
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-08-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	10.0	D-4	SM	SILTY SAND	5-8-19	23	n/a	n/a	NP			1.0	56.1	42.9			0.230	0.123	0.092			
⊠	18.0	D-7A	ML	SANDY SILT	5-8-19	22	22	n/a	NP			0.8	30.2	69.0			0.226					
▲	25.0	D-10	SM	SILTY SAND	5-8-19	21	n/a	n/a	NP			0.0	66.9	33.1			0.328	0.175	0.154			
★	30.0	D-12	SC-SM	SILTY, CLAYEY SAND	5-8-19	28	26	19	7			8.1	44.0	47.8			3.419	0.156	0.086			
⊙	38.0	D-15	CL	LEAN CLAY with SAND	5-8-19	22	48	21	27			1.3	16.5	82.1			0.197					

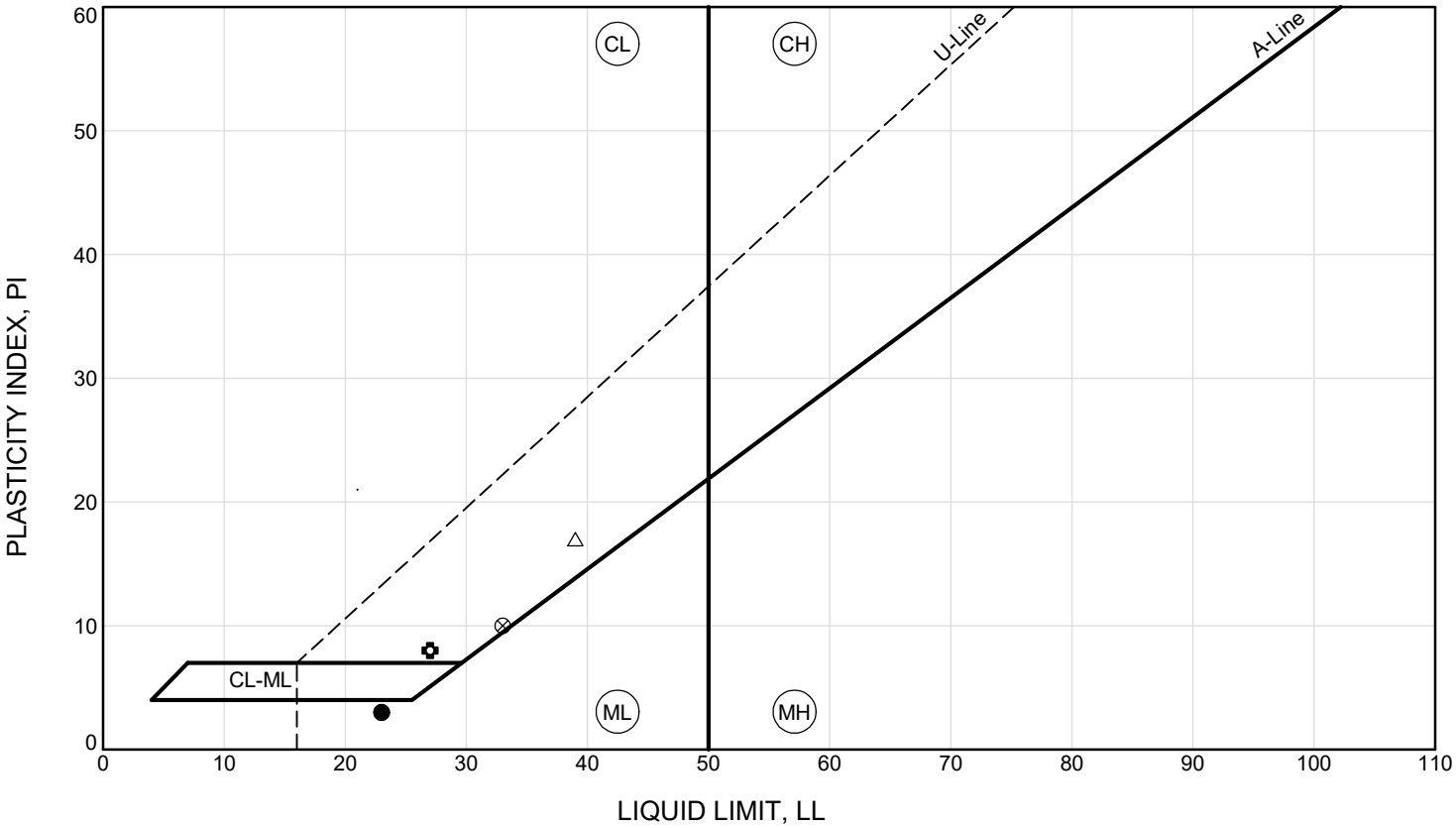
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-09si-19	5.0	D-2	ML	SANDY SILT		24	23	20	3	59.9		
	NE-09si-19	8.0	D-3	SM	SILTY SAND		18	n/a	n/a	NP	40.8		
	NE-09si-19	13.0	D-5	SM	SILTY SAND		16	n/a	n/a	NP	24.6		
	NE-09si-19	30.0	D-12	SP-SM	POORLY GRADED SAND with SILT		22	n/a	n/a	NP	9.3		
	NE-09si-19	40.0	D-14	ML	SILT		24	21	n/a	NP	90.1		
✿	NE-09si-19	55.0	D-17	CL	SANDY LEAN CLAY		27	27	19	8	67.5		
	NE-09si-19	70.0	D-20	ML	SILT with SAND		28	21	n/a	NP	72.2		
△	NE-09si-19	95.0	D-25	CL	LEAN CLAY		31	39	22	17	87.9		
⊗	NE-09si-19	130.0	D-29		MC & AL Only		30	33	23	10			

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

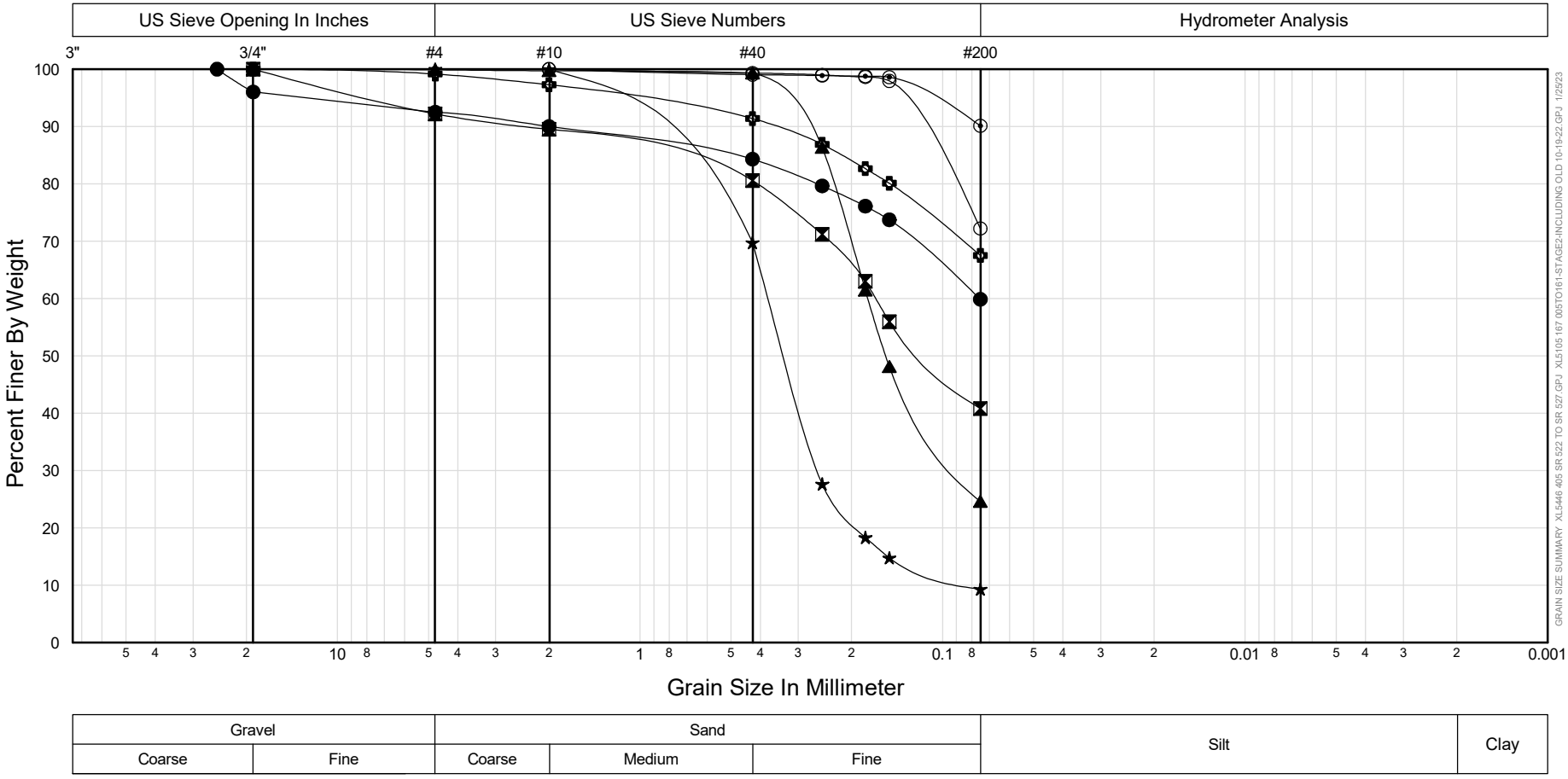
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-09si-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	5.0	D-2	ML	SANDY SILT	7-22-19	24	23	20	3			7.5	32.6	59.9			2.004	0.076				
⊠	8.0	D-3	SM	SILTY SAND	7-22-19	18	n/a	n/a	NP			7.8	51.4	40.8			2.343	0.167	0.114			
▲	13.0	D-5	SM	SILTY SAND	7-22-19	16	n/a	n/a	NP			0.1	75.3	24.6			0.290	0.176	0.154	0.088		
★	30.0	D-12	SP-SM	POORLY GRADED SAND with SILT	7-22-19	22	n/a	n/a	NP			0.0	90.7	9.3	2.2	5	1.200	0.376	0.331	0.257	0.191	0.082
⊙	40.0	D-14	ML	SILT	7-22-19	24	21	n/a	NP			0.0	9.9	90.1								
✿	55.0	D-17	CL	SANDY LEAN CLAY	7-22-19	27	27	19	8			0.8	31.7	67.5			0.361					
○	70.0	D-20	ML	SILT with SAND	7-22-19	28	21	n/a	NP			0.0	27.8	72.2			0.121					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

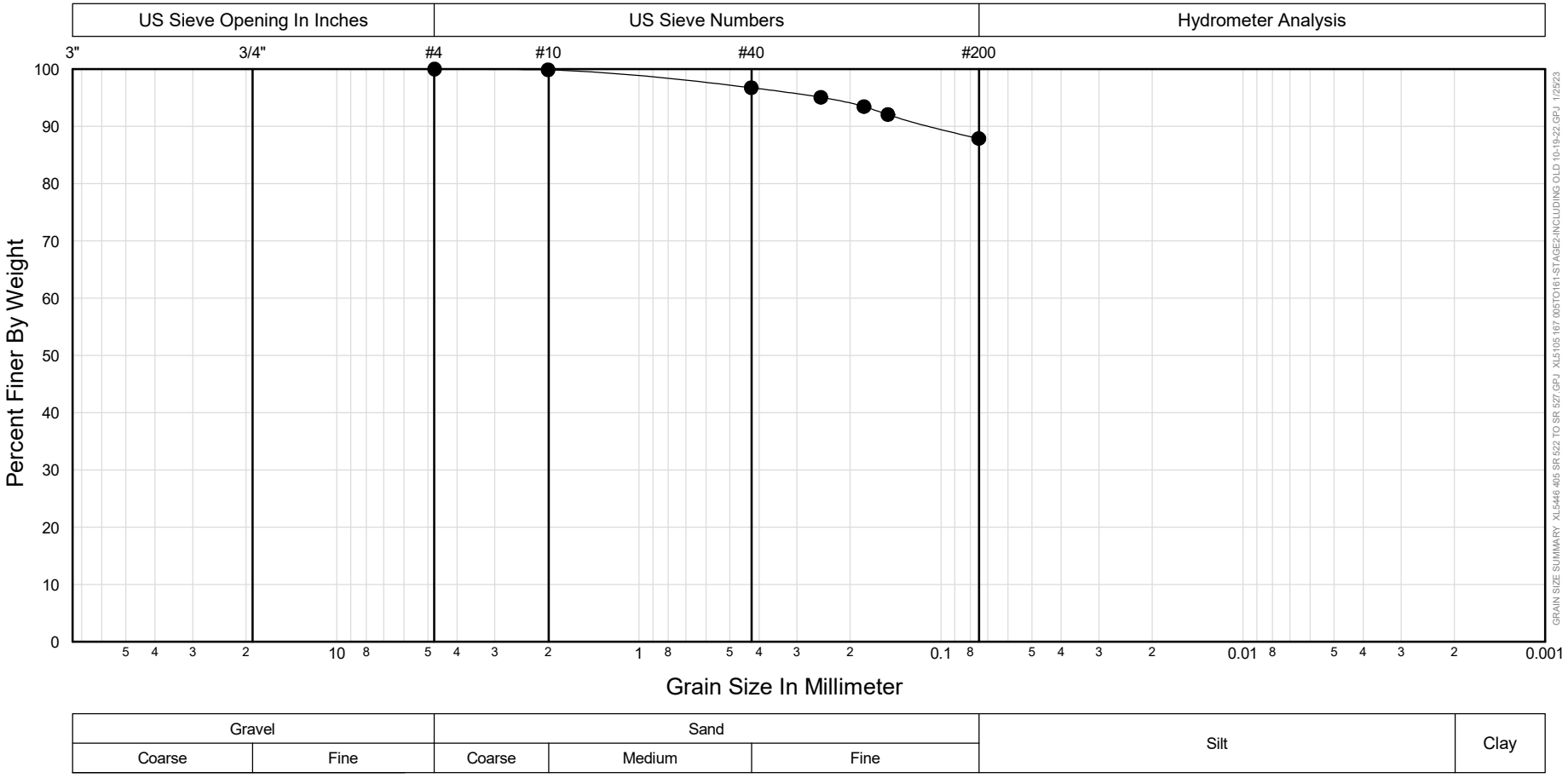


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	95.0	D-25	CL	LEAN CLAY	7-22-19	31	39	22	17			0.0	12.1	87.9			0.107					

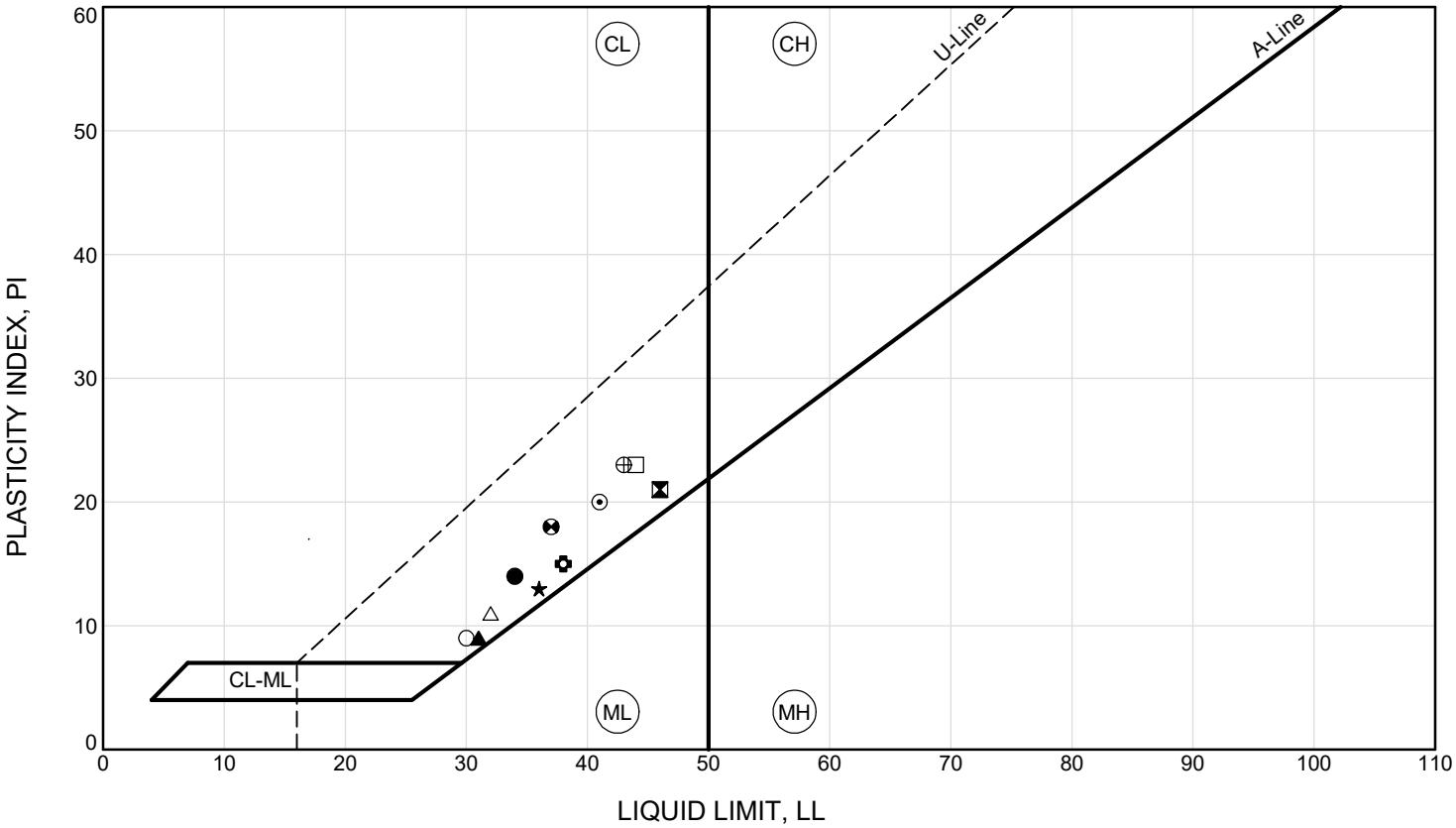
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-11-19	4.0	D-2	SC	CLAYEY SAND with GRAVEL		29	34	20	14	46.5		
⊠	NE-11-19	9.0	D-4	CL	SANDY LEAN CLAY		40	46	25	21	66.6		
▲	NE-11-19	14.0	D-6	CL	LEAN CLAY		27	31	22	9	89.6		
★	NE-11-19	29.0	D-12		MC & AL Only		28	36	23	13			
⊙	NE-11-19	34.0	D-13	CL	LEAN CLAY		34	41	21	20	88.3		
✿	NE-11-19	39.0	D-14		MC & AL Only		32	38	23	15			
○	NE-11-19	44.0	D-15	CL	LEAN CLAY with SAND		23	30	21	9	80.2		
△	NE-11-19	59.0	D-18	CL	LEAN CLAY		30	32	21	11	92.4		
	NE-11-19	79.0	D-22	ML	SANDY SILT		19	17	n/a	NP	50.9		
⊕	NE-11-19	104.0	D-27	CL	LEAN CLAY		34	43	20	23	86.0		
□	NE-11-19	129.0	D-32		MC & AL Only		30	44	21	23			
⊗	NE-11-19	149.0	D-36	CL	LEAN CLAY		26	37	19	18	88.1		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

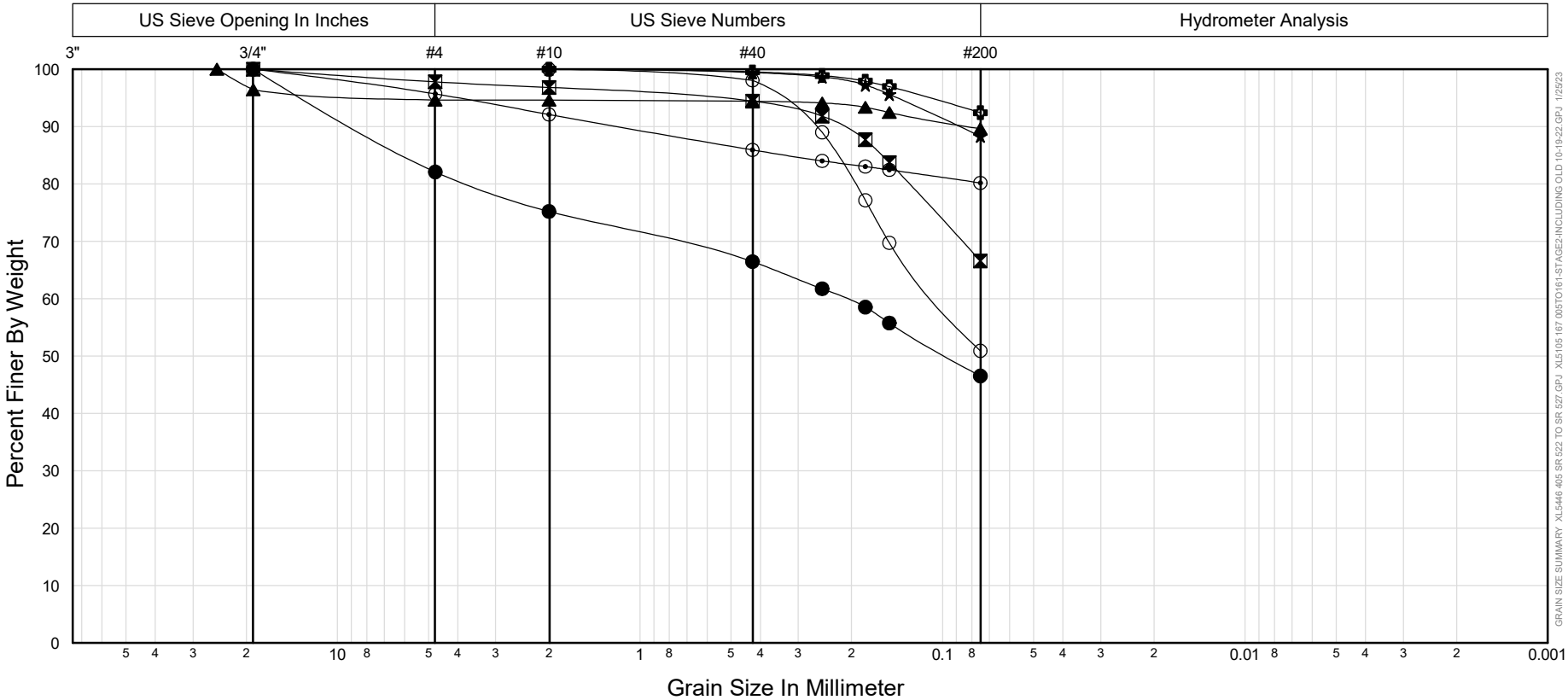
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-11-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SC	CLAYEY SAND with GRAVEL	8-13-19	29	34	20	14			17.9	35.6	46.5			8.761	0.209	0.097			
⊠	9.0	D-4	CL	SANDY LEAN CLAY	8-13-19	40	46	25	21			2.2	31.2	66.6			0.216					
▲	14.0	D-6	CL	LEAN CLAY	8-13-19	27	31	22	9			5.4	5.0	89.6			0.082					
★	34.0	D-13	CL	LEAN CLAY	8-13-19	34	41	21	20			0.0	11.7	88.3			0.088					
⊙	44.0	D-15	CL	LEAN CLAY with SAND	8-13-19	23	30	21	9			4.3	15.5	80.2			1.179					
✿	59.0	D-18	CL	LEAN CLAY	8-13-19	30	32	21	11			0.0	7.6	92.4								
○	79.0	D-22	ML	SANDY SILT	8-13-19	19	17	n/a	NP			0.0	49.1	50.9			0.265	0.105				

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



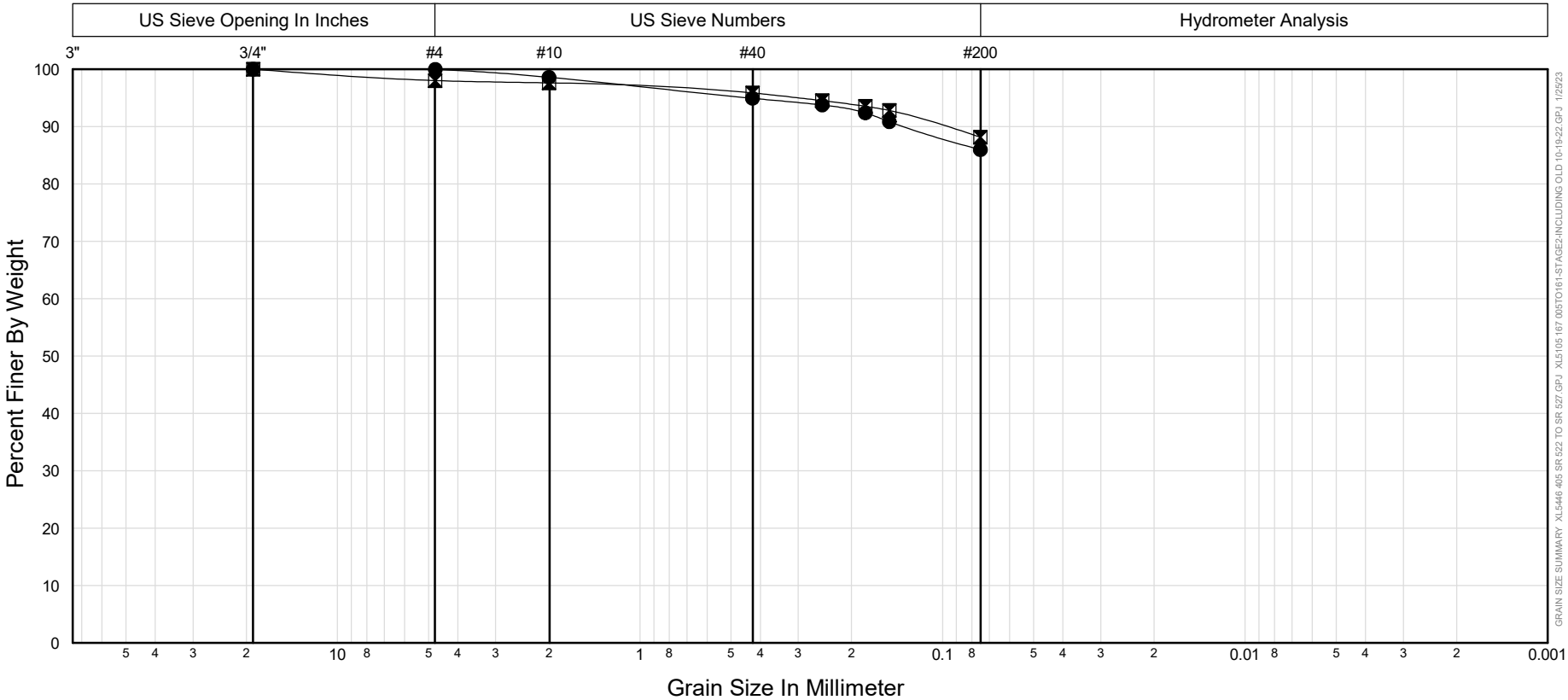
Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

GRAIN SIZE ANALYSIS SUMMARY FOR NE-11-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	104.0	D-27	CL	LEAN CLAY	8-13-19	34	43	20	23			0.0	14.0	86.0			0.133					
⊠	149.0	D-36	CL	LEAN CLAY	8-13-19	26	37	19	18			2.0	9.9	88.1			0.099					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

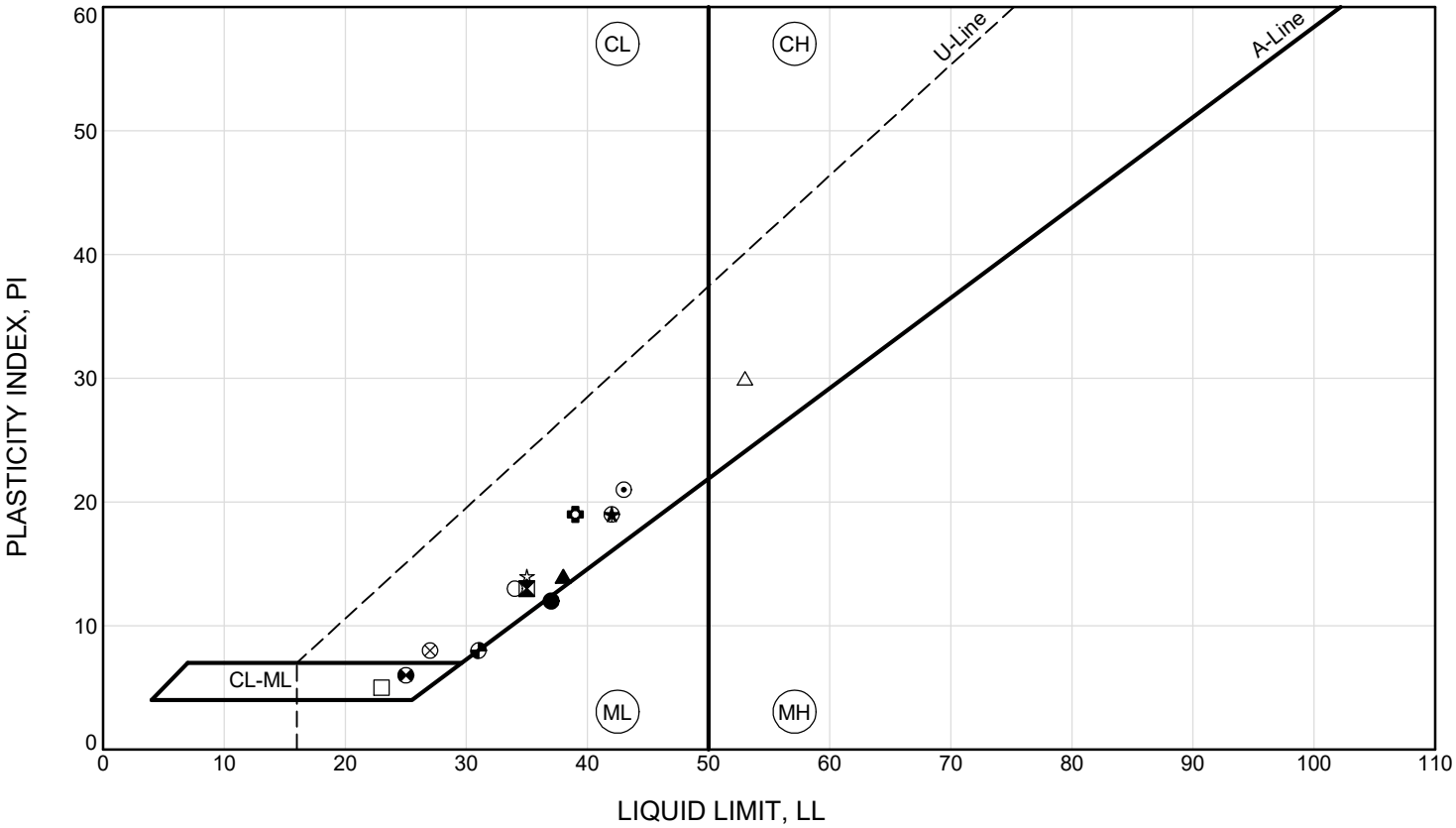


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-12p-19	4.5	D-2	ML	SILT		34	37	25	12	86.6		
⊠	NE-12p-19	9.5	D-4		MC & AL Only		38	35	22	13			
▲	NE-12p-19	17.5	D-7	CL	LEAN CLAY		30	38	24	14	95.6		
★	NE-12p-19	27.5	D-11		MC & AL Only		32	42	23	19			
⊙	NE-12p-19	29.5	D-12		MC & AL Only		34	43	22	21			
✿	NE-12p-19	32.5	D-13		MC & AL Only		27	39	20	19			
○	NE-12p-19	34.5	D-14	CL	LEAN CLAY		39	34	21	13	95.6	74.7	20.9
△	NE-12p-19	37.5	D-15		MC & AL Only		27	53	23	30			
⊗	NE-12p-19	44.5	D-18	CL	LEAN CLAY with SAND		22	27	19	8	80.8		
⊕	NE-12p-19	54.5	D-21	CL	LEAN CLAY		33	42	23	19	91.9		
□	NE-12p-19	74.5	D-25	CL-ML	SILTY CLAY with SAND		22	23	18	5	73.6		
⊠	NE-12p-19	89.5	D-28		MC & AL Only		27	25	19	6			
◕	NE-12p-19	114.5	D-33	ML	SILT		25	31	23	8	97.1		
☆	NE-12p-19	134.5	D-37		MC & AL Only		29	35	21	14			

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

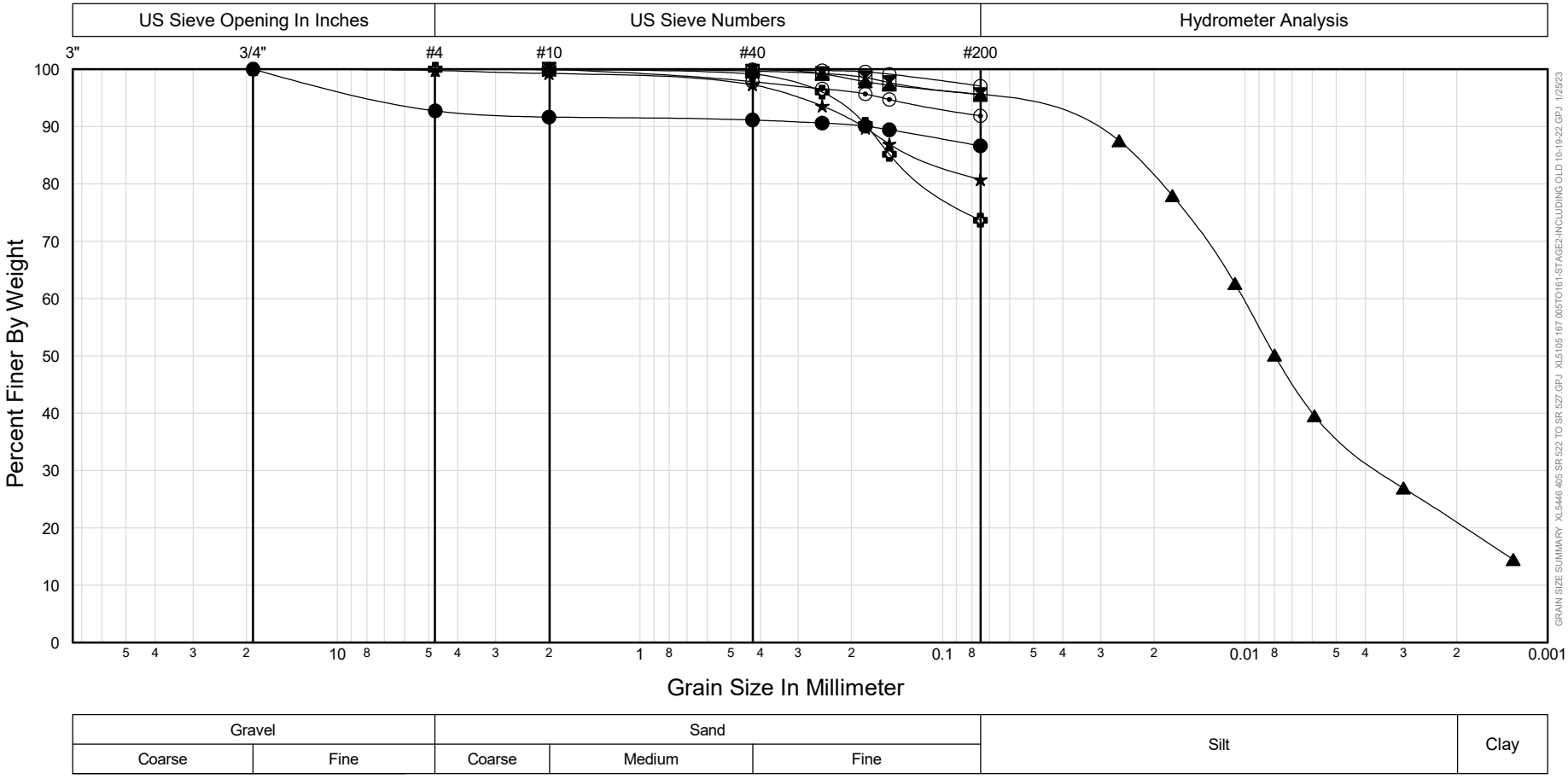
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-12p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.5	D-2	ML	SILT	8-16-19	34	37	25	12			7.3	6.1	86.6			0.177					
⊠	17.5	D-7	CL	LEAN CLAY	8-16-19	30	38	24	14			0.0	4.4	95.6								
▲	34.5	D-14	CL	LEAN CLAY	8-19-19	39	34	21	13		2.76	0.0	4.4	95.6			0.036	0.010	0.008	0.004	0.002	
★	44.5	D-18	CL	LEAN CLAY with SAND	8-16-19	22	27	19	8			0.2	19.0	80.8			0.184					
⊙	54.5	D-21	CL	LEAN CLAY	8-16-19	33	42	23	19			0.0	8.1	91.9								
✿	74.5	D-25	CL-ML	SILTY CLAY with SAND	8-16-19	22	23	18	5			0.0	26.4	73.6			0.178					
○	114.5	D-33	ML	SILT	8-16-19	25	31	23	8			0.0	2.9	97.1								

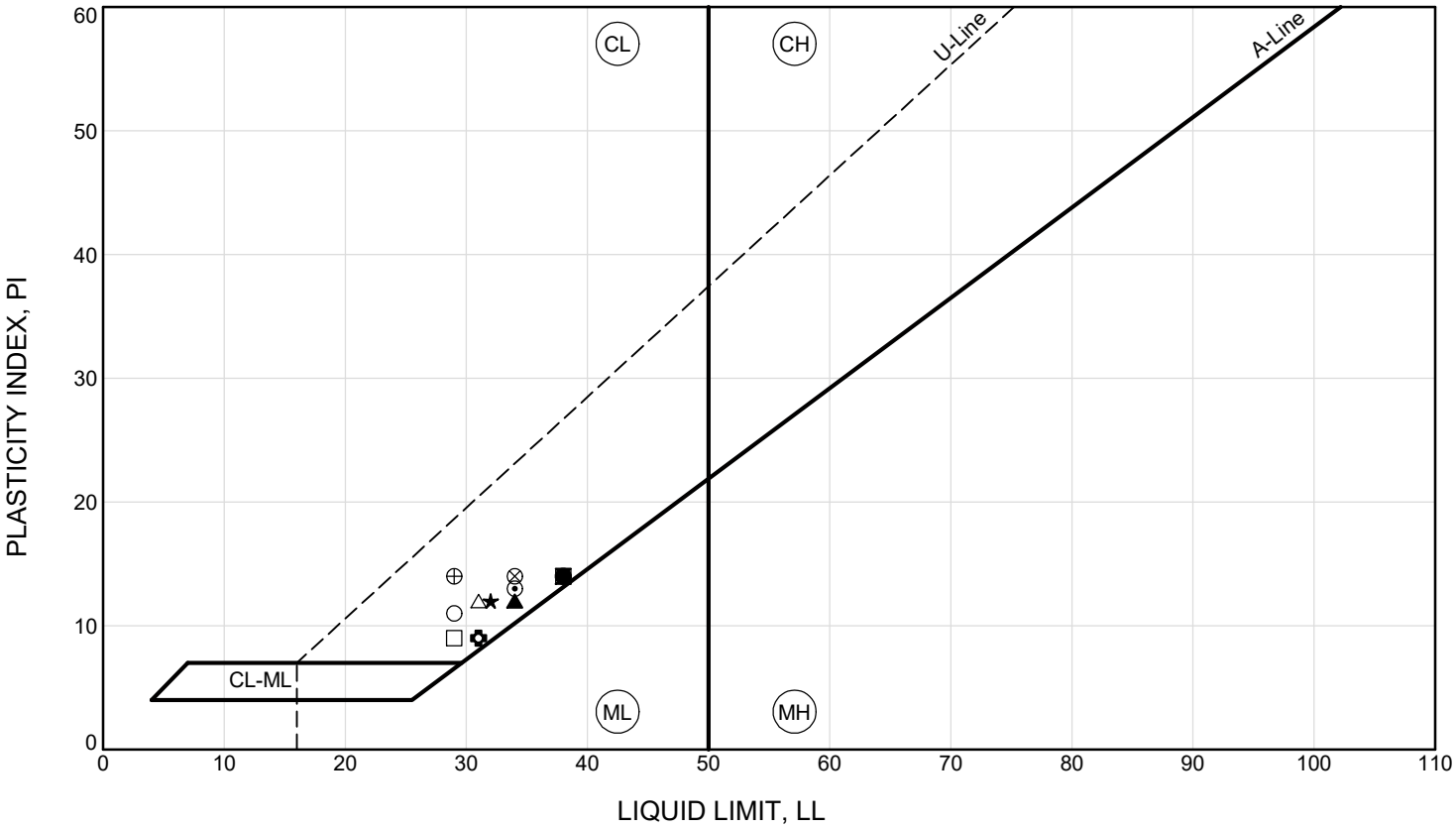
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-13p-19	6.5	D-3	CL	LEAN CLAY with SAND		29	38	24	14	83.2		
⊠	NE-13p-19	8.5	D-4		MC & AL Only		38	38	24	14			
▲	NE-13p-19	11.5	S-5	CL	LEAN CLAY		34	34	22	12	91.8	67.1	24.7
★	NE-13p-19	12.0	D-6		MC & AL Only		24	32	20	12			
⊙	NE-13p-19	18.5	D-9	CL	LEAN CLAY		33	34	21	13	96.3	60.5	35.7
✿	NE-13p-19	23.5	D-11		MC & AL Only		29	31	22	9			
○	NE-13p-19	28.5	D-13	CL	LEAN CLAY with SAND		24	29	18	11	84.1	56.6	27.5
△	NE-13p-19	38.5	D-17	CL	LEAN CLAY		25	31	19	12	88.2		
⊗	NE-13p-19	68.5	D-25	CL	LEAN CLAY		27	34	20	14	85.8		
⊕	NE-13p-19	78.5	D-27	CL	SANDY LEAN CLAY		18	29	15	14	55.5		
□	NE-13p-19	88.5	D-29	CL	LEAN CLAY with SAND		24	29	20	9	71.2		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

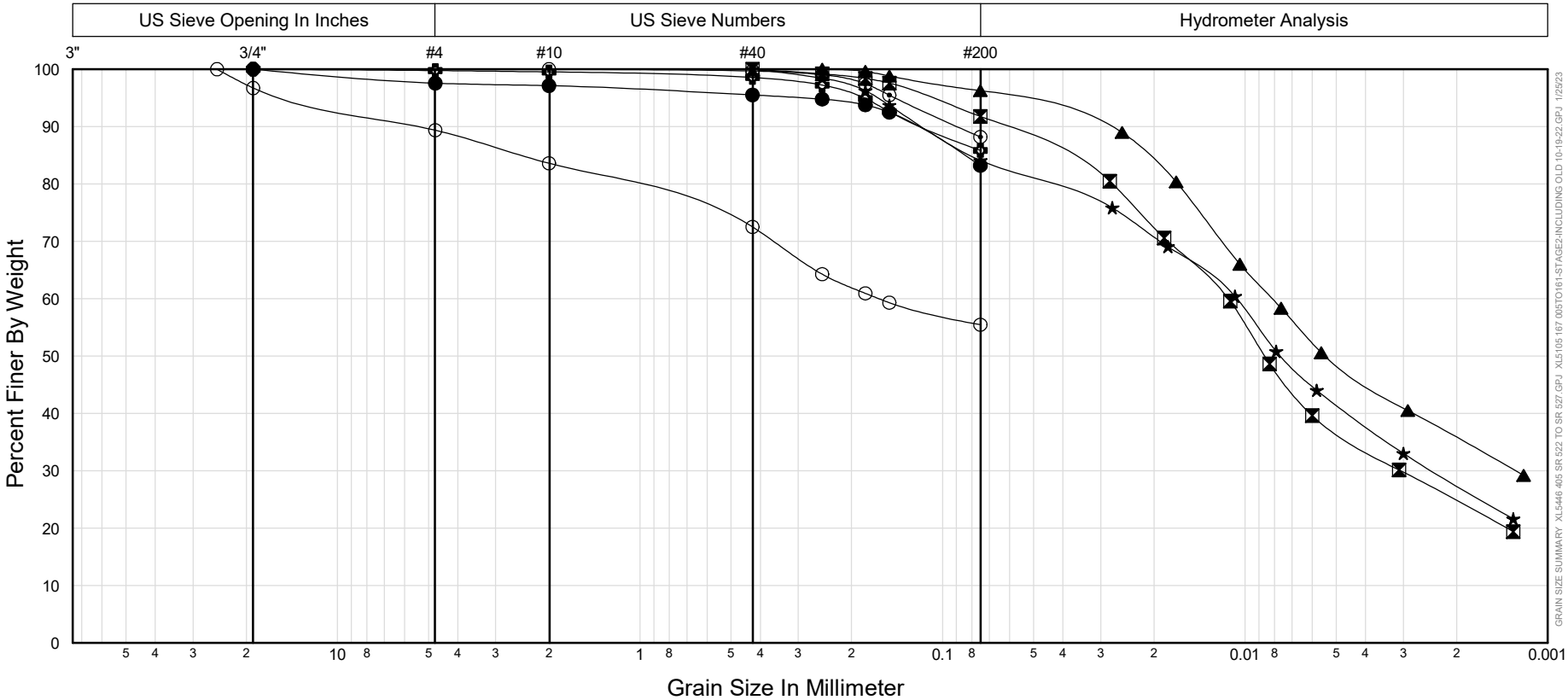
ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

GRAIN SIZE ANALYSIS SUMMARY FOR NE-13p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	6.5	D-3	CL	LEAN CLAY with SAND	1-23-20	29	38	24	14			2.4	14.4	83.2			0.125					
⊠	11.5	S-5	CL	LEAN CLAY	1-27-20	34	34	22	12	118	2.64	0.0	8.2	91.8			0.064	0.011	0.009	0.003	0.001	
▲	18.5	D-9	CL	LEAN CLAY	1-23-20	33	34	21	13		2.76	0.0	3.7	96.3			0.030	0.008	0.005	0.001		
★	28.5	D-13	CL	LEAN CLAY with SAND	1-23-20	24	29	18	11		2.73	0.0	15.9	84.1			0.115	0.011	0.008	0.002		
⊙	38.5	D-17	CL	LEAN CLAY	1-23-20	25	31	19	12			0.0	11.8	88.2			0.089					
✿	68.5	D-25	CL	LEAN CLAY	1-23-20	27	34	20	14			0.2	13.9	85.8			0.115					
○	78.5	D-27	CL	SANDY LEAN CLAY	1-23-20	18	29	15	14			10.6	33.9	55.5			5.354	0.162				

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

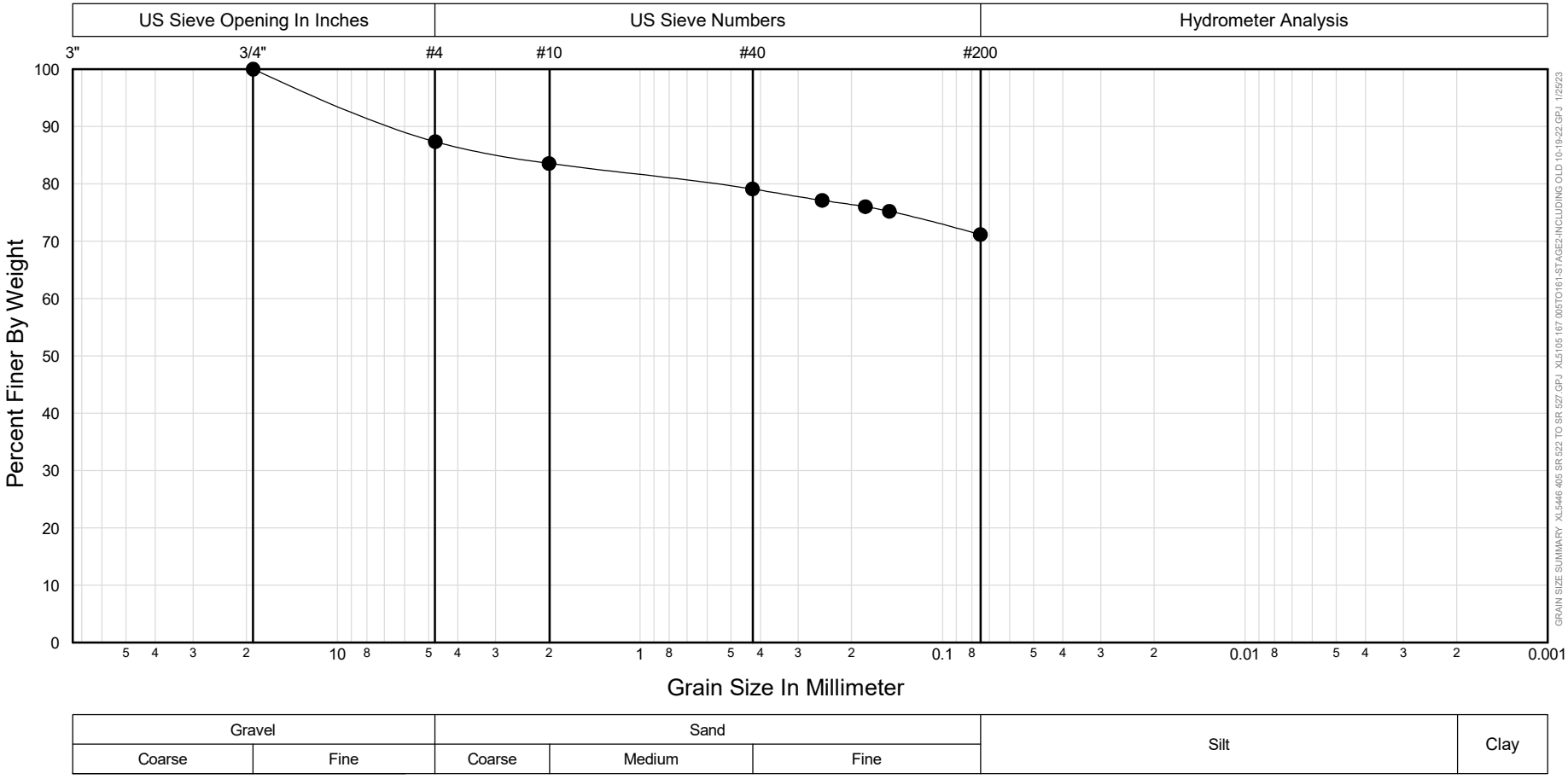


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	88.5	D-29	CL	LEAN CLAY with SAND	1-23-20	24	29	20	9			12.6	16.2	71.2			6.350					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

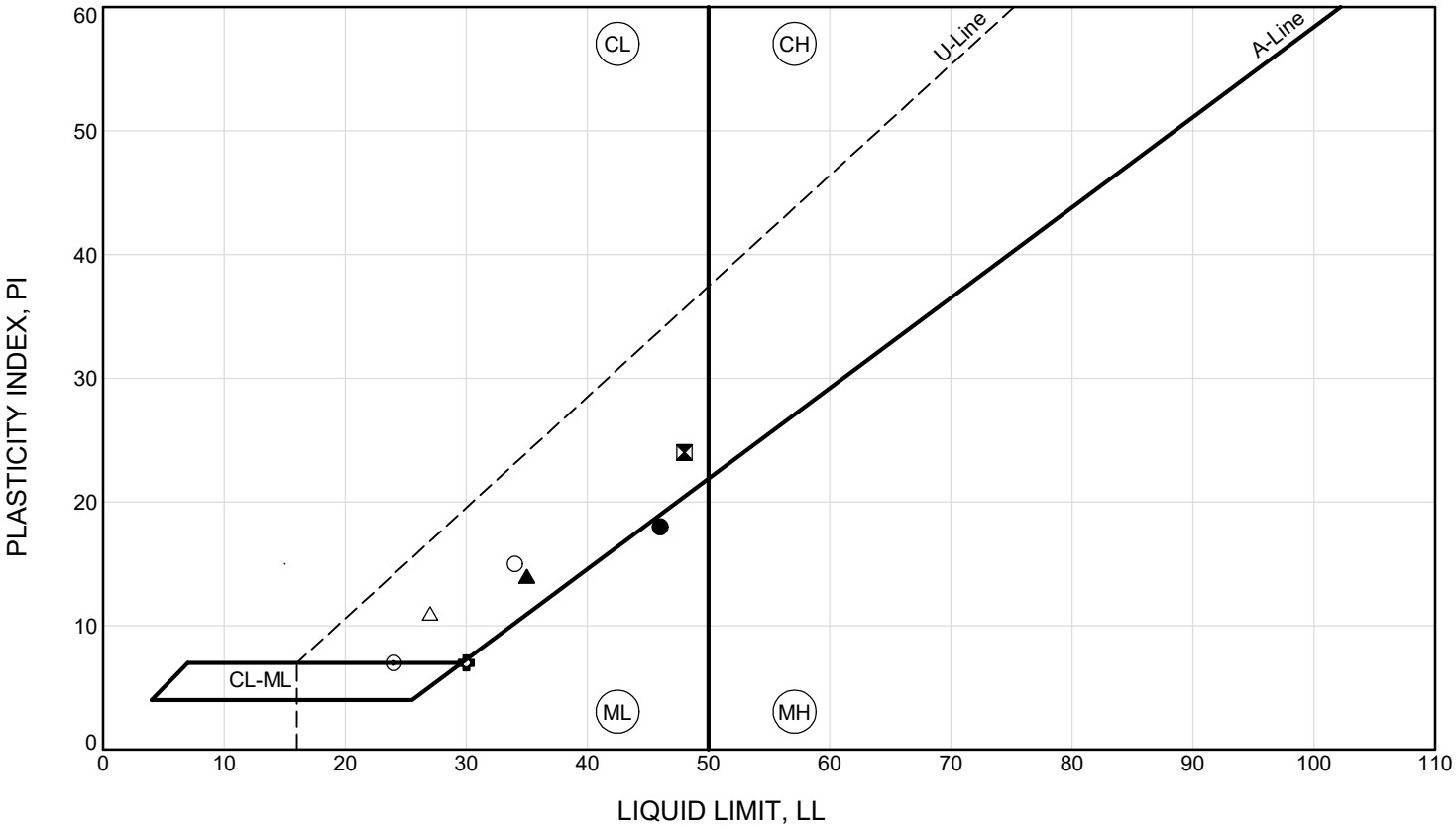


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-14p-19	0.0	D-1	ML	SANDY SILT		36	46	28	18	66.5		
⊠	NE-14p-19	8.0	D-3	CL	LEAN CLAY		36	48	24	24	94.3		
▲	NE-14p-19	23.0	D-9	CL	LEAN CLAY		35	35	21	14	89.3		
	NE-14p-19	35.0	D-14	SM	SILTY SAND		18	15	n/a	NP	44.7		
⊙	NE-14p-19	43.0	D-17	CL-ML	SILTY CLAY with SAND		21	24	17	7	74.2		
✿	NE-14p-19	55.0	D-21	ML	SILT		30	30	23	7	97.5		
○	NE-14p-19	70.0	D-24	CL	LEAN CLAY		29	34	19	15	92.3		
△	NE-14p-19	80.0	D-26	GC	CLAYEY GRAVEL with SAND		23	27	16	11	43.1		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

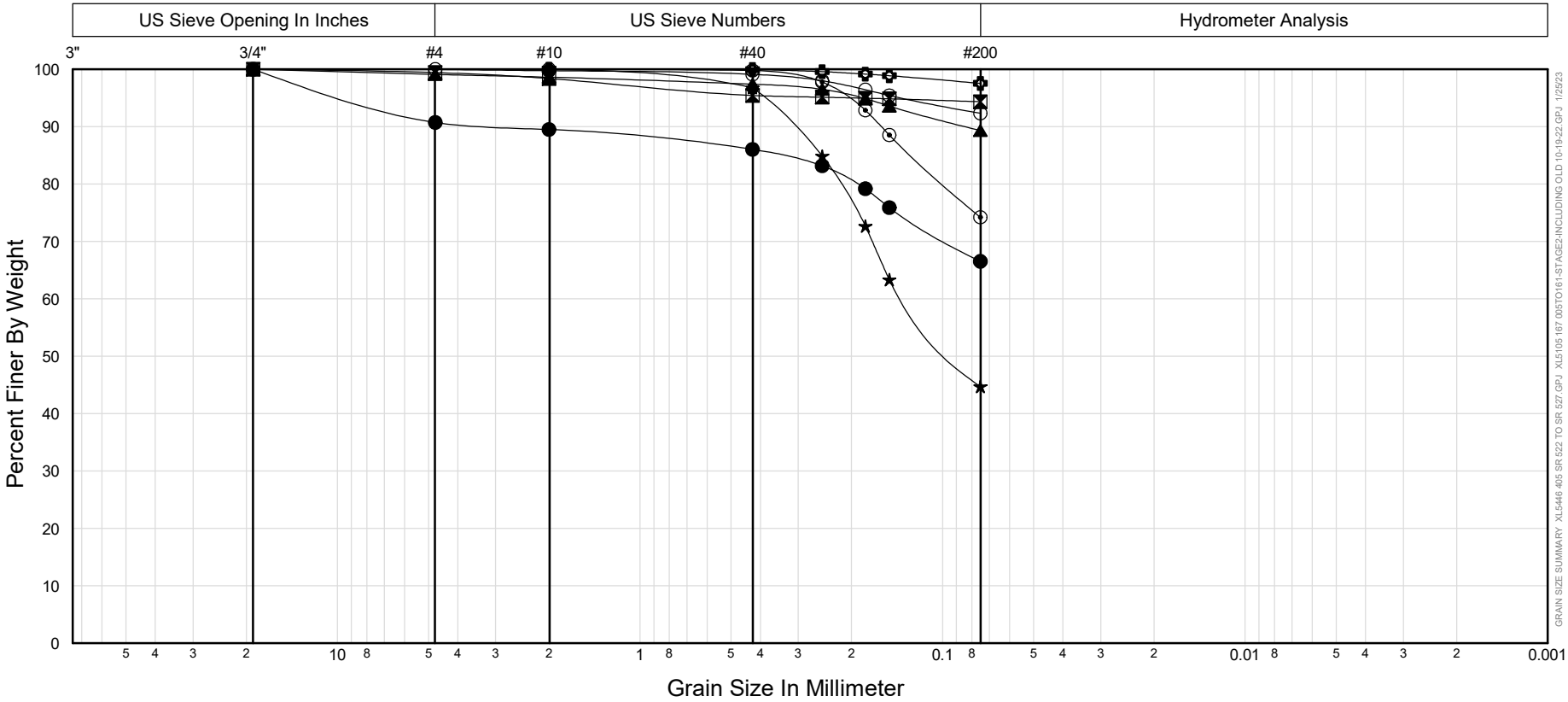
ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

GRAIN SIZE ANALYSIS SUMMARY FOR NE-14p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	0.0	D-1	ML	SANDY SILT	8-14-19	36	46	28	18			9.3	24.2	66.5			2.844					
⊠	8.0	D-3	CL	LEAN CLAY	8-14-19	36	48	24	24			0.6	5.1	94.3								
▲	23.0	D-9	CL	LEAN CLAY	8-14-19	35	35	21	14			0.9	9.8	89.3			0.084					
★	35.0	D-14	SM	SILTY SAND	8-14-19	18	15	n/a	NP			0.0	55.3	44.7			0.314	0.132	0.091			
⊙	43.0	D-17	CL-ML	SILTY CLAY with SAND	8-14-19	21	24	17	7			0.0	25.8	74.2			0.160					
✿	55.0	D-21	ML	SILT	8-14-19	30	30	23	7			0.0	2.5	97.5								
○	70.0	D-24	CL	LEAN CLAY	8-14-19	29	34	19	15			0.0	7.7	92.3								

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

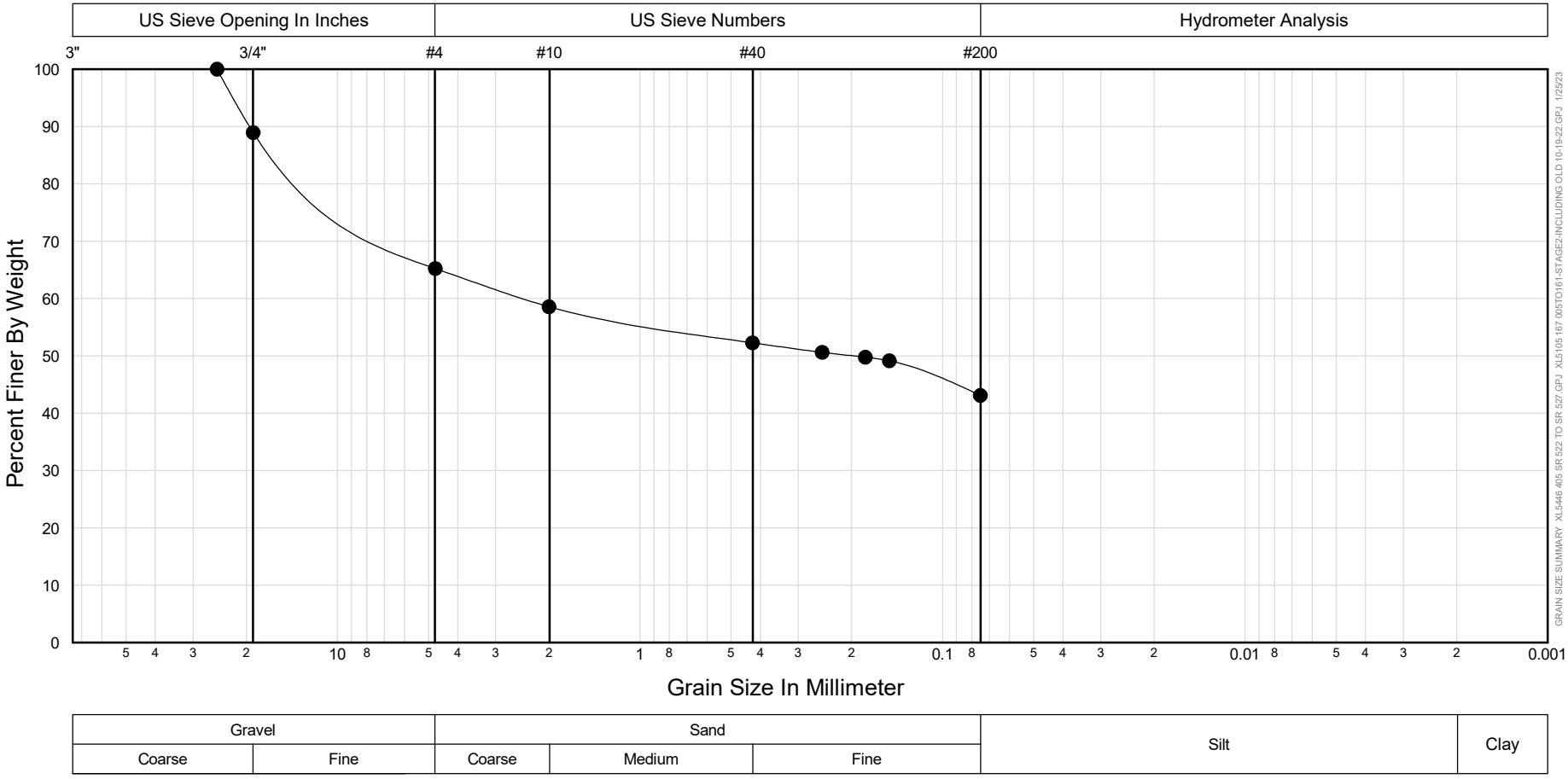


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	80.0	D-26	GC	CLAYEY GRAVEL with SAND	8-14-19	23	27	16	11			34.8	22.1	43.1			19.504	2.409	0.197			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

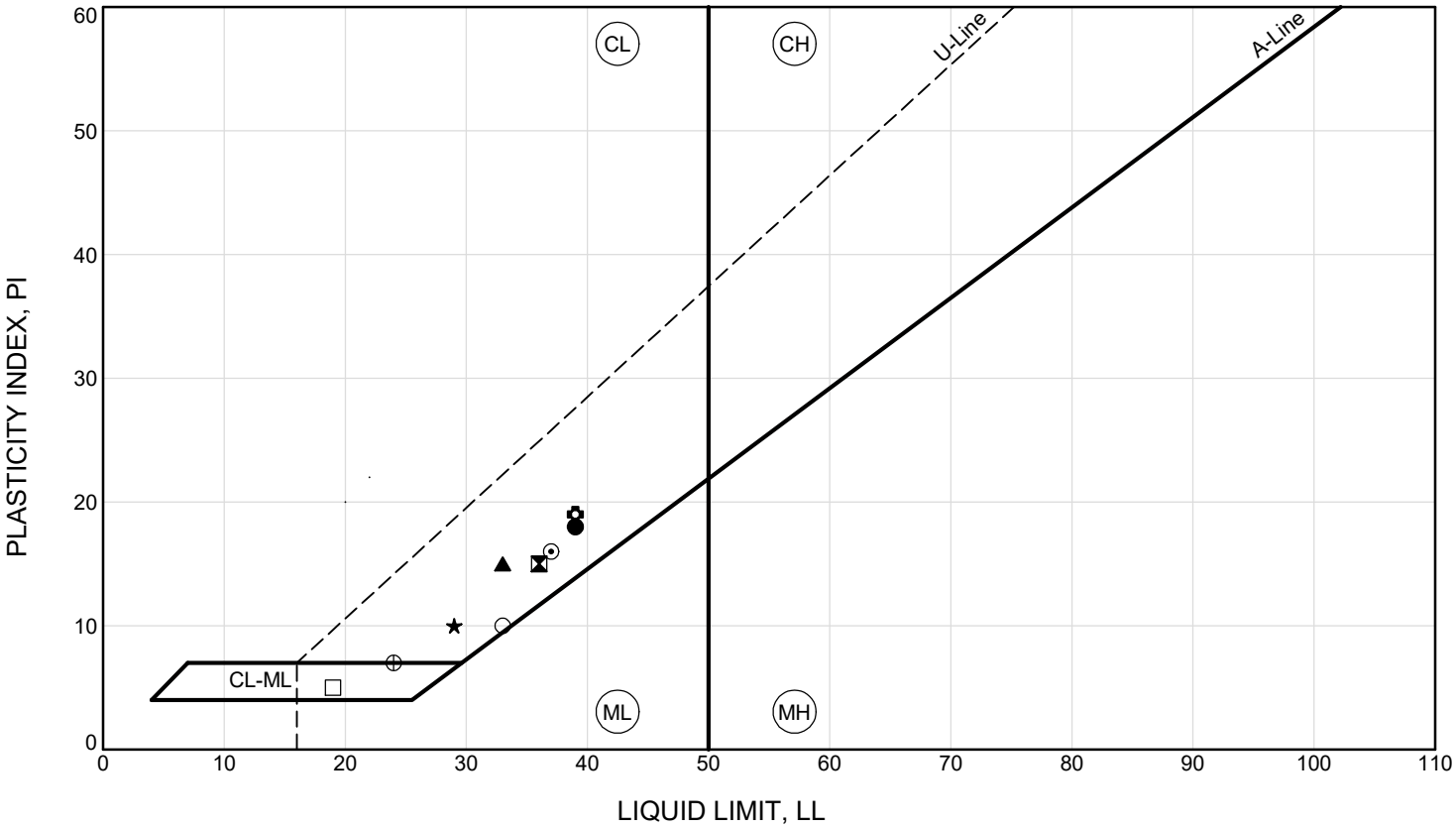


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-15p-19	8.0	D-3	CL	LEAN CLAY with SAND		32	39	21	18	78.7		
⊠	NE-15p-19	10.0	D-4	CL	LEAN CLAY		39	36	21	15	87.3		
▲	NE-15p-19	14.0	D-6	GC	CLAYEY GRAVEL with SAND		16	33	18	15	26.3		
★	NE-15p-19	23.0	D-9	CL	LEAN CLAY with SAND		23	29	19	10	80.5		
⊙	NE-15p-19	33.0	D-13	CL	LEAN CLAY		32	37	21	16	94.0		
✿	NE-15p-19	50.0	D-18	CL	LEAN CLAY		31	39	20	19	89.4		
○	NE-15p-19	70.0	D-22	CL	LEAN CLAY		33	33	23	10	96.6		
	NE-15p-19	90.0	D-26	ML	SILT		27	22	n/a	NP	95.6		
	NE-15p-19	110.0	D-30	ML	SANDY SILT with GRAVEL		17	20	n/a	NP	58.1		
⊕	NE-15p-19	120.0	D-32	CL-ML	SILTY CLAY with SAND		22	24	17	7	71.5		
□	NE-15p-19	130.0	D-34	SC-SM	SILTY, CLAYEY SAND with GRAVEL		16	19	14	5	16.1		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

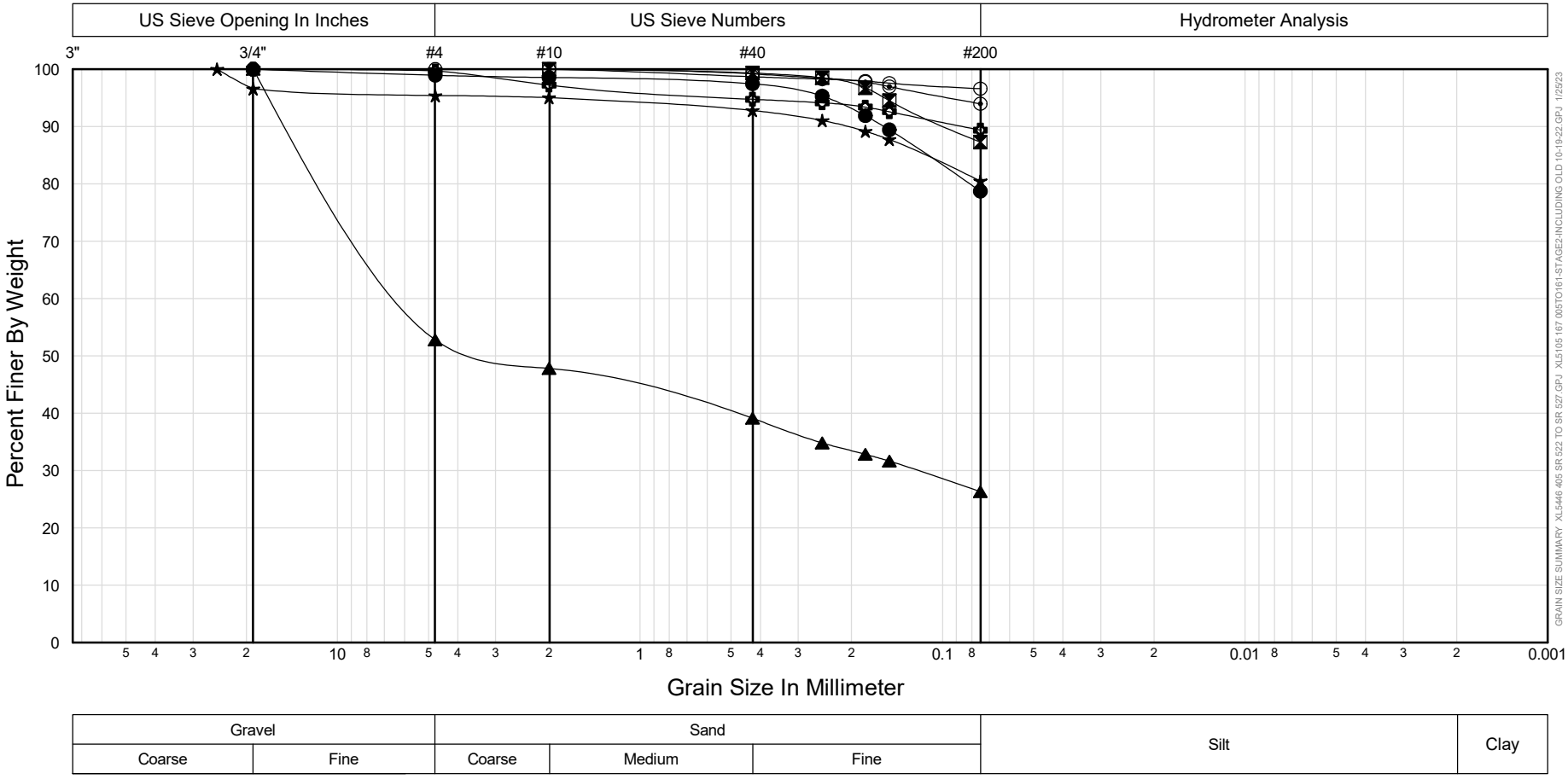
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-15p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	8.0	D-3	CL	LEAN CLAY with SAND	8-15-19	32	39	21	18			1.1	20.2	78.7			0.157					
⊠	10.0	D-4	CL	LEAN CLAY	8-15-19	39	36	21	15			0.0	12.7	87.3			0.097					
▲	14.0	D-6	GC	CLAYEY GRAVEL with SAND	8-15-19	16	33	18	15			47.2	26.5	26.3			14.166	5.871	2.926	0.121		
★	23.0	D-9	CL	LEAN CLAY with SAND	8-15-19	23	29	19	10			4.6	14.9	80.5			0.208					
⊙	33.0	D-13	CL	LEAN CLAY	8-15-19	32	37	21	16			0.0	6.0	94.0								
✿	50.0	D-18	CL	LEAN CLAY	8-15-19	31	39	20	19			0.3	10.4	89.4			0.086					
○	70.0	D-22	CL	LEAN CLAY	8-15-19	33	33	23	10			0.0	3.4	96.6								

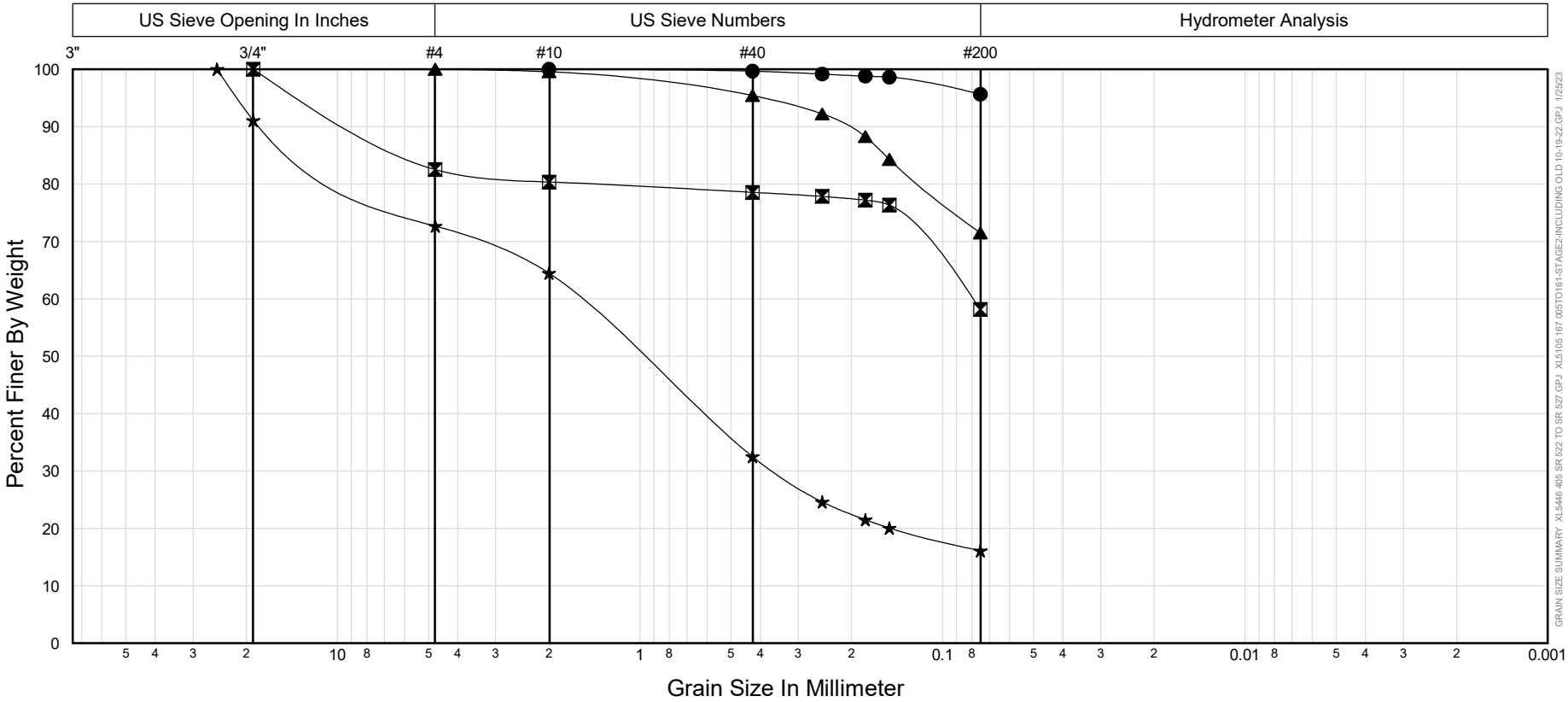
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	90.0	D-26	ML	SILT	8-15-19	27	22	n/a	NP			0.0	4.4	95.6								
⊠	110.0	D-30	ML	SANDY SILT with GRAVEL	8-15-19	17	20	n/a	NP			17.5	24.4	58.1			8.602	0.081				
▲	120.0	D-32	CL-ML	SILTY CLAY with SAND	8-15-19	22	24	17	7			0.0	28.5	71.5			0.208					
★	130.0	D-34	SC-SM	SILTY, CLAYEY SAND with GRAVEL	8-15-19	16	19	14	5			27.3	56.6	16.1			17.527	1.611	0.992	0.359	0.149	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

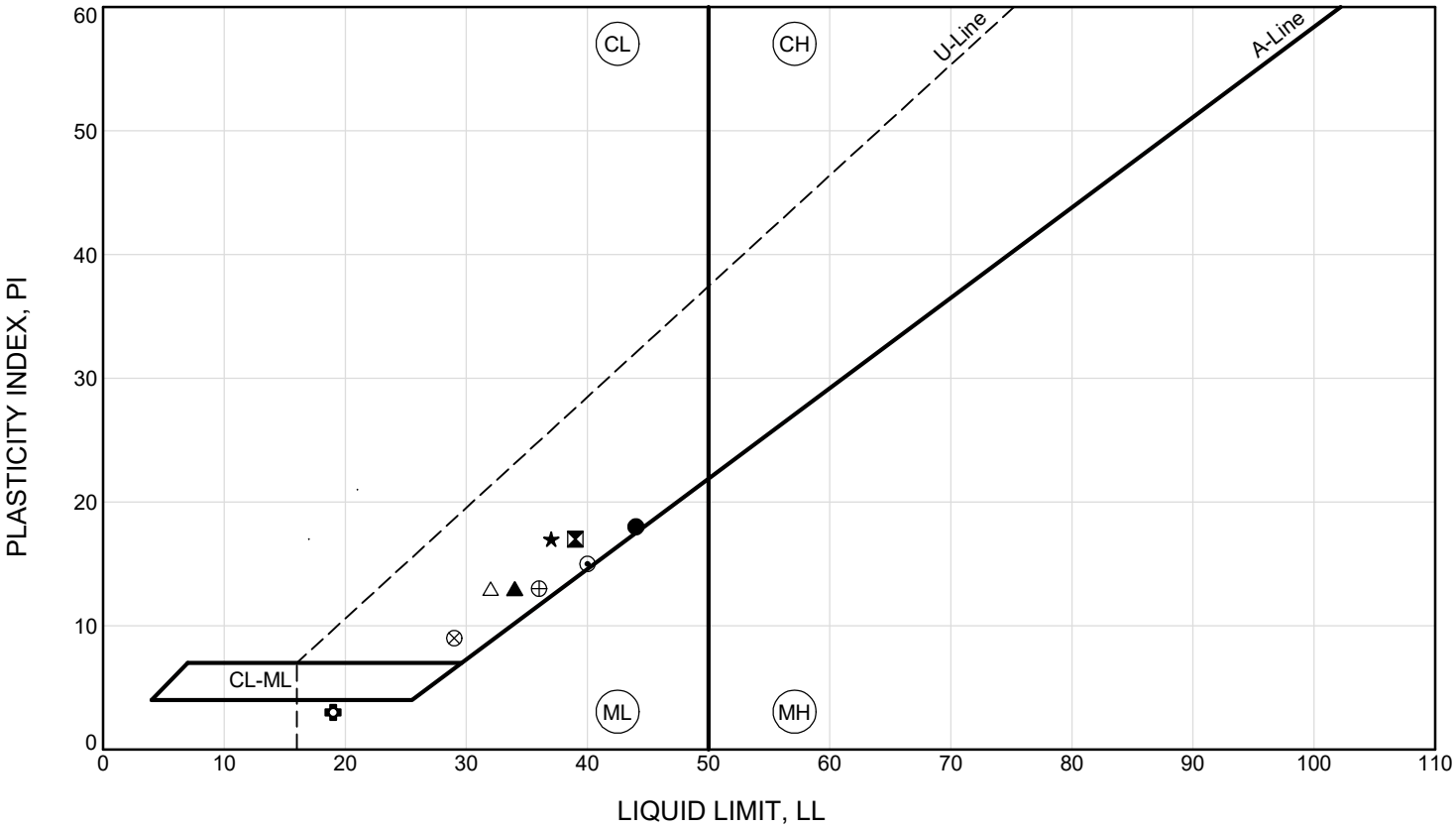


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-16p-19	4.0	D-2		MC & AL Only		37	44	26	18			
⊠	NE-16p-19	7.5	P-3	CL	LEAN CLAY		35	39	22	17	94.0	66.1	27.9
▲	NE-16p-19	12.0	D-5	CL	LEAN CLAY		31	34	21	13	95.0	65.1	30.0
★	NE-16p-19	15.5	P-6	CL	LEAN CLAY		32	37	20	17	88.4	62.7	25.7
⊙	NE-16p-19	19.0	D-8		MC & AL Only		33	40	25	15			
✿	NE-16p-19	29.3	P-12	ML	SANDY SILT		16	19	16	3	58.5	53.1	5.4
	NE-16p-19	31.0	D-13	ML	SANDY SILT		20	17	n/a	NP	54.2		
△	NE-16p-19	34.0	D-14		MC & AL Only		32	32	19	13			
⊗	NE-16p-19	44.0	D-16		MC & AL Only		25	29	20	9			
⊕	NE-16p-19	54.0	D-18	CL	LEAN CLAY		31	36	23	13	98.2	72.0	26.2
	NE-16p-19	89.0	D-25	ML	SILT with SAND		30	21	n/a	NP	78.5		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

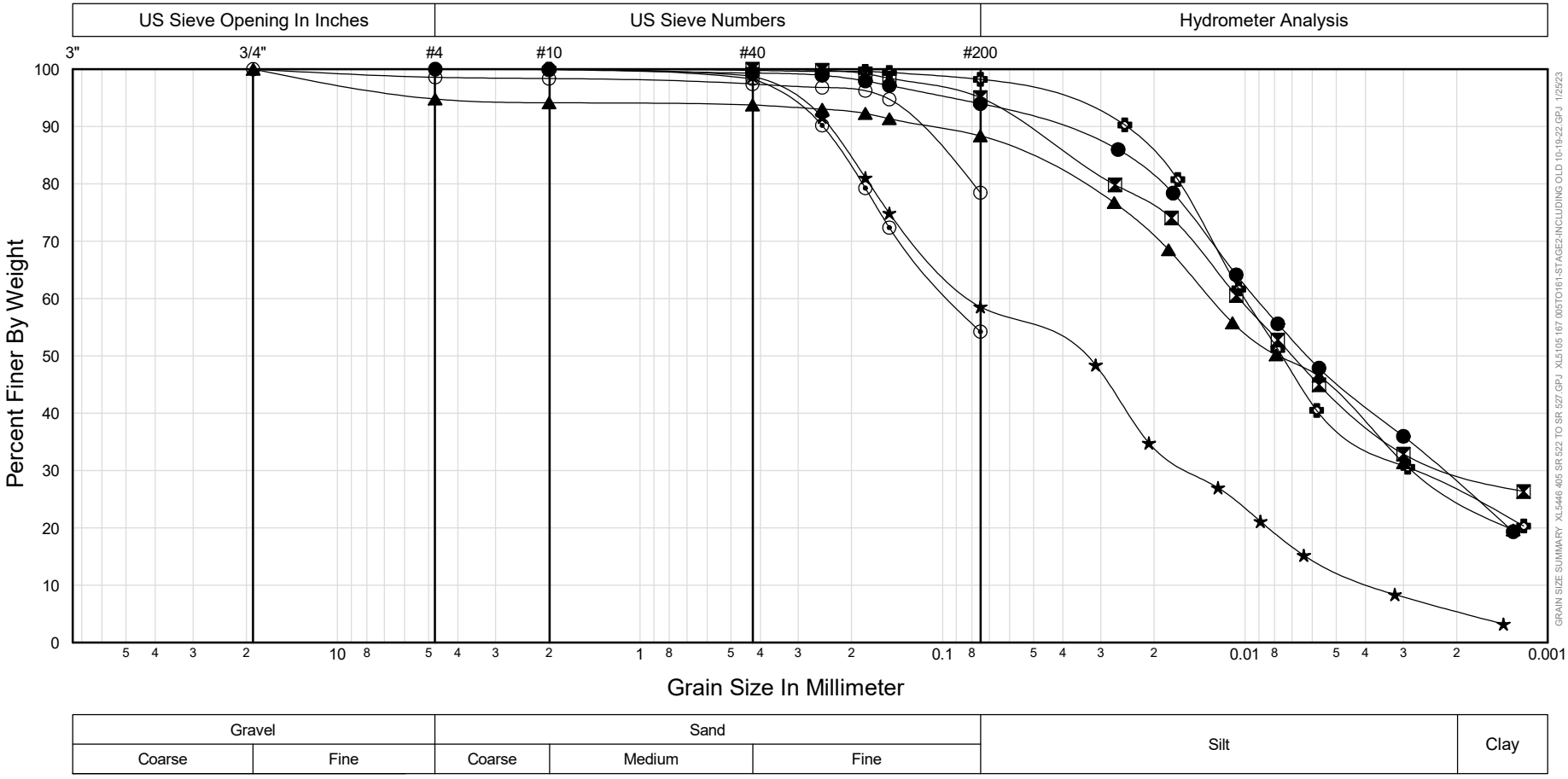
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-16p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.5	P-3	CL	LEAN CLAY	1-27-20	35	39	22	17	121	2.71	0.0	6.0	94.0			0.045	0.009	0.006	0.002	0.001	
⊠	12.0	D-5	CL	LEAN CLAY	1-6-20	31	34	21	13		2.75	0.0	5.0	95.0			0.053	0.010	0.007	0.002		
▲	15.5	P-6	CL	LEAN CLAY	1-23-20	32	37	20	17	129	2.70	5.2	6.4	88.4			0.110	0.013	0.008	0.003	0.001	
★	29.3	P-12	ML	SANDY SILT	2-14-20	16	19	16	3	136	2.76	0.0	41.5	58.5	0.8	21	0.238	0.080	0.036	0.015	0.008	0.004
⊙	31.0	D-13	ML	SANDY SILT	1-6-20	20	17	n/a	NP			0.0	45.8	54.2			0.249	0.093				
✿	54.0	D-18	CL	LEAN CLAY	1-6-20	31	36	23	13		2.78	0.0	1.8	98.2			0.025	0.010	0.008	0.003		
○	89.0	D-25	ML	SILT with SAND	1-6-20	30	21	n/a	NP			1.4	20.1	78.5			0.123					

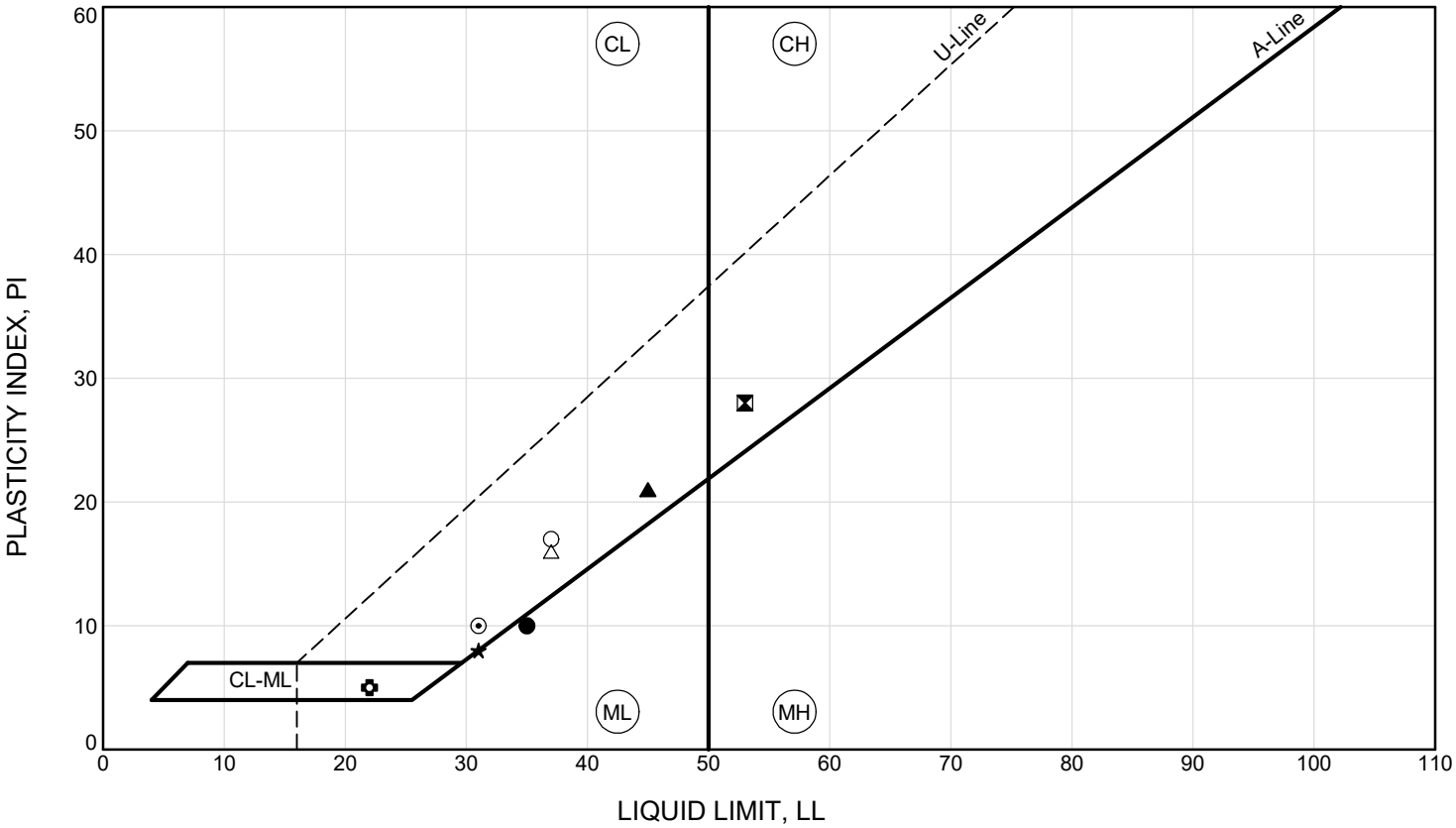
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-17p-19	9.0	D-4	ML	SILT with SAND		36	35	25	10	84.9		
⊠	NE-17p-19	17.0	D-7	CH	FAT CLAY with SAND		38	53	25	28	80.5		
▲	NE-17p-19	19.5	S-8	CL	LEAN CLAY		35	45	24	21	96.4	67.7	28.7
★	NE-17p-19	21.0	D-9	ML	SILT		32	31	23	8	86.8		
⊙	NE-17p-19	27.0	D-11		MC & AL Only		40	31	21	10			
✿	NE-17p-19	32.0	D-13	CL-ML	SANDY SILTY CLAY		20	22	17	5	69.8		
○	NE-17p-19	54.0	D-21	CL	LEAN CLAY		30	37	20	17	90.0		
△	NE-17p-19	94.0	D-29	CL	LEAN CLAY		26	37	21	16	94.1		
	NE-17p-19	134.0	D-37	SM	SILTY SAND		21	n/a	n/a	NP	31.0		
	NE-17p-19	149.0	D-40	SM	SILTY SAND		23	n/a	n/a	NP	25.3		

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

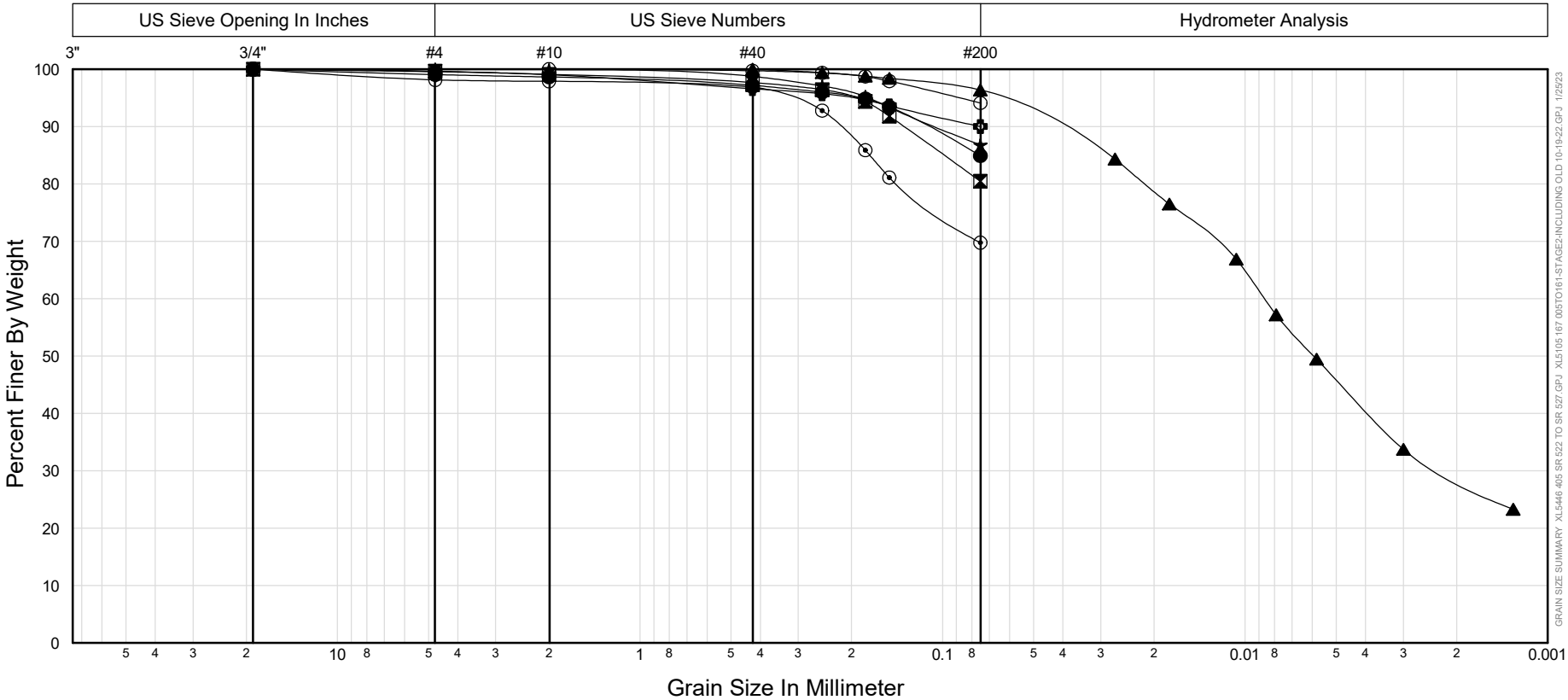
ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

GRAIN SIZE ANALYSIS SUMMARY FOR NE-17p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-4	ML	SILT with SAND	6-20-19	36	35	25	10			0.9	14.1	84.9			0.114					
⊠	17.0	D-7	CH	FAT CLAY with SAND	6-20-19	38	53	25	28			0.3	19.2	80.5			0.134					
▲	19.5	S-8	CL	LEAN CLAY	6-28-19	35	45	24	21	116	2.72	0.0	3.6	96.4			0.044	0.009	0.006	0.002		
★	21.0	D-9	ML	SILT	7-6-19	32	31	23	8			0.0	13.2	86.8			0.105					
⊙	32.0	D-13	CL-ML	SANDY SILTY CLAY	6-20-19	20	22	17	5			1.9	28.4	69.8			0.219					
✿	54.0	D-21	CL	LEAN CLAY	6-20-19	30	37	20	17			0.4	9.6	90.0								
○	94.0	D-29	CL	LEAN CLAY	6-20-19	26	37	21	16			0.0	5.9	94.1								

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

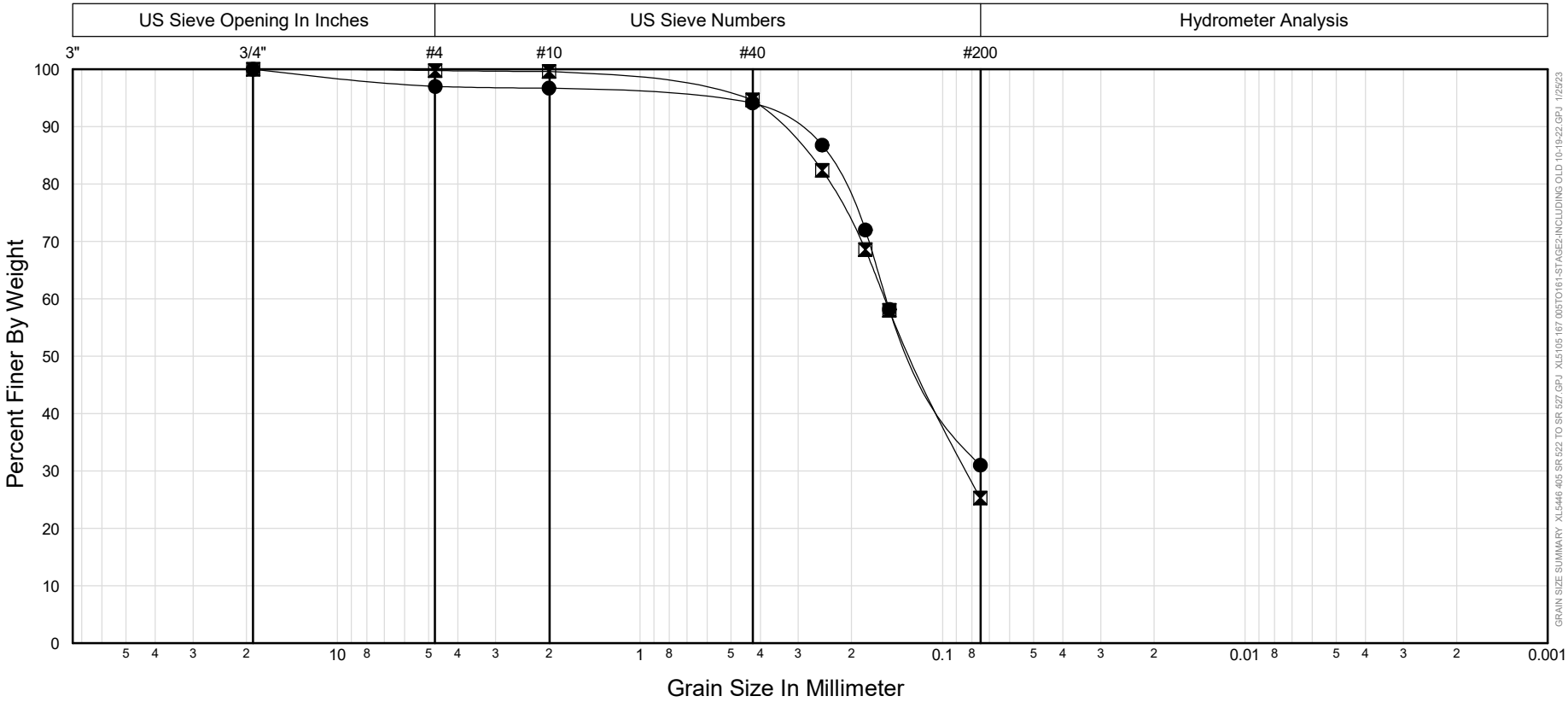


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	134.0	D-37	SM	SILTY SAND	6-20-19	21	n/a	n/a	NP			3.0	66.0	31.0			0.316	0.154	0.122			
⊠	149.0	D-40	SM	SILTY SAND	6-20-19	23	n/a	n/a	NP			0.2	74.5	25.3			0.348	0.155	0.127	0.083		

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

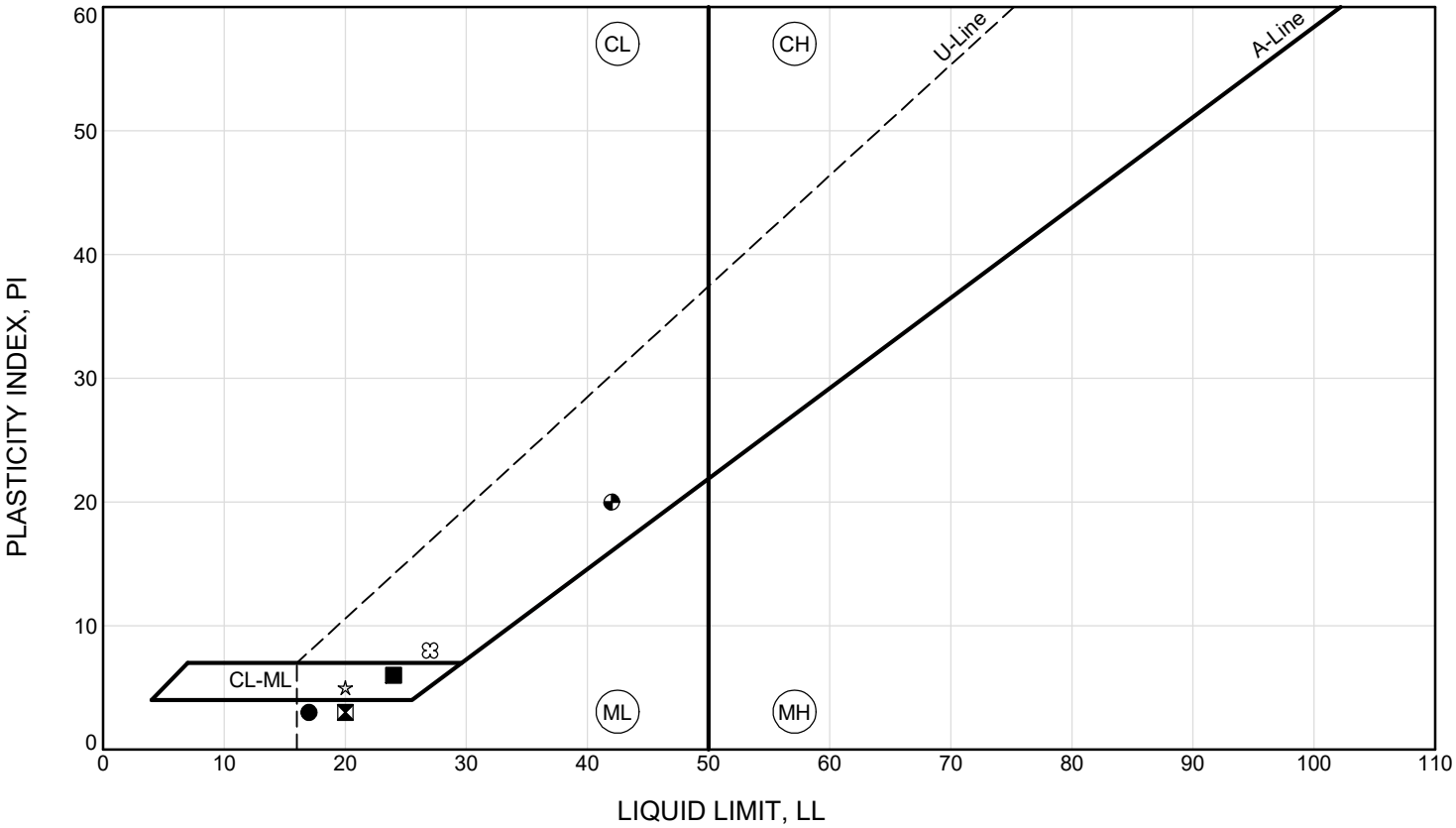


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-18p-19	4.0	D-2	SM	SILTY SAND with GRAVEL		15	17	14	3	45.2		
⊠	NE-18p-19	12.0	D-5	ML	SANDY SILT		20	20	17	3	62.4		
	NE-18p-19	19.0	D-8	SM	SILTY SAND with GRAVEL		18	n/a	n/a	NP	33.2		
	NE-18p-19	24.0	D-10	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	24.4		
	NE-18p-19	29.0	D-12	SM	SILTY SAND		26	n/a	n/a	NP	16.9		
	NE-18p-19	37.0	D-15	SM	SILTY SAND		30	n/a	n/a	NP	16.2		
	NE-18p-19	39.0	D-16		MC and LOI Only		50	n/a	n/a	NP			
	NE-18p-19	44.0	D-18	SW-SM	WELL-GRADED SAND with SILT		22	n/a	n/a	NP	6.2		
	NE-18p-19	49.0	D-20	SM	SILTY SAND		23	n/a	n/a	NP	12.9		
	NE-18p-19	59.0	D-22	ML	SANDY SILT		26	n/a	n/a	NP	62.8		
	NE-18p-19	69.0	D-24	SM	SILTY SAND		26	n/a	n/a	NP	12.2		
	NE-18p-19	79.0	D-26	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		18	n/a	n/a	NP	10.2		
◕	NE-18p-19	89.0	D-28	CL	LEAN CLAY with SAND		29	42	22	20	80.5		
☆	NE-18p-19	104.0	D-31	CL-ML	SANDY SILTY CLAY		21	20	15	5	61.6		
⊠	NE-18p-19	119.0	D-34		MC & AL Only		24	27	19	8			
■	NE-18p-19	129.0	D-36	CL-ML	SILTY CLAY with SAND		23	24	18	6	75.0		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

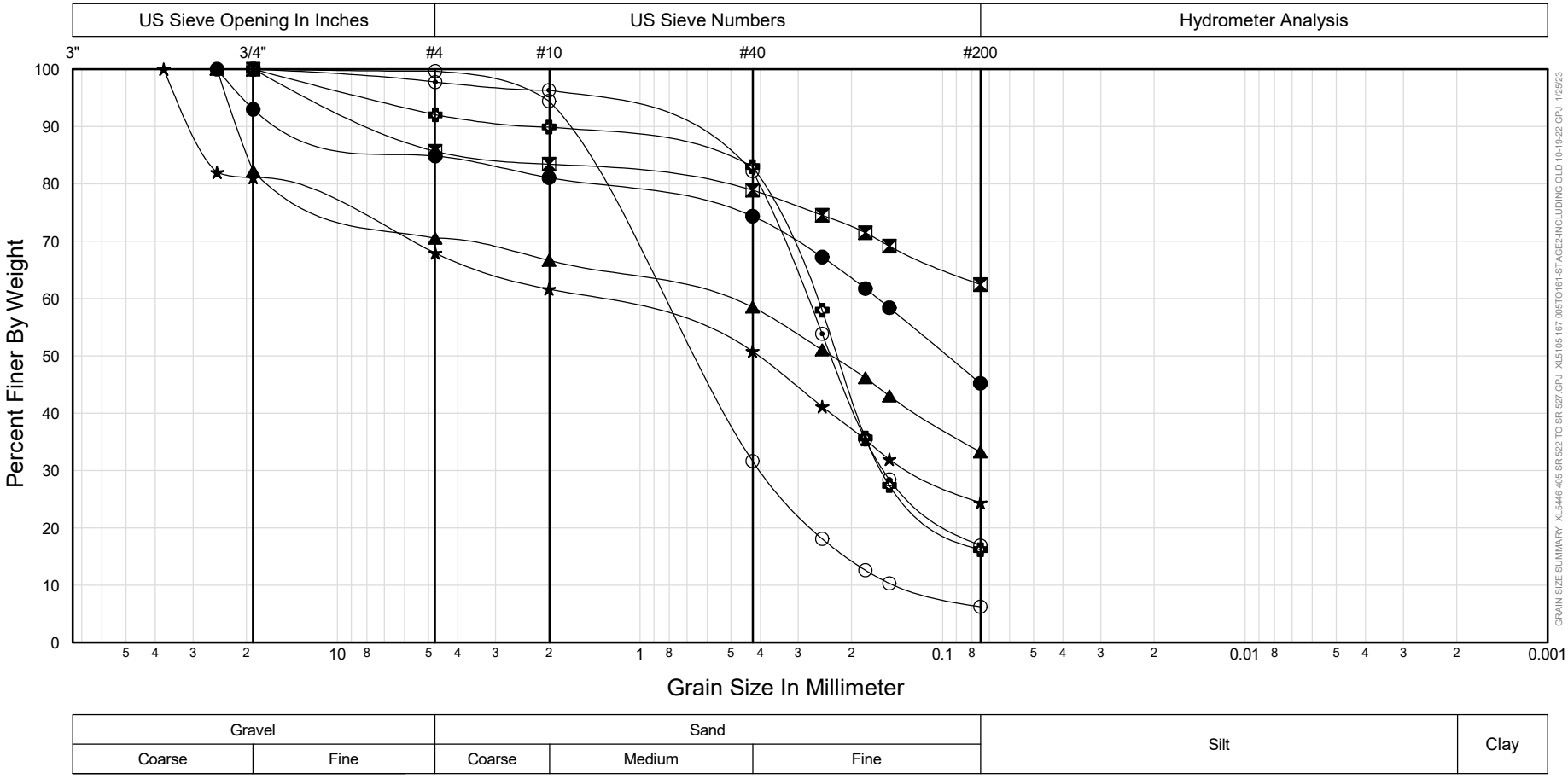
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-18p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND with GRAVEL	7-23-19	15	17	14	3			15.1	39.6	45.2			11.406	0.164	0.096			
⊠	12.0	D-5	ML	SANDY SILT	7-23-19	20	20	17	3			14.3	23.2	62.4			7.219					
▲	19.0	D-8	SM	SILTY SAND with GRAVEL	7-23-19	18	n/a	n/a	NP			29.5	37.3	33.2			21.426	0.564	0.233			
★	24.0	D-10	SM	SILTY SAND with GRAVEL	7-23-19	11	n/a	n/a	NP			32.1	43.6	24.4			29.937	1.584	0.407	0.126		
⊙	29.0	D-12	SM	SILTY SAND	7-23-19	26	n/a	n/a	NP			2.3	80.8	16.9			0.999	0.280	0.233	0.156	0.090	
✿	37.0	D-15	SM	SILTY SAND	7-23-19	30	n/a	n/a	NP			8.0	75.8	16.2			2.065	0.261	0.222	0.159	0.095	
○	44.0	D-18	SW-SM	WELL-GRADED SAND with SILT	7-23-19	22	n/a	n/a	NP			0.3	93.4	6.2	1.3	6	1.793	0.855	0.668	0.398	0.269	0.142

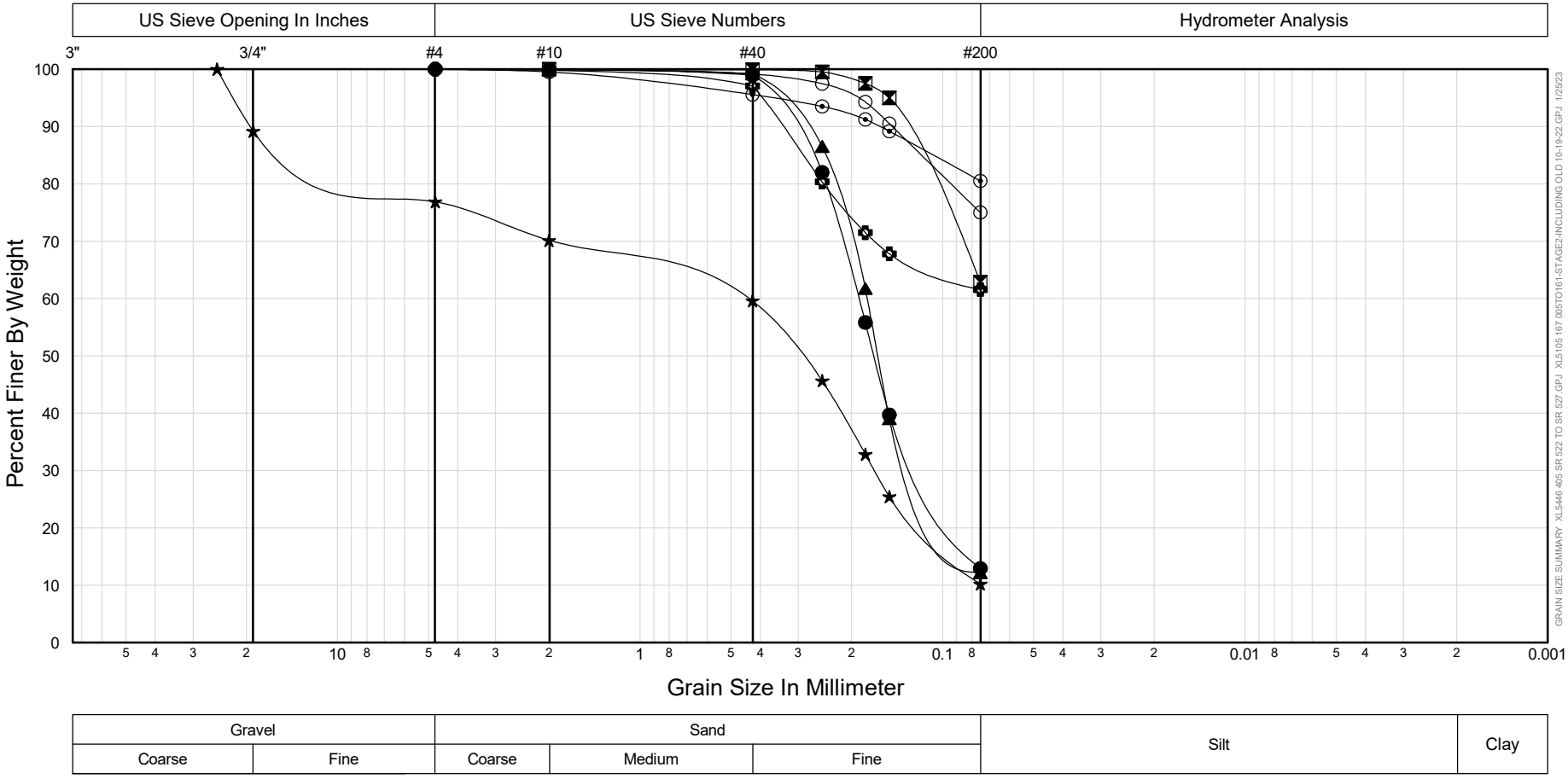
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	49.0	D-20	SM	SILTY SAND	7-23-19	23	n/a	n/a	NP			0.0	87.1	12.9			0.321	0.190	0.169	0.117	0.090	
⊠	59.0	D-22	ML	SANDY SILT	7-23-19	26	n/a	n/a	NP			0.0	37.2	62.8			0.135					
▲	69.0	D-24	SM	SILTY SAND	7-23-19	26	n/a	n/a	NP			0.0	87.8	12.2	1.1	3	0.289	0.178	0.164	0.119	0.092	
★	79.0	D-26	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	7-23-19	18	n/a	n/a	NP			23.1	66.6	10.2	0.8	6	19.394	0.449	0.295	0.168	0.117	
⊙	89.0	D-28	CL	LEAN CLAY with SAND	7-23-19	29	42	22	20			0.0	19.5	80.5			0.161					
✿	104.0	D-31	CL-ML	SANDY SILTY CLAY	7-23-19	21	20	15	5			0.0	38.4	61.6			0.340					
○	129.0	D-36	CL-ML	SILTY CLAY with SAND	7-23-19	23	24	18	6			0.0	25.0	75.0			0.147					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

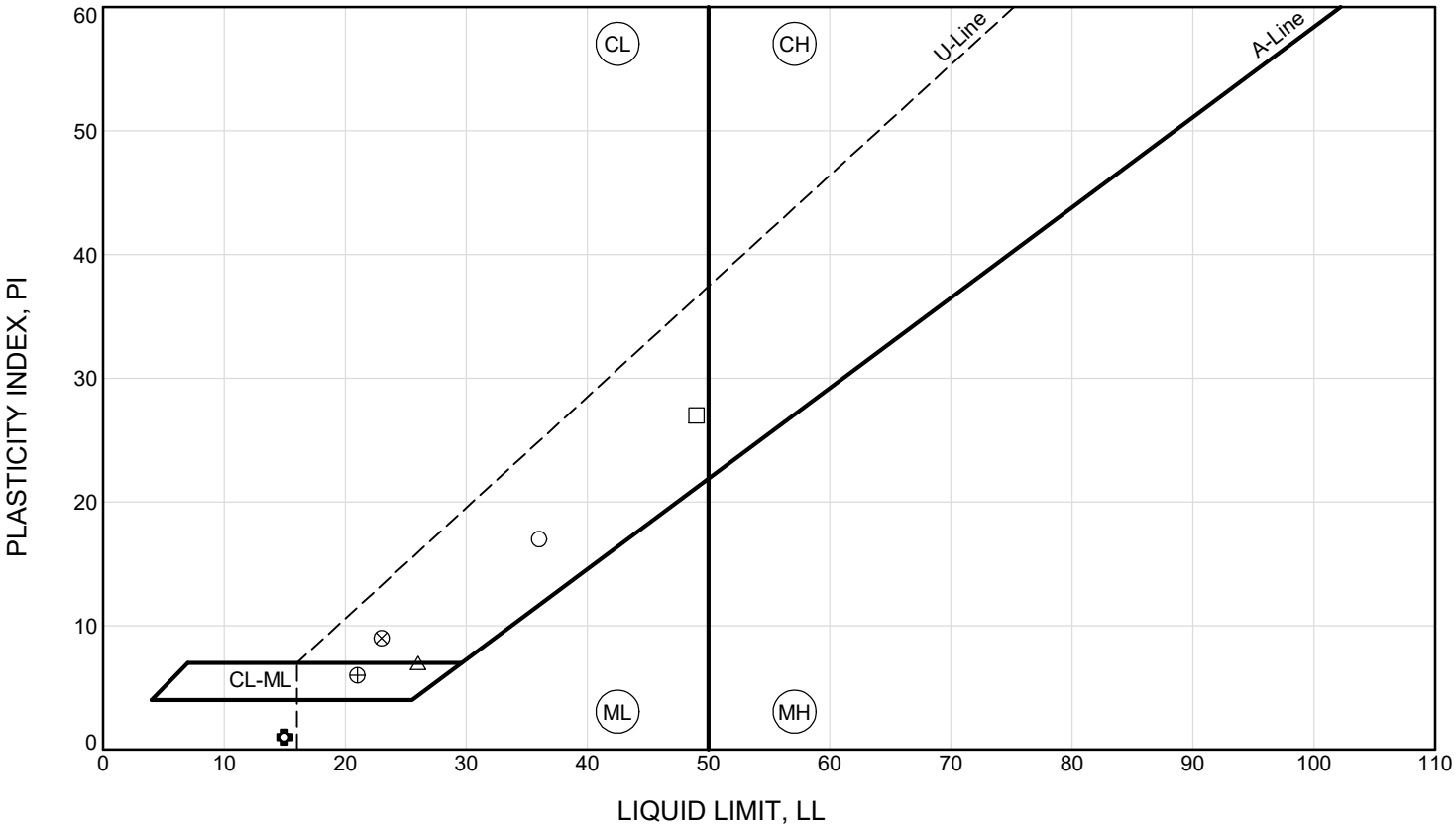


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-19p-19	9.5	D-3	SM	SILTY SAND		52	n/a	n/a	NP	19.8		
	NE-19p-19	12.5	D-4		MC and LOI Only		75	n/a	n/a	NP			
	NE-19p-19	17.5	D-6	SP-SM	POORLY GRADED SAND with SILT		18	n/a	n/a	NP	8.9		
	NE-19p-19	32.5	D-12	ML	SANDY SILT		26	n/a	n/a	NP	68.2		
	NE-19p-19	39.5	D-15	SM	SILTY SAND		23	n/a	n/a	NP	12.1		
✿	NE-19p-19	64.5	D-22	ML	SANDY SILT		21	15	14	1	51.1		
○	NE-19p-19	74.5	D-24	CL	LEAN CLAY with SAND		26	36	19	17	79.8		
△	NE-19p-19	94.5	D-28	CL-ML	SILTY CLAY with SAND		24	26	19	7	84.9		
⊗	NE-19p-19	124.5	D-34	CL	SANDY LEAN CLAY		25	23	14	9	61.3		
⊕	NE-19p-19	144.5	D-38	CL-ML	SILTY CLAY with SAND		27	21	15	6	70.3		
□	NE-19p-19	159.5	D-41	CL	LEAN CLAY		29	49	22	27	92.3		

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/9/22

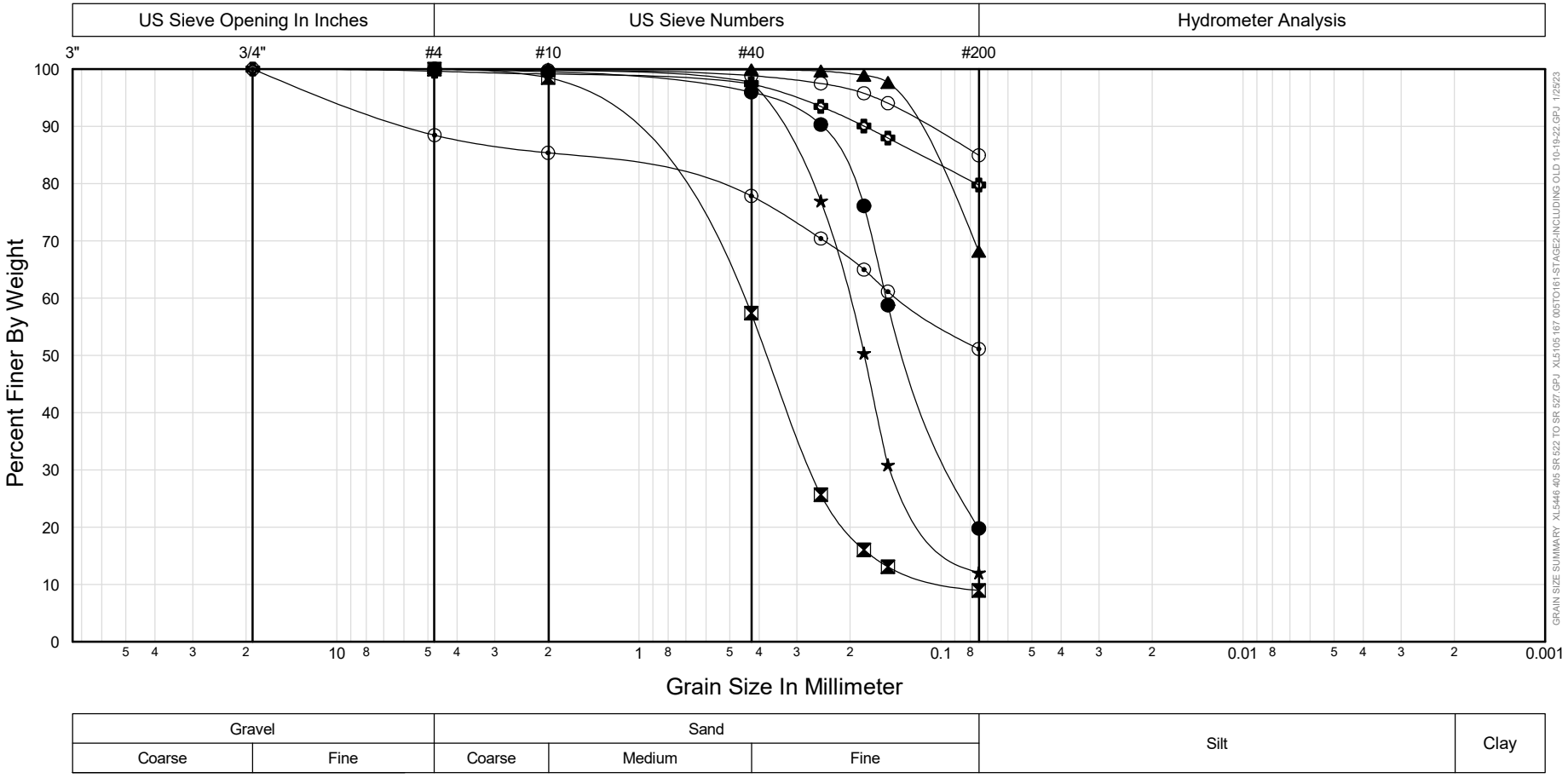
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-19p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.5	D-3	SM	SILTY SAND	6-20-19	52	n/a	n/a	NP			0.0	80.2	19.8			0.248	0.152	0.128	0.090	0.075	
⊠	17.5	D-6	SP-SM	POORLY GRADED SAND with SILT	6-20-19	18	n/a	n/a	NP			0.0	91.1	8.9	1.7	5	1.452	0.469	0.376	0.269	0.206	0.090
▲	32.5	D-12	ML	SANDY SILT	6-20-19	26	n/a	n/a	NP			0.0	31.8	68.2			0.125					
★	39.5	D-15	SM	SILTY SAND	6-20-19	23	n/a	n/a	NP			0.0	87.9	12.1	1.5	3	0.349	0.203	0.179	0.145	0.101	
⊙	64.5	D-22	ML	SANDY SILT	6-20-19	21	15	14	1			11.5	37.3	51.1			5.717	0.139				
✿	74.5	D-24	CL	LEAN CLAY with SAND	6-20-19	26	36	19	17			0.4	19.9	79.8			0.179					
○	94.5	D-28	CL-ML	SILTY CLAY with SAND	6-20-19	24	26	19	7			0.0	15.1	84.9			0.110					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

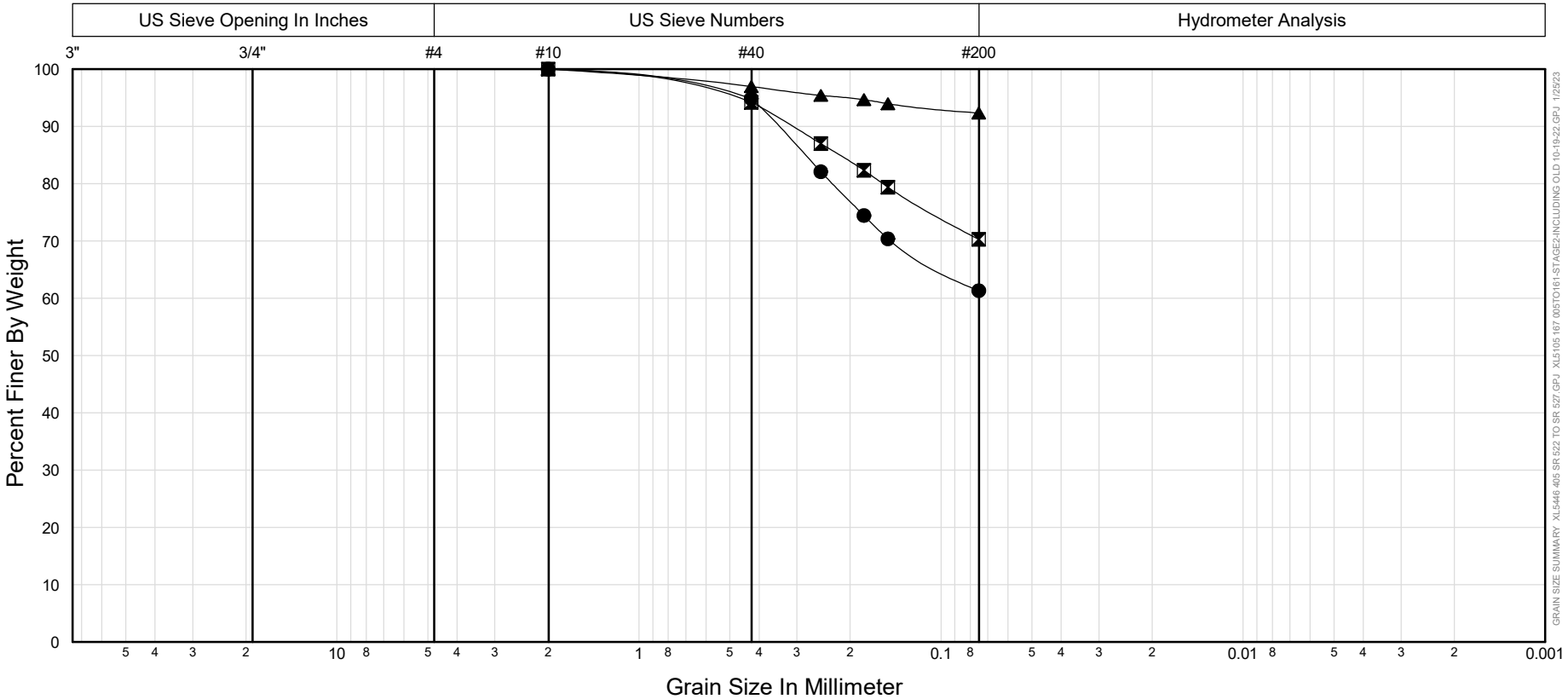


GRAIN SIZE ANALYSIS SUMMARY FOR NE-19p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	124.5	D-34	CL	SANDY LEAN CLAY	6-20-19	25	23	14	9			0.0	38.7	61.3			0.347					
⊠	144.5	D-38	CL-ML	SILTY CLAY with SAND	6-20-19	27	21	15	6			0.0	29.7	70.3			0.312					
▲	159.5	D-41	CL	LEAN CLAY	6-20-19	29	49	22	27			0.0	7.7	92.3								

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

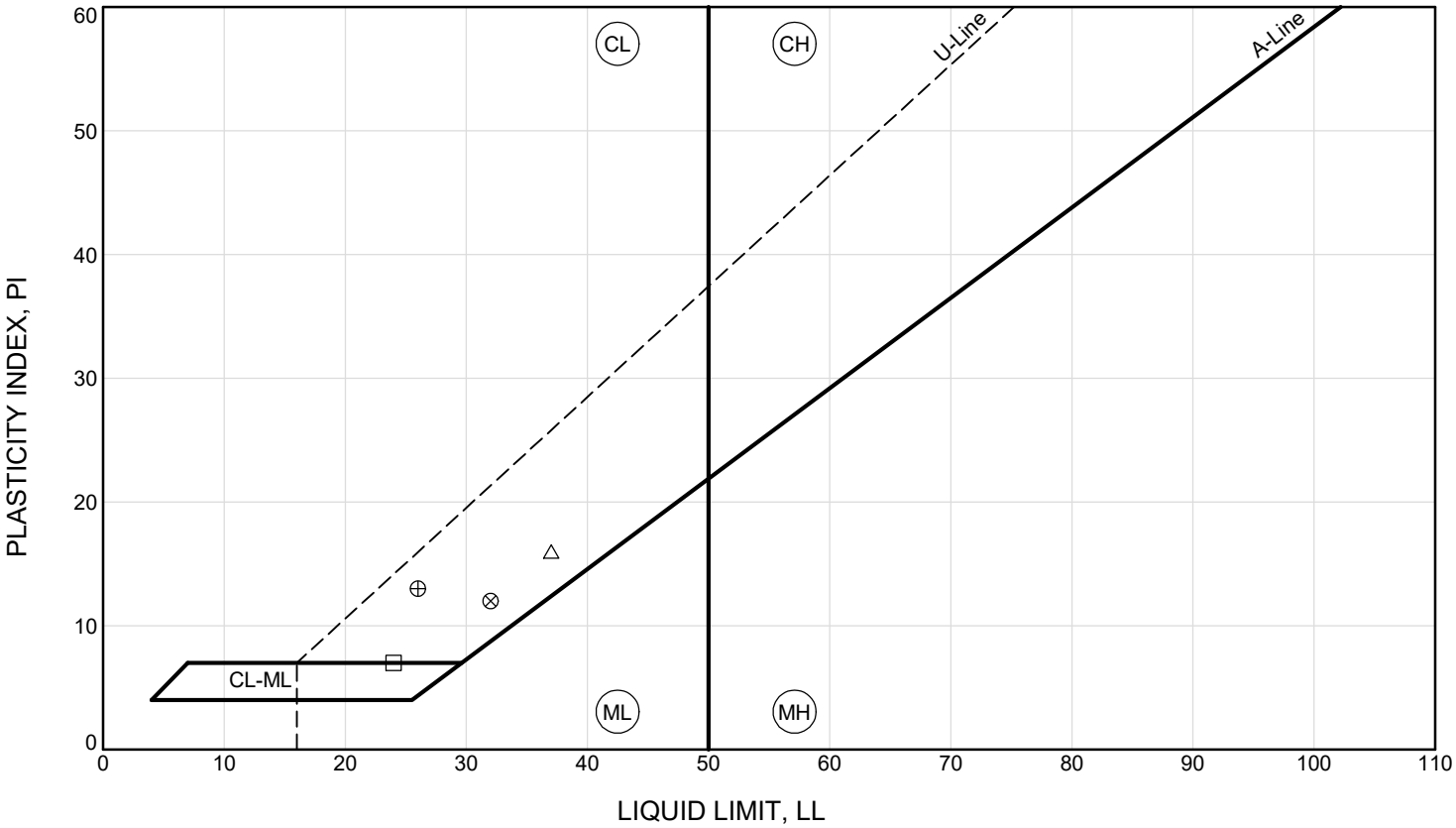


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-20vw-19	4.0	D-2	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	28.4		
	NE-20vw-19	12.0	D-5	SM	SILTY SAND		38	n/a	n/a	NP	12.3	10.9	1.5
	NE-20vw-19	17.0	D-7	SP-SM	POORLY GRADED SAND with SILT and Organics		26	n/a	n/a	NP	5.5		
	NE-20vw-19	27.0	D-11	SP-SM	POORLY GRADED SAND with SILT		22	n/a	n/a	NP	8.6		
	NE-20vw-19	34.0	D-13	SP-SM	POORLY GRADED SAND with SILT and Organics		30	n/a	n/a	NP	11.3		
	NE-20vw-19	49.0	D-16	ML	SANDY SILT with Organics		27	n/a	n/a	NP	55.6		
	NE-20vw-19	54.0	D-17	SP-SM	POORLY GRADED SAND with SILT and Organics		26	n/a	n/a	NP	8.3		
△	NE-20vw-19	69.0	D-20	CL	LEAN CLAY with SAND		25	37	21	16	80.6		
⊗	NE-20vw-19	94.0	D-25	CL	LEAN CLAY		25	32	20	12	91.7	77.0	14.7
⊕	NE-20vw-19	104.0	D-27	CL	LEAN CLAY		26	26	13	13	89.6	79.9	9.7
□	NE-20vw-19	139.0	D-34	CL-ML	SILTY CLAY with SAND		23	24	17	7	74.9		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

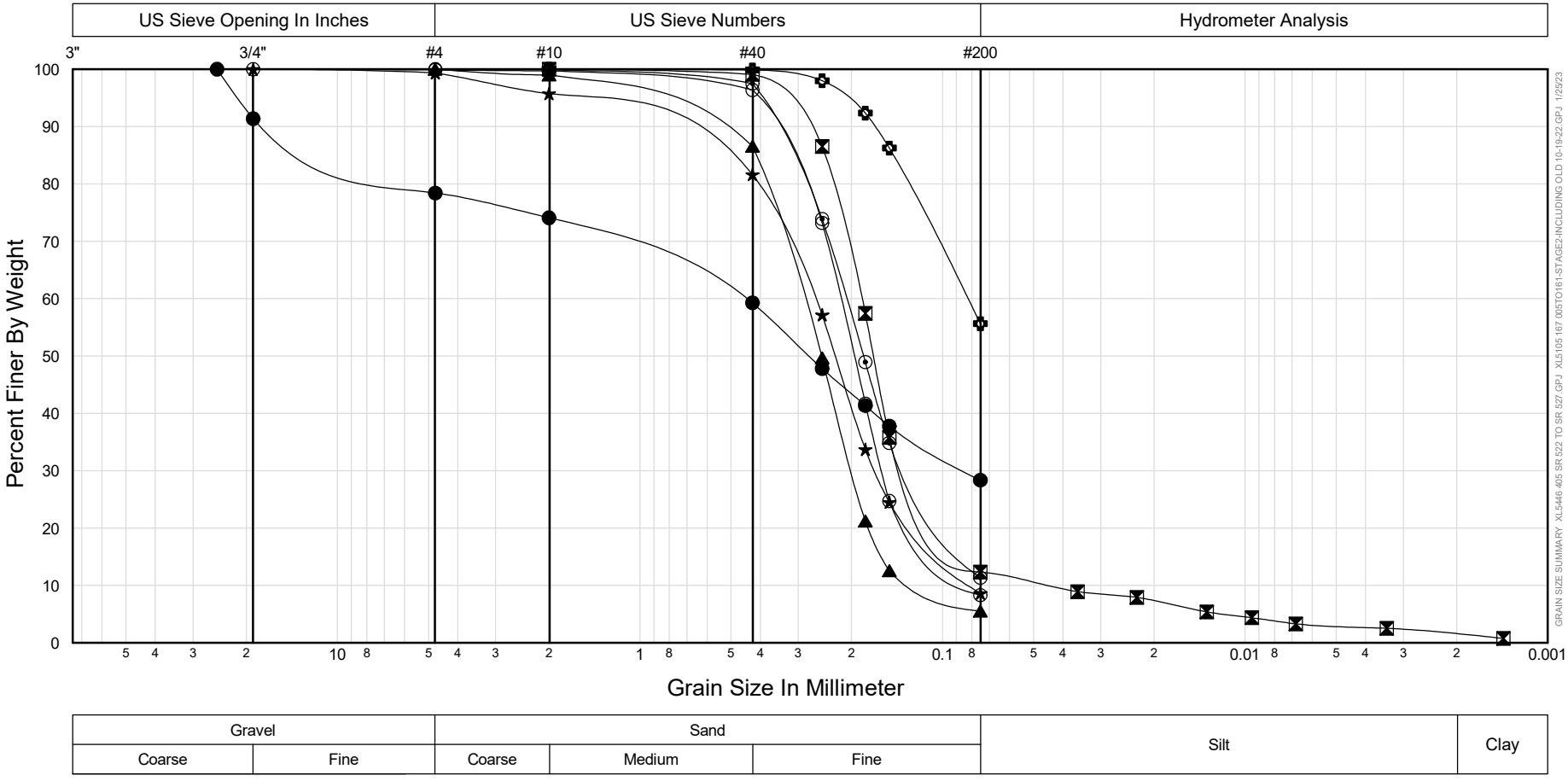
ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR 522 TO SR 527.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 1/25/23

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND with GRAVEL	4-5-19	13	n/a	n/a	NP			21.6	50.1	28.4			16.401	0.459	0.277	0.085		
⊠	12.0	D-5	SM	SILTY SAND	4-9-19	38	n/a	n/a	NP		2.66	0.0	87.7	12.3	1.9	4	0.290	0.185	0.169	0.126	0.094	0.045
▲	17.0	D-7	SP-SM	POORLY GRADED SAND with SILT and Organics	4-5-19	26	n/a	n/a	NP			0.0	94.5	5.5	1.2	2	0.652	0.290	0.251	0.199	0.175	0.117
★	27.0	D-11	SP-SM	POORLY GRADED SAND with SILT	4-5-19	22	n/a	n/a	NP			0.6	90.7	8.6	1.3	3	1.065	0.266	0.226	0.167	0.123	0.080
⊙	34.0	D-13	SP-SM	POORLY GRADED SAND with SILT and Organics	4-5-19	30	n/a	n/a	NP			0.0	88.7	11.3	1.1	3	0.359	0.208	0.183	0.130	0.097	
✿	49.0	D-16	ML	SANDY SILT with Organics	4-5-19	27	n/a	n/a	NP			0.0	44.4	55.6			0.168	0.083				
○	54.0	D-17	SP-SM	POORLY GRADED SAND with SILT and Organics	4-5-19	26	n/a	n/a	NP			0.1	91.6	8.3	1.4	3	0.367	0.218	0.196	0.159	0.123	0.081

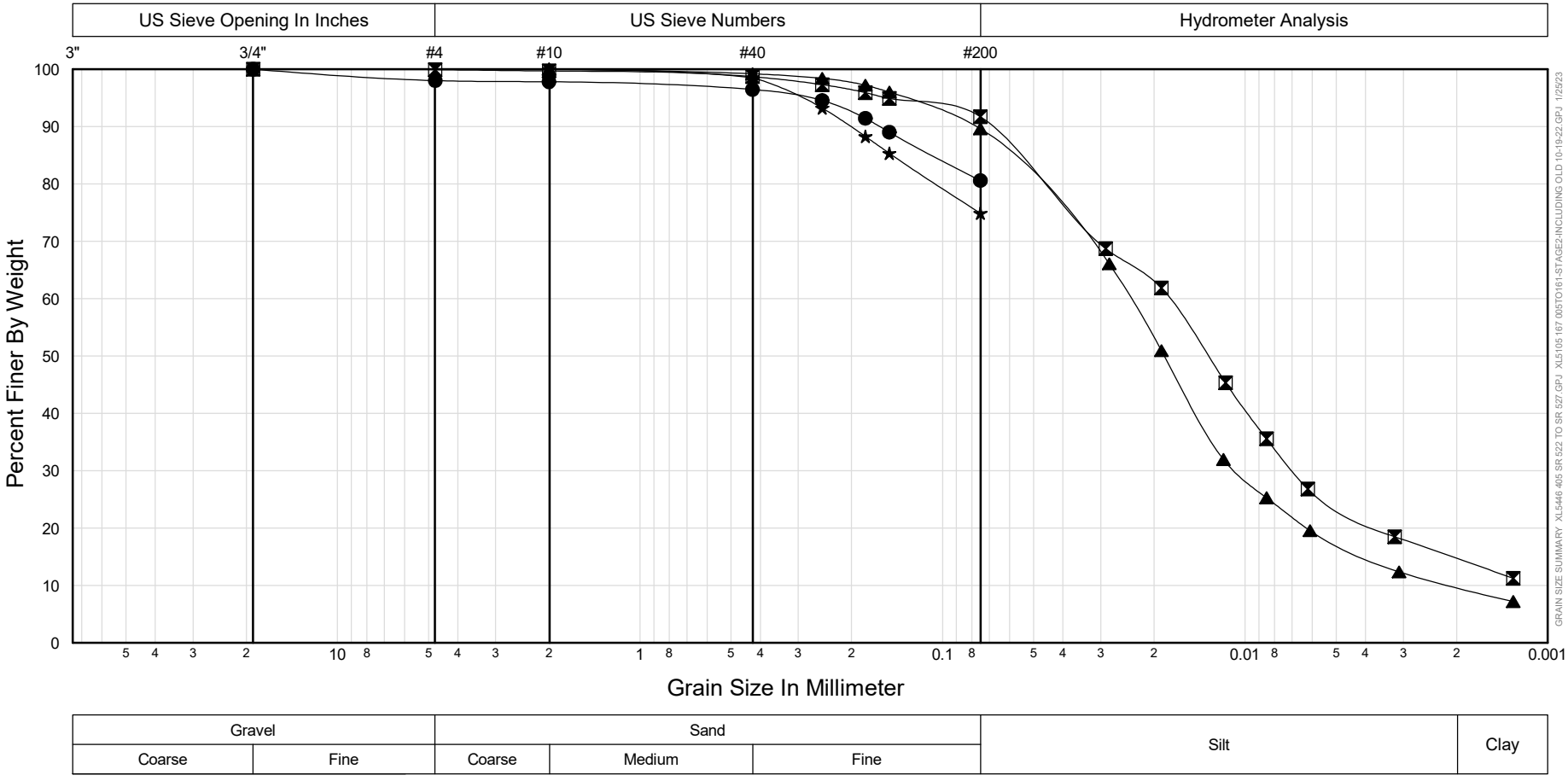
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



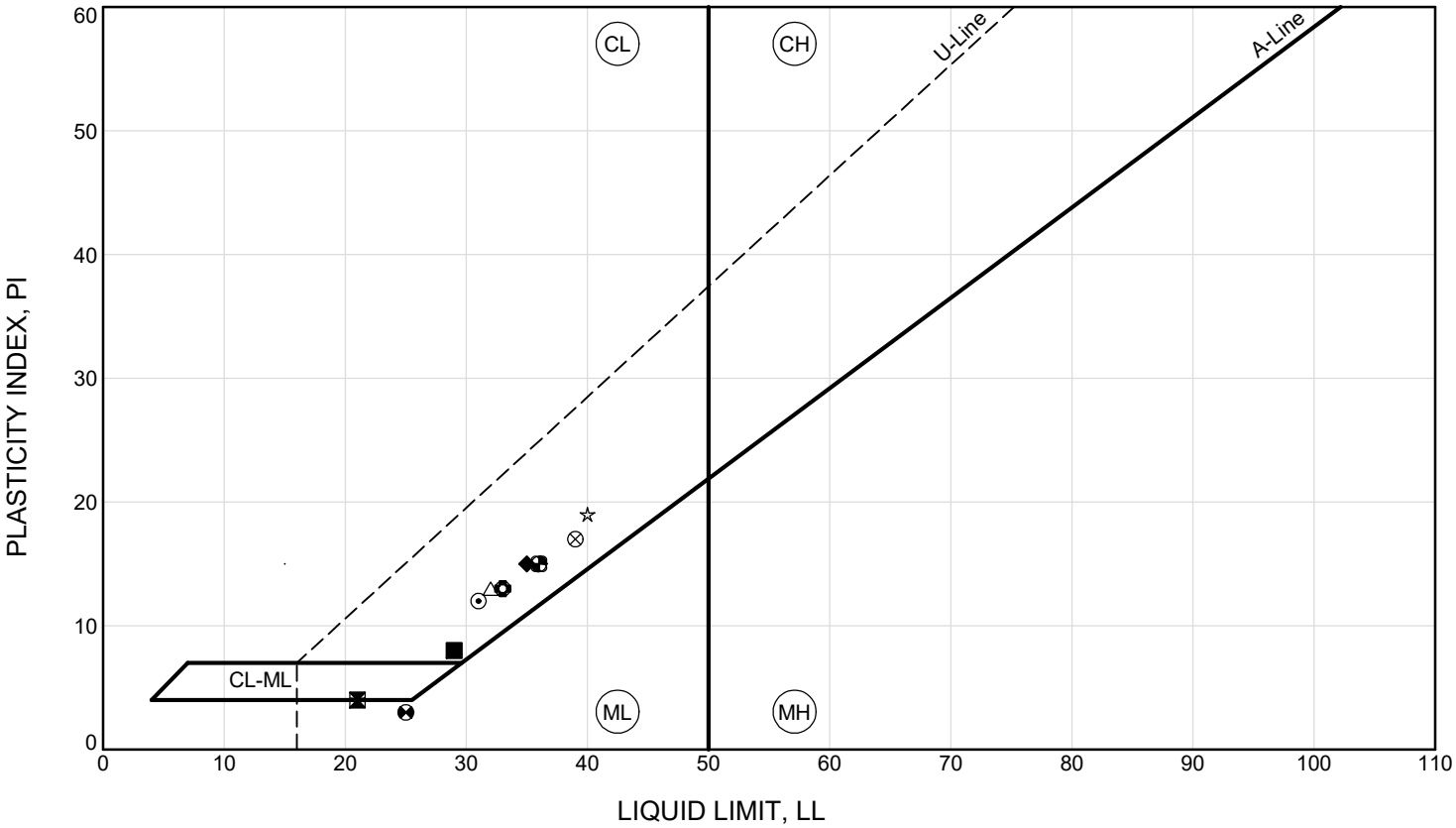
Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	69.0	D-20	CL	LEAN CLAY with SAND	4-5-19	25	37	21	16			2.0	17.4	80.6			0.162					
⊠	94.0	D-25	CL	LEAN CLAY	4-9-19	25	32	20	12		2.74	0.1	8.2	91.7			0.070	0.018	0.013	0.007	0.004	
▲	104.0	D-27	CL	LEAN CLAY	4-9-19	26	26	13	13		2.86	0.0	10.4	89.6	2.3	11	0.078	0.024	0.018	0.011	0.006	0.002
★	139.0	D-34	CL-ML	SILTY CLAY with SAND	4-5-19	23	24	17	7			0.0	25.1	74.9			0.202					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



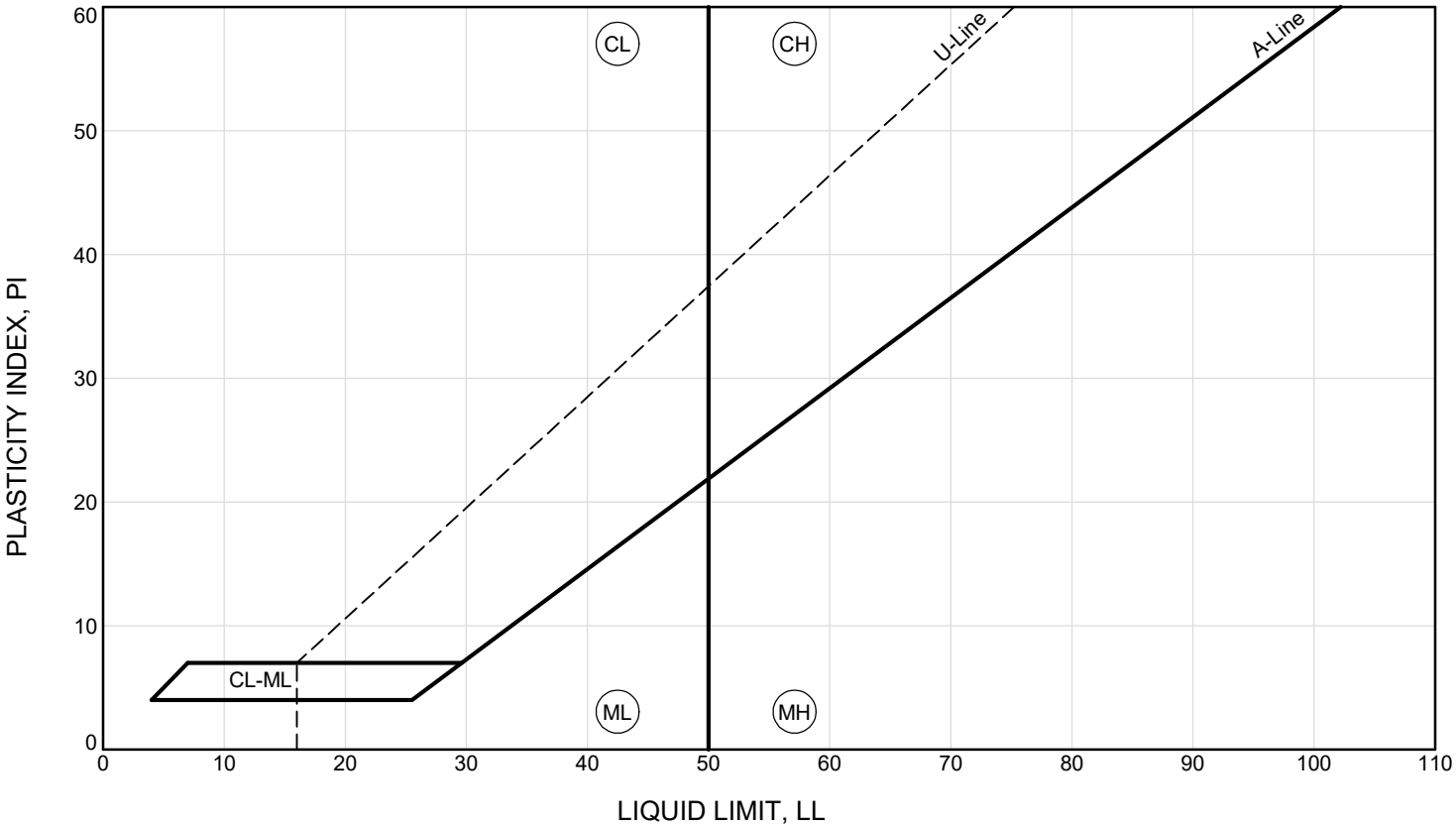
Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-21p-19	4.0	D-2	SM	SILTY SAND with GRAVEL		13	15	n/a	NP	32.5		
⊠	NE-21p-19	7.0	D-3	CL-ML	SANDY SILTY CLAY		16	21	17	4	57.3		
	NE-21p-19	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT		21	n/a	n/a	NP	6.9		
★	NE-21p-19	35.5	S-14	CL-ML	SILTY CLAY		34	21	17	4	90.7	74.0	16.7
⊙	NE-21p-19	37.0	D-15		MC & AL Only		40	31	19	12			
✿	NE-21p-19	45.5	S-18	CL	LEAN CLAY		36	33	20	13	96.6	70.9	25.7
○	NE-21p-19	47.0	D-19		MC & AL Only		39	33	20	13			
△	NE-21p-19	57.0	D-23		MC & AL Only		36	32	19	13			
⊗	NE-21p-19	62.0	D-25		MC & AL Only		42	39	22	17			
	NE-21p-19	64.0	D-26	SM	SILTY SAND		27	n/a	n/a	NP	35.0		
	NE-21p-19	79.0	D-29	ML	SANDY SILT		29	n/a	n/a	NP	53.7		
⊛	NE-21p-19	84.0	D-30		MC & AL Only		27	25	22	3			
◕	NE-21p-19	100.5	S-34	CL	LEAN CLAY		34	36	21	15	99.2	71.0	28.2
☆	NE-21p-19	105.0	S-36	CL	LEAN CLAY		33	40	21	19	98.6	73.1	25.6
⊠	NE-21p-19	107.0	D-37		MC & AL Only		35	36	21	15			
■	NE-21p-19	112.0	D-39		MC & AL Only		31	29	21	8			
◆	NE-21p-19	117.0	D-41	CL	LEAN CLAY		34	35	20	15	89.0		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-21p-19	154.0	D-50	SM	SILTY SAND		14	n/a	n/a	NP	30.7		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

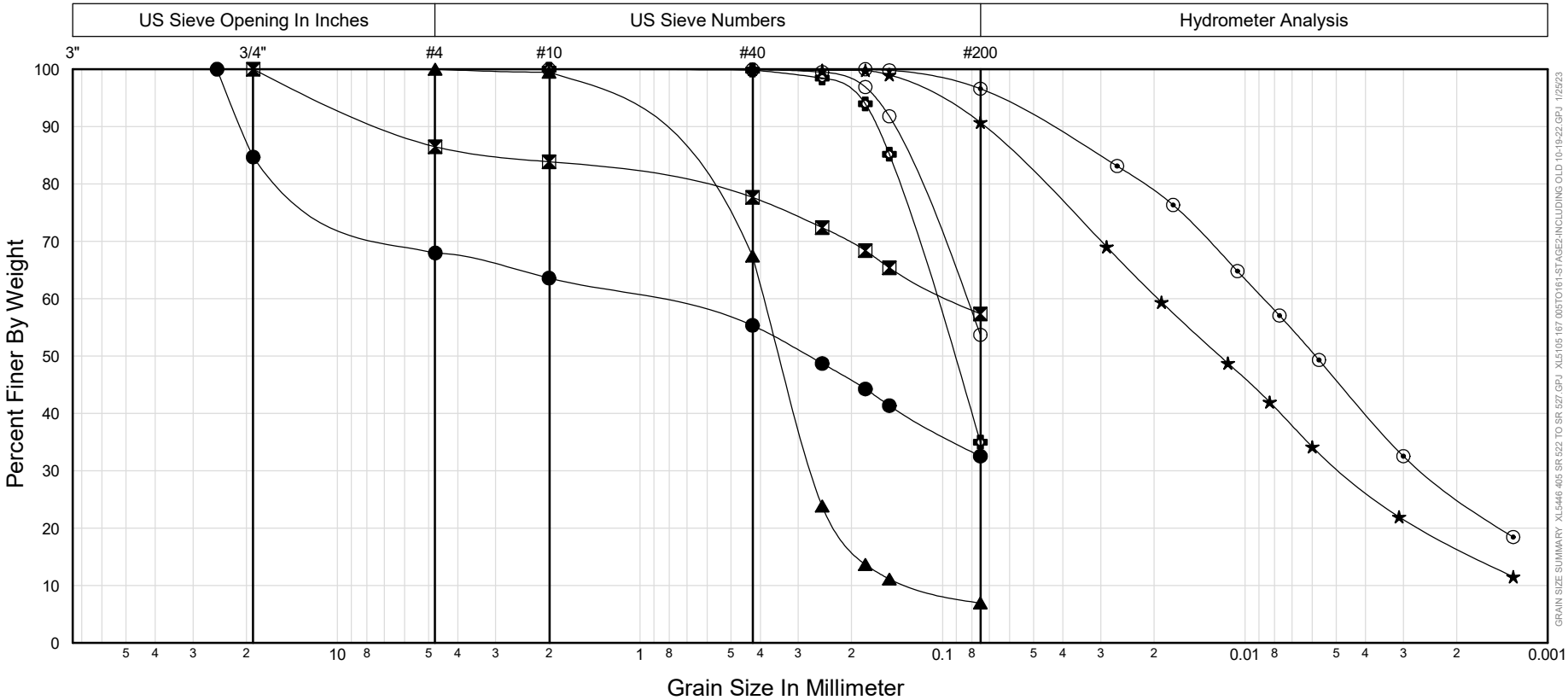
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-21p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND with GRAVEL	4-15-19	13	15	n/a	NP			32.0	35.4	32.5			20.900	1.020	0.277			
⊠	7.0	D-3	CL-ML	SANDY SILTY CLAY	4-15-19	16	21	17	4			13.5	29.1	57.3			6.807	0.094				
▲	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT	4-15-19	21	n/a	n/a	NP			0.0	93.1	6.9	1.5	3	1.265	0.388	0.344	0.269	0.221	0.124
★	35.5	S-14	CL-ML	SILTY CLAY	4-19-19	34	21	17	4	119	2.75	0.0	9.3	90.7			0.073	0.019	0.012	0.005	0.003	
⊙	45.5	S-18	CL	LEAN CLAY	4-19-19	36	33	20	13	117	2.81	0.0	3.4	96.6			0.045	0.009	0.006	0.003	0.001	
✿	64.0	D-26	SM	SILTY SAND	4-15-19	27	n/a	n/a	NP			0.0	65.0	35.0			0.166	0.106	0.092			
○	79.0	D-29	ML	SANDY SILT	4-15-19	29	n/a	n/a	NP			0.0	46.3	53.7			0.145	0.084				

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

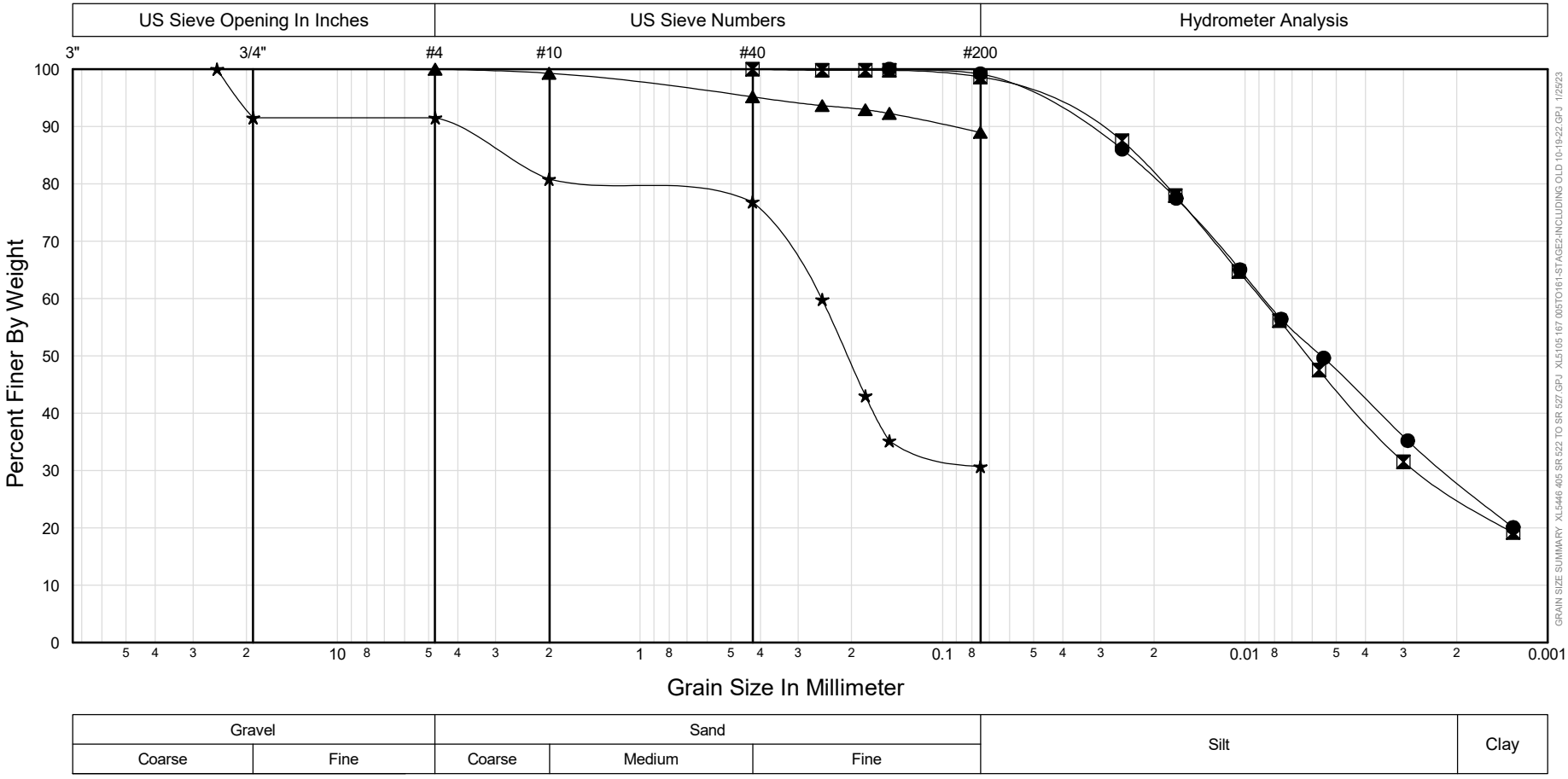


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

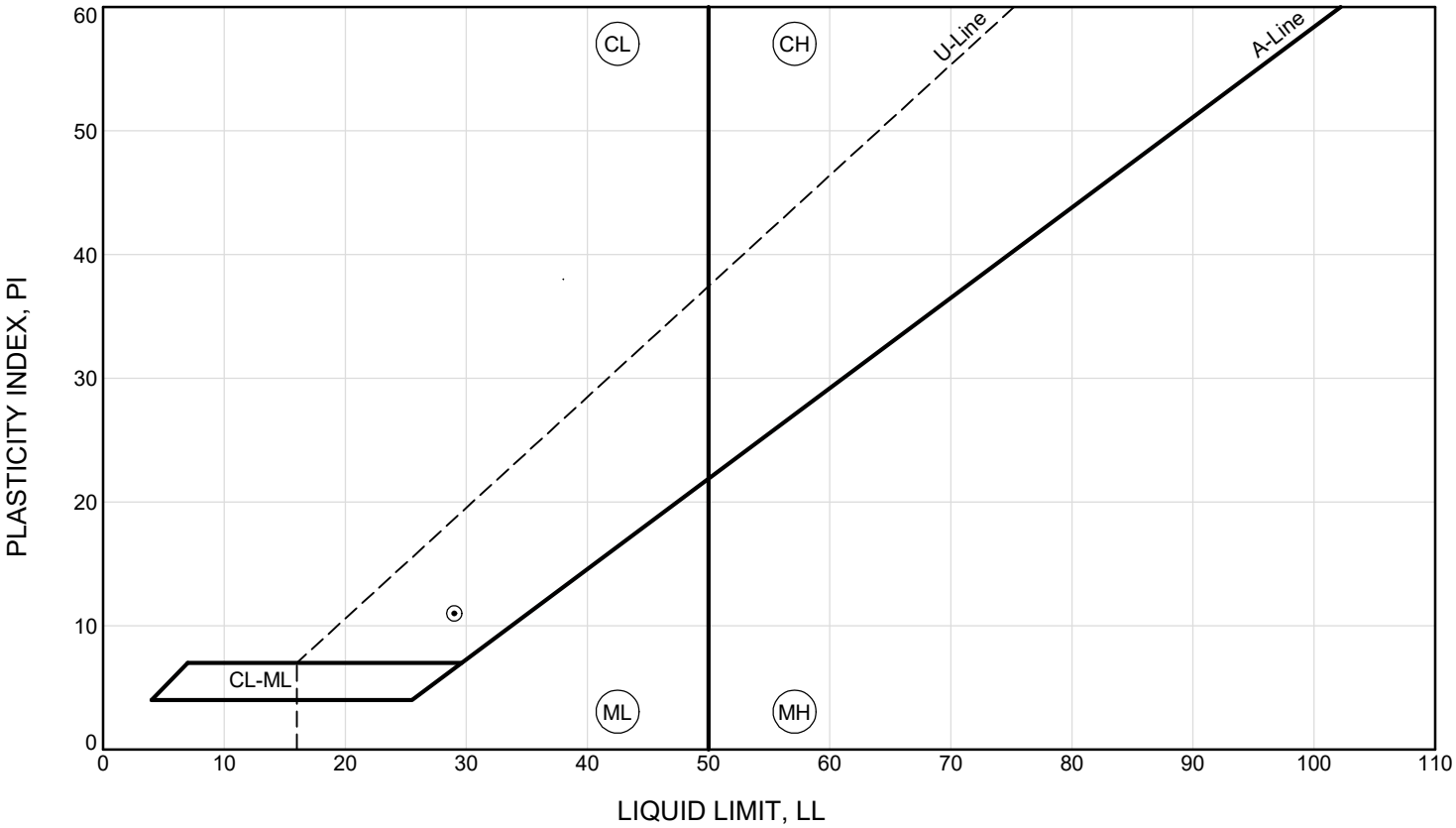
Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	100.5	S-34	CL	LEAN CLAY	4-30-19	34	36	21	15	122	2.82	0.0	0.8	99.2			0.035	0.009	0.006	0.002		
⊠	105.0	S-36	CL	LEAN CLAY	4-30-19	33	40	21	19	123	2.76	0.0	1.4	98.6			0.032	0.009	0.006	0.003	0.001	
▲	117.0	D-41	CL	LEAN CLAY	4-15-19	34	35	20	15			0.0	11.0	89.0			0.093					
★	154.0	D-50	SM	SILTY SAND	4-15-19	14	n/a	n/a	NP			8.5	60.8	30.7			4.201	0.251	0.206			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-22p-19	7.0	D-3	MH	with Organics		77	60	n/a	NP	67.5		
	NE-22p-19	9.0	D-4		MC, LOI, and AL Only		61	38	n/a	NP			
	NE-22p-19	12.0	D-5		MC and LOI Only		113	n/a	n/a	NP			
	NE-22p-19	22.0	D-10	SM	SILTY SAND		20	n/a	n/a	NP	23.4		
⊙	NE-22p-19	32.0	D-14	CL	LEAN CLAY		36	29	18	11	88.5		
	NE-22p-19	42.0	D-18	SM	SILTY SAND		25	n/a	n/a	NP	14.5		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

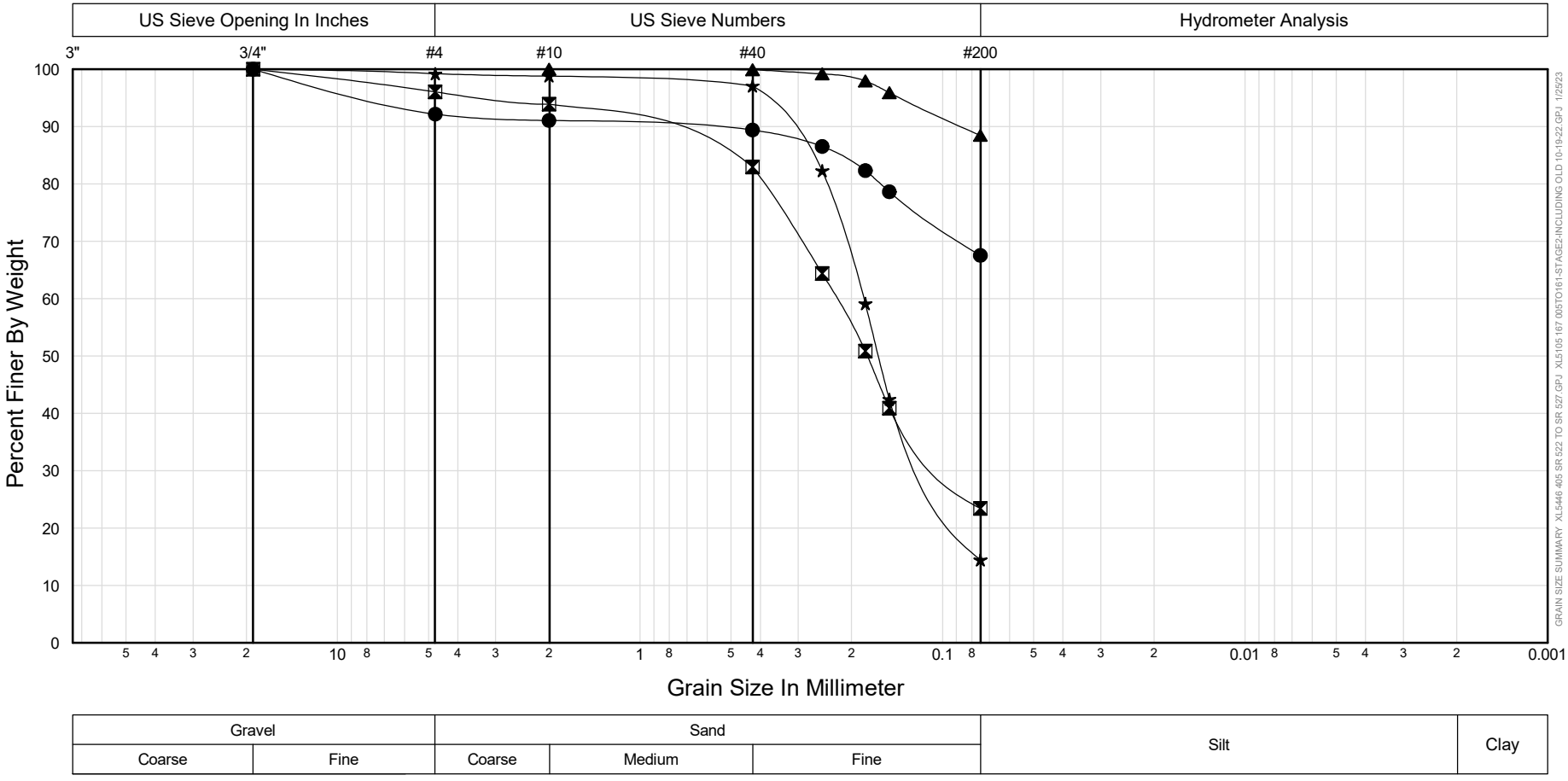
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-22p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	MH	SANDY ELASTIC SILT with organics	6-20-19	77	60	n/a	NP			7.8	24.6	67.5			0.746					
⊠	22.0	D-10	SM	SILTY SAND	6-20-19	20	n/a	n/a	NP			3.9	72.6	23.4			1.155	0.225	0.177	0.097		
▲	32.0	D-14	CL	LEAN CLAY	6-20-19	36	29	18	11			0.0	11.5	88.5			0.087					
★	42.0	D-18	SM	SILTY SAND	6-20-19	25	n/a	n/a	NP			0.8	84.7	14.5			0.329	0.182	0.163	0.110	0.086	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

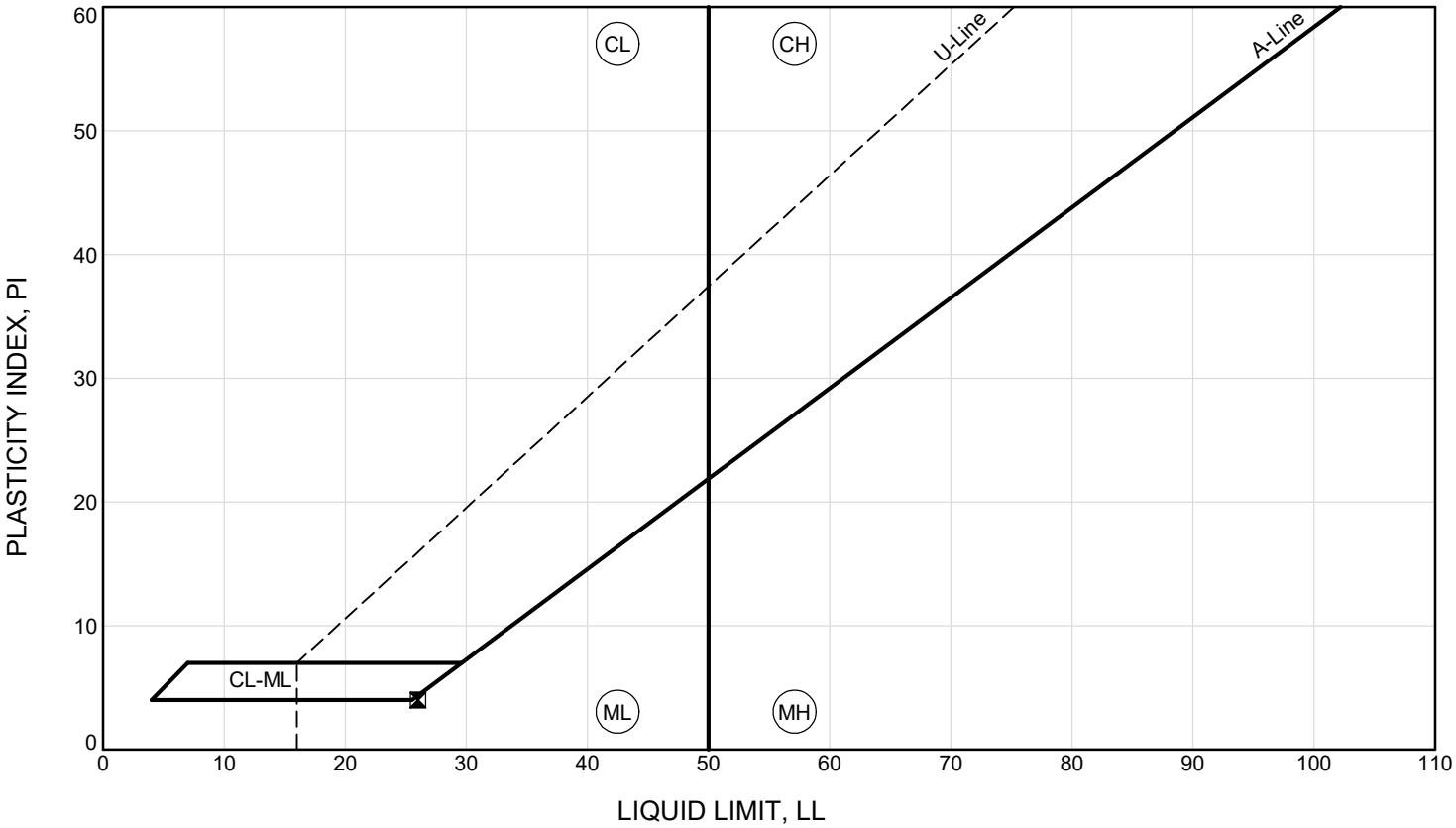


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-23-19	4.0	D-2	SM	SILTY SAND with GRAVEL		6	n/a	n/a	NP	20.8		
☒	NE-23-19	9.0	D-4	ML	SANDY SILT		39	26	22	4	65.5	50.8	14.7
	NE-23-19	19.0	D-8	SM	with Organics		22	n/a	n/a	NP	14.6		
	NE-23-19	29.0	D-12	SM	SILTY SAND		21	n/a	n/a	NP	26.6		
	NE-23-19	44.0	D-15	SM	with Organics		25	n/a	n/a	NP	18.3		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/12/22

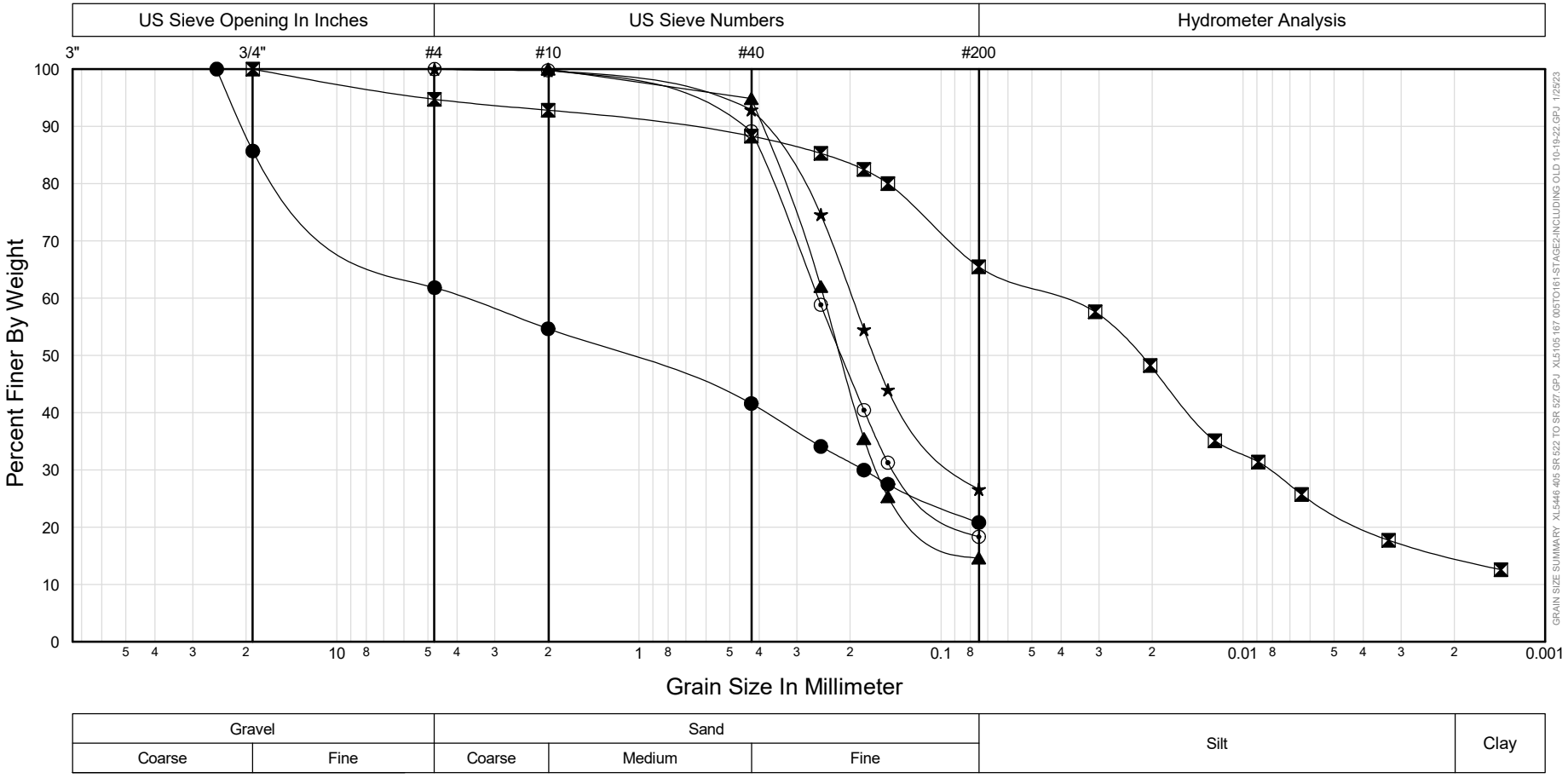
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-23-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND with GRAVEL	4-5-19	6	n/a	n/a	NP			38.2	41.0	20.8			20.641	3.813	1.151	0.180		
⊠	9.0	D-4	ML	SANDY SILT	4-9-19	39	26	22	4		2.64	5.3	29.2	65.5			0.762	0.040	0.022	0.008	0.004	
▲	19.0	D-8	SM	SILTY SAND with Organics	4-5-19	22	n/a	n/a	NP			0.0	85.4	14.6			0.393	0.244	0.215	0.163	0.106	
★	29.0	D-12	SM	SILTY SAND	4-5-19	21	n/a	n/a	NP			0.0	73.4	26.6			0.391	0.197	0.167	0.086		
⊙	44.0	D-15	SM	SILTY SAND with Organics	4-5-19	25	n/a	n/a	NP			0.0	81.7	18.3			0.482	0.255	0.213	0.140	0.082	

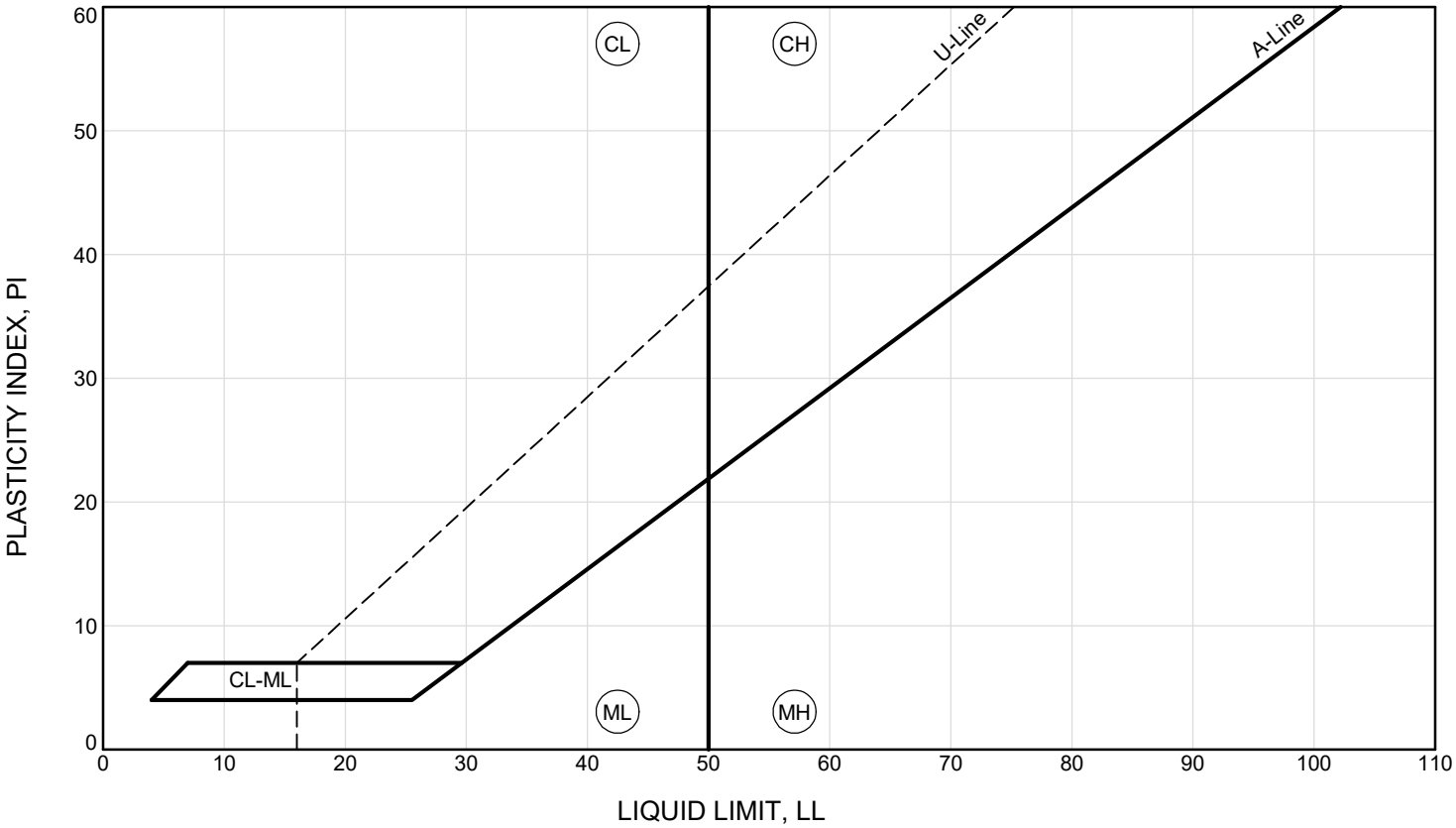
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-24-19	4.0	D-2	SM	SILTY SAND		14	n/a	n/a	NP	37.2		
	NE-24-19	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT		27	n/a	n/a	NP	6.8		
	NE-24-19	27.0	D-11	ML	SANDY SILT		29	n/a	n/a	NP	53.5		
	NE-24-19	29.0	D-12	ML	SILT with SAND		26	n/a	n/a	NP	72.3		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

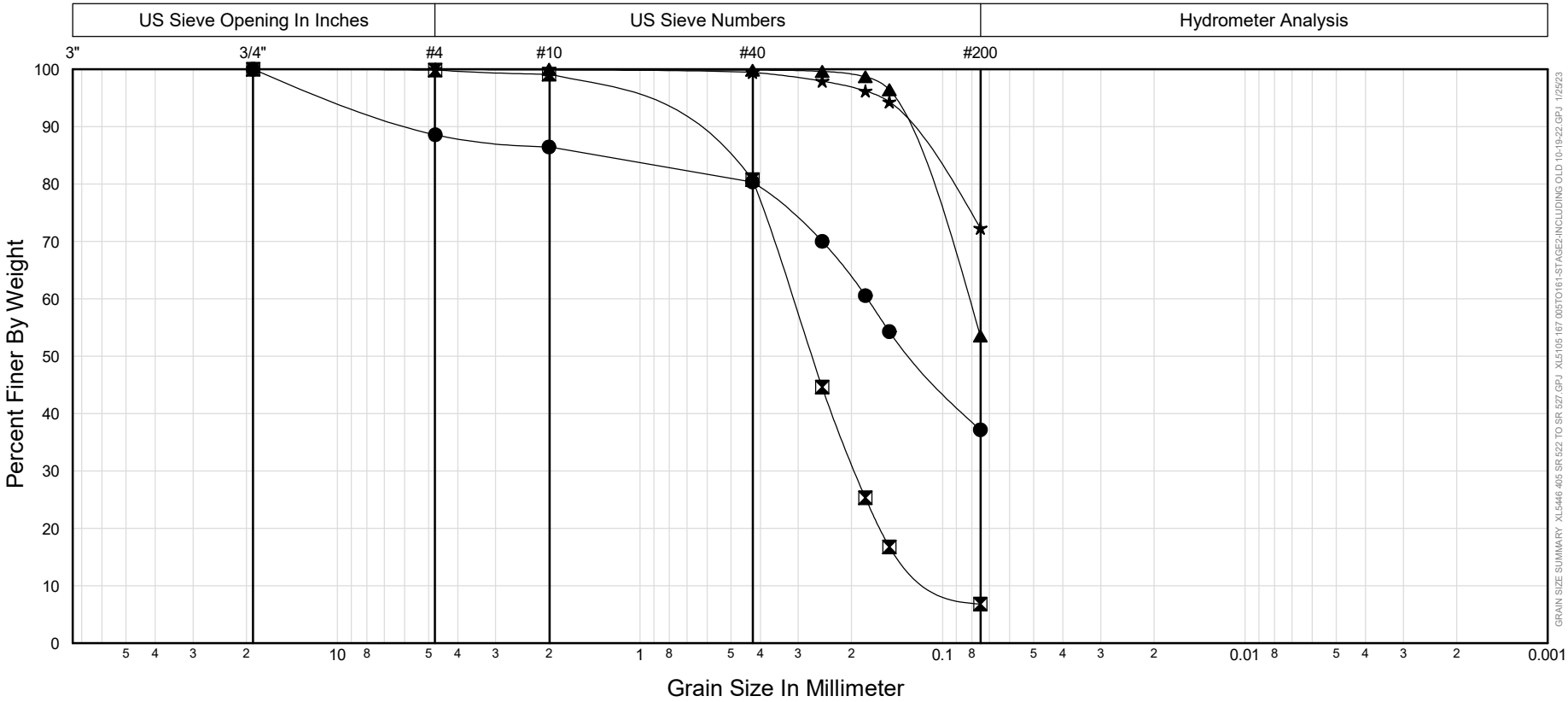
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-24-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND	5-8-19	14	n/a	n/a	NP			11.4	51.4	37.2			5.643	0.177	0.126			
⊠	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT	5-8-19	27	n/a	n/a	NP			0.2	93.0	6.8	1.3	3	0.926	0.313	0.271	0.195	0.161	0.094
▲	27.0	D-11	ML	SANDY SILT	5-8-19	29	n/a	n/a	NP			0.0	46.5	53.5			0.135	0.083				
★	29.0	D-12	ML	SILT with SAND	5-8-19	26	n/a	n/a	NP			0.0	27.7	72.3			0.131					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

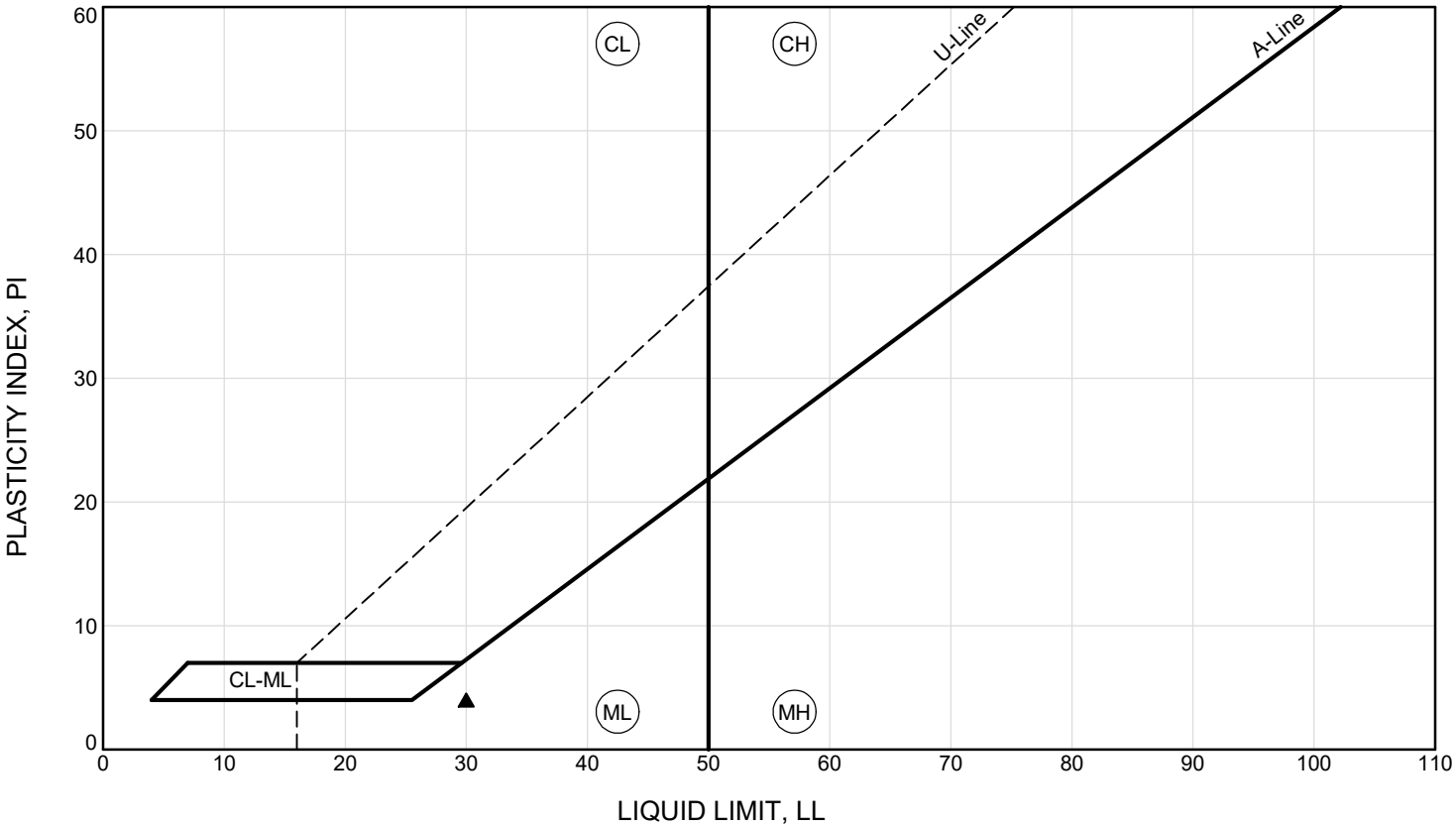


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-25p-19	4.0	D-2	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	28.0		
	NE-25p-19	7.0	D-3		MC and LOI Only		58	n/a	n/a	NP			
▲	NE-25p-19	10.7	S-4	ML	SILT		28	30	26	4	92.6		
	NE-25p-19	14.0	D-6		MC Only		28	n/a	n/a	NP			
	NE-25p-19	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT		24	n/a	n/a	NP	8.2		
	NE-25p-19	24.0	D-10	SM	SILTY SAND		24	n/a	n/a	NP	12.8		
	NE-25p-19	27.0	D-11	ML	SANDY SILT		26	n/a	n/a	NP	50.1		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/12/22

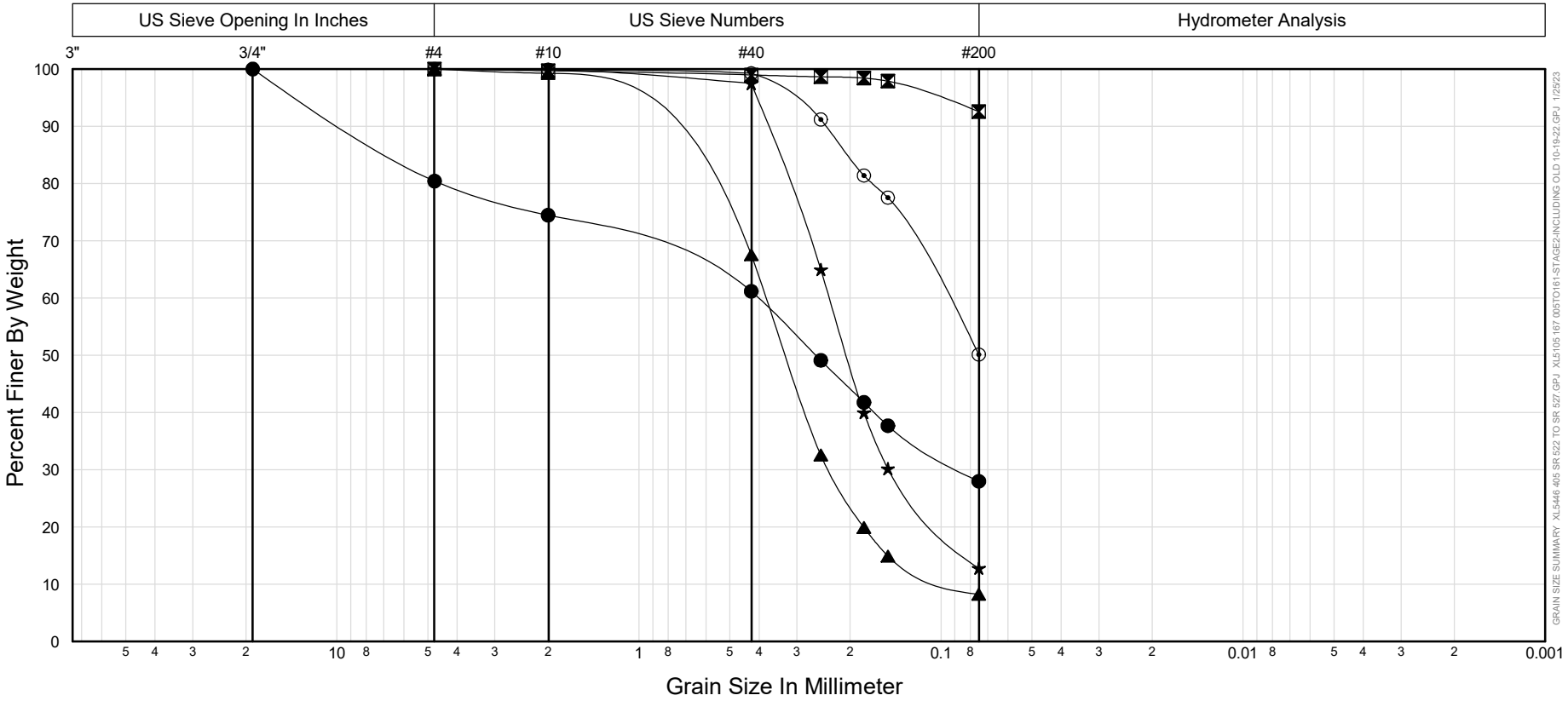
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-25p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND with GRAVEL	4-5-19	11	n/a	n/a	NP			19.6	52.4	28.0			9.358	0.404	0.260	0.087		
⊠	10.7	S-4	ML	SILT	8-15-19	28	30	26	4	121		0.0	7.4	92.6								
▲	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT	4-5-19	24	n/a	n/a	NP			0.0	91.8	8.2	1.6	4	1.273	0.379	0.326	0.234	0.180	0.090
★	24.0	D-10	SM	SILTY SAND	4-5-19	24	n/a	n/a	NP			0.0	87.2	12.8			0.376	0.234	0.205	0.149	0.100	
⊙	27.0	D-11	ML	SANDY SILT	4-5-19	26	n/a	n/a	NP			0.0	49.9	50.1			0.240	0.096				

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

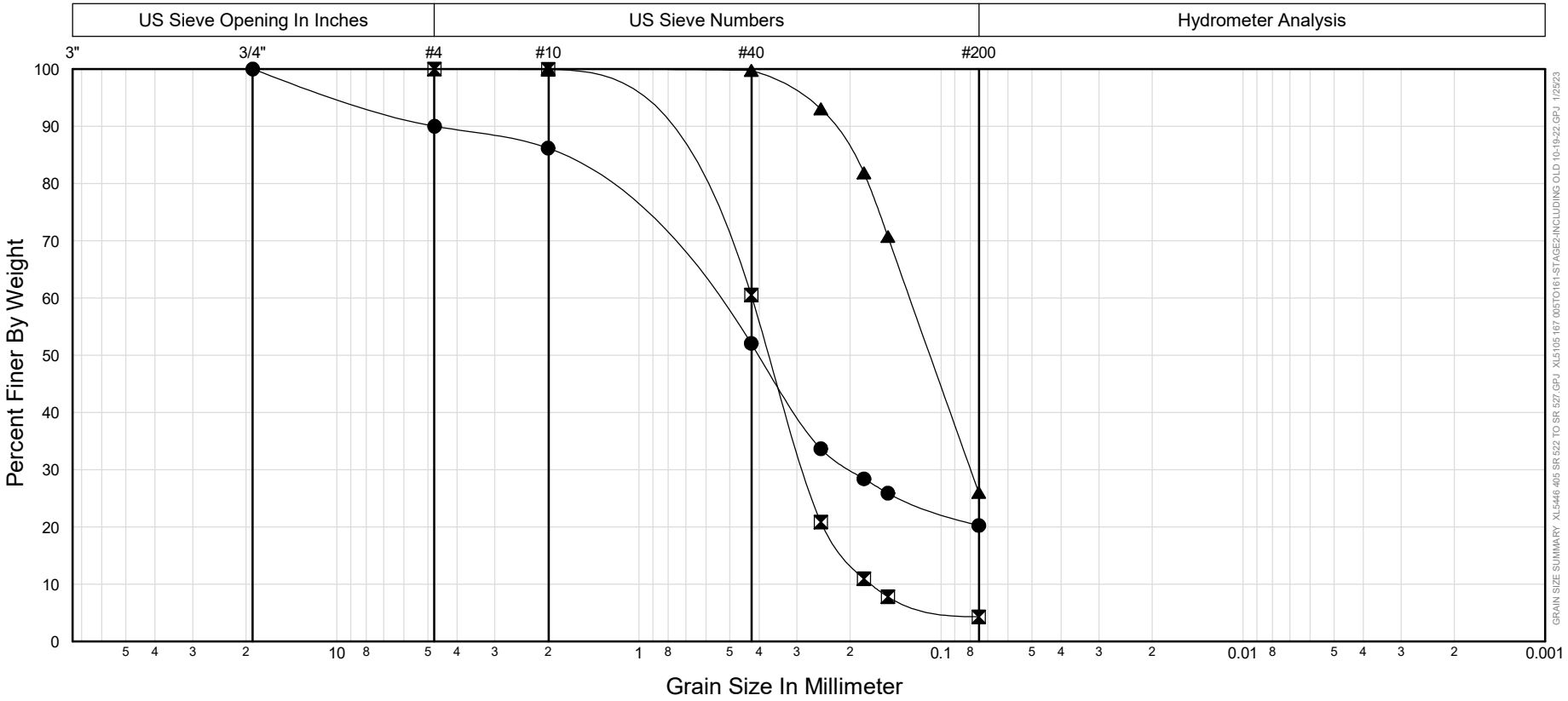
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-26-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND	5-8-19	21	n/a	n/a	NP			10.0	69.8	20.2			4.750	0.609	0.400	0.199		
⊠	22.0	D-9	SP	POORLY GRADED SAND	5-8-19	26	n/a	n/a	NP			0.0	95.7	4.3	1.1	2	1.353	0.422	0.369	0.282	0.243	0.170
▲	34.0	D-13	SM	SILTY SAND	5-8-19	26	n/a	n/a	NP			0.0	74.0	26.0			0.229	0.127	0.109	0.080		

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

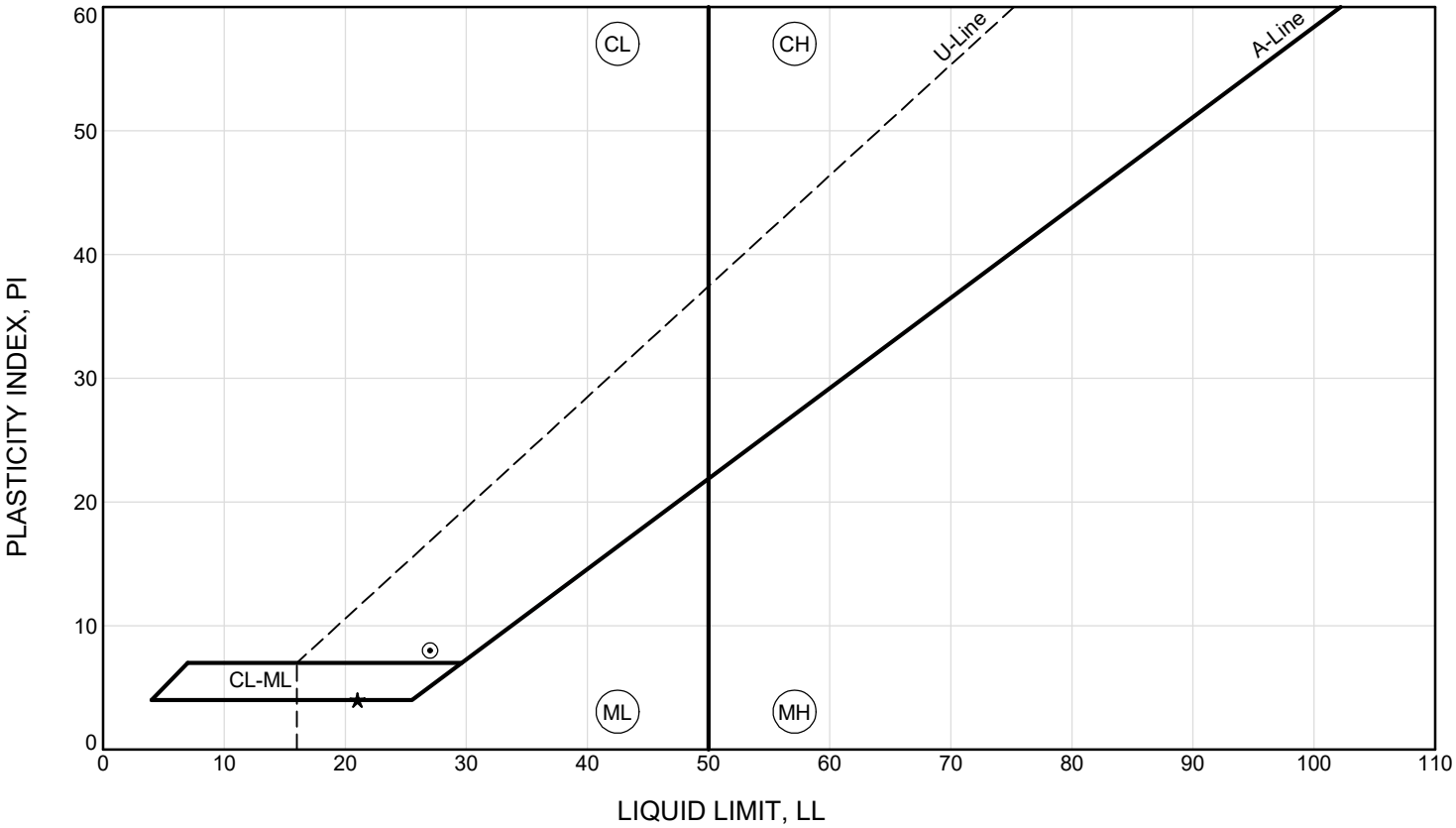


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-28p-19	2.0	D-1	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	39.0		
	NE-28p-19	14.0	D-6	SM	SILTY SAND with GRAVEL		14	n/a	n/a	NP	18.0		
	NE-28p-19	19.0	D-8	MH	ELASTIC SILT		99	83	n/a	NP	94.5	73.8	20.8
★	NE-28p-19	22.0	D-9	CL-ML	SILTY CLAY with SAND		40	21	17	4	76.4		
⊙	NE-28p-19	24.0	D-10	CL	LEAN CLAY		41	27	19	8	92.3		
	NE-28p-19	30.0	D-13	SM	SILTY SAND		27	n/a	n/a	NP	17.5		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

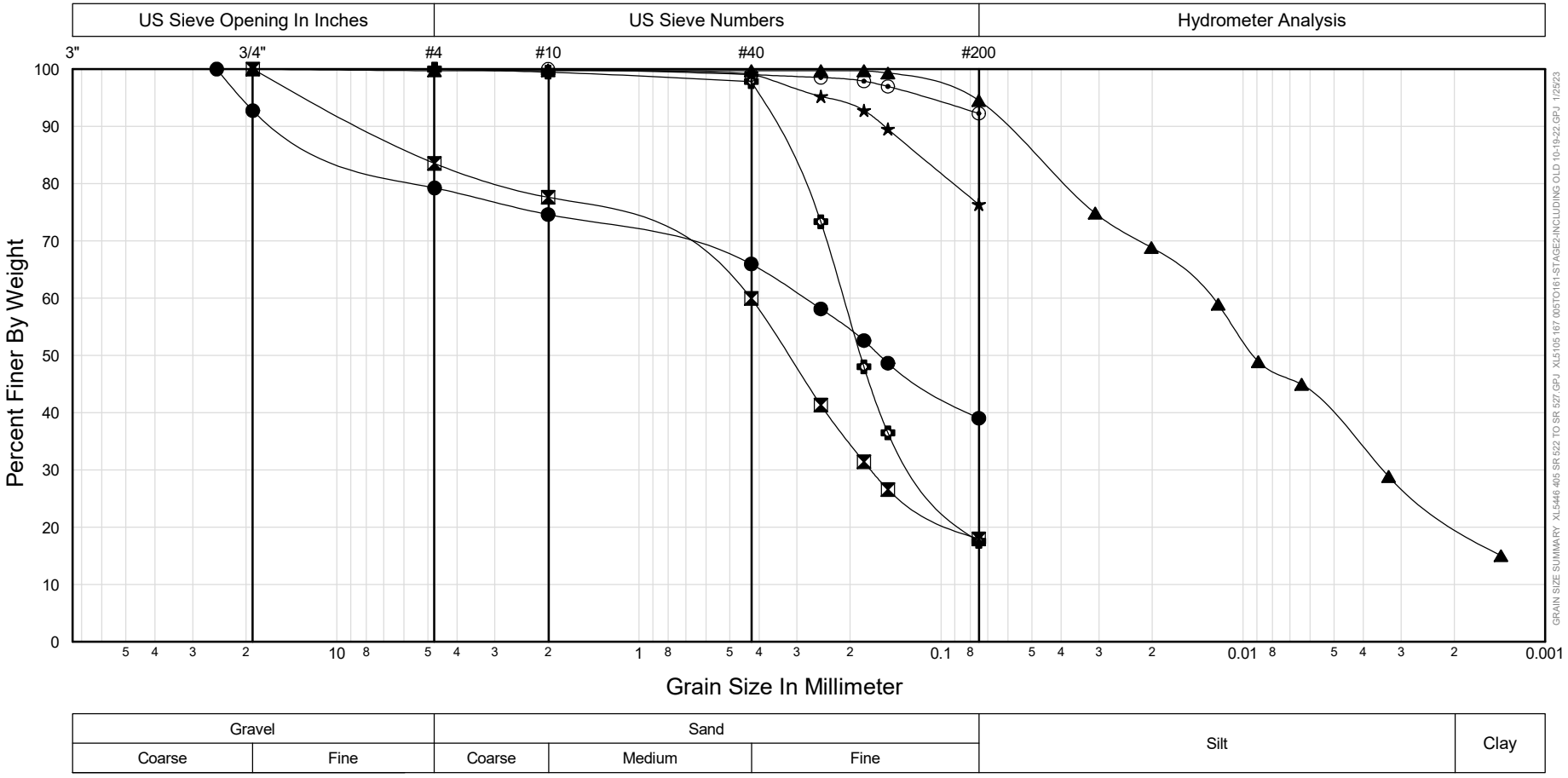
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-28p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	2.0	D-1	SM	SILTY SAND with GRAVEL	10-10-19	11	n/a	n/a	NP			20.8	40.2	39.0			14.343	0.284	0.160			
⊠	14.0	D-6	SM	SILTY SAND with GRAVEL	10-10-19	14	n/a	n/a	NP			16.5	65.6	18.0			8.191	0.427	0.320	0.171	0.088	
▲	19.0	D-8	MH	ELASTIC SILT	10-10-19	99	83	n/a	NP		2.47	0.3	5.2	94.5			0.061	0.013	0.009	0.003	0.002	
★	22.0	D-9	CL-ML	SILTY CLAY with SAND	10-10-19	40	21	17	4			0.0	23.6	76.4			0.154					
⊙	24.0	D-10	CL	LEAN CLAY	10-10-19	41	27	19	8			0.0	7.7	92.3								
✿	30.0	D-13	SM	SILTY SAND	10-10-19	27	n/a	n/a	NP			0.0	82.5	17.5			0.359	0.210	0.185	0.118	0.082	

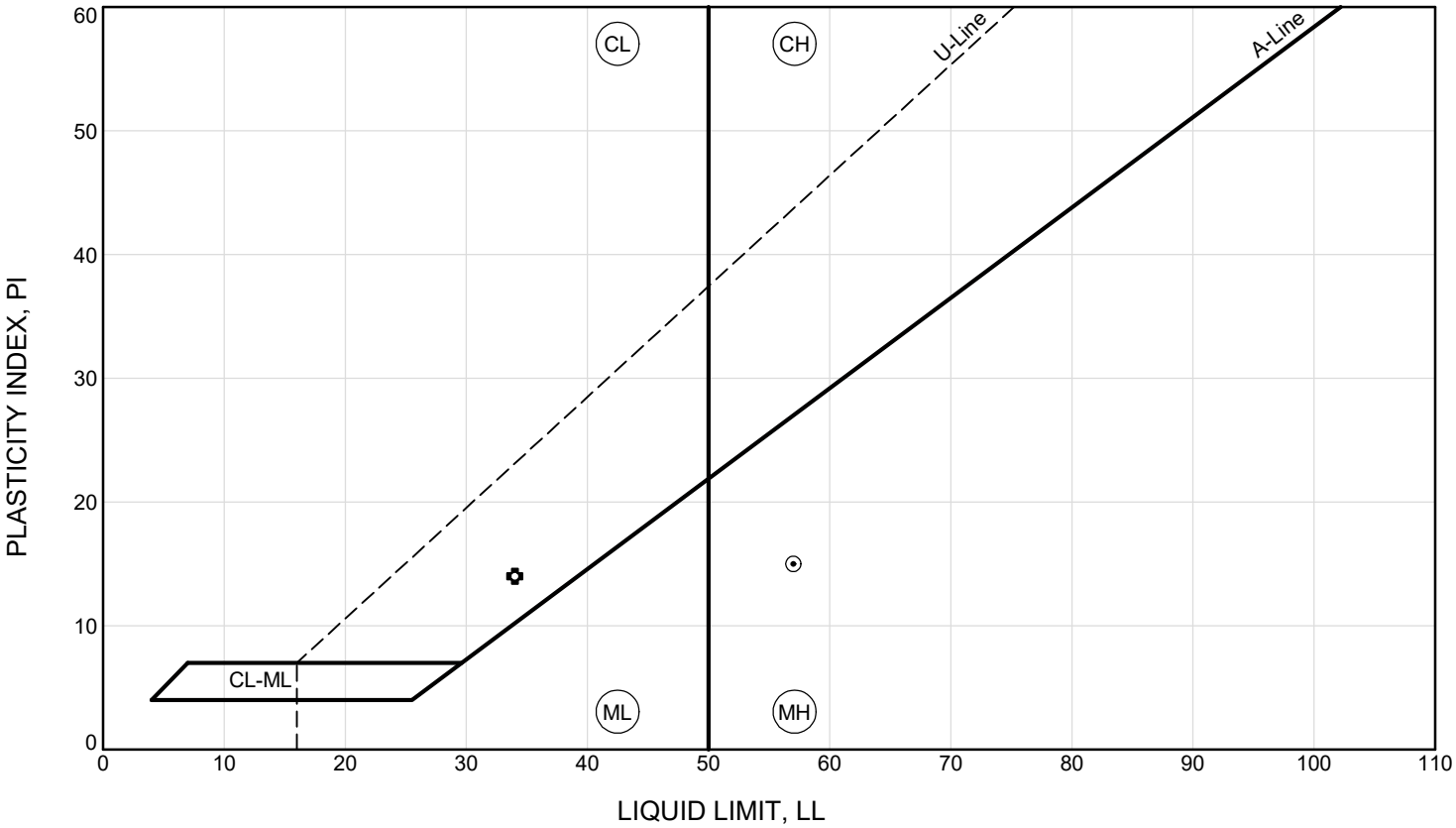
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-29-19	15.0	D-6	SM	SILTY SAND with GRAVEL		10	n/a	n/a	NP	19.7		
	NE-29-19	30.0	D-12	SM	SILTY SAND with GRAVEL		12	n/a	n/a	NP	27.1		
	NE-29-19	38.5	D-15B	SM	SILTY SAND		21	n/a	n/a	NP	26.8		
	NE-29-19	45.0	D-18	SP-SM	POORLY GRADED SAND with SILT		25	n/a	n/a	NP	9.7		
⊙	NE-29-19	50.0	D-19A	MH	SANDY ELASTIC SILT		73	57	42	15	59.2		
✿	NE-29-19	70.0	D-23	CL	LEAN CLAY		34	34	20	14	93.7		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

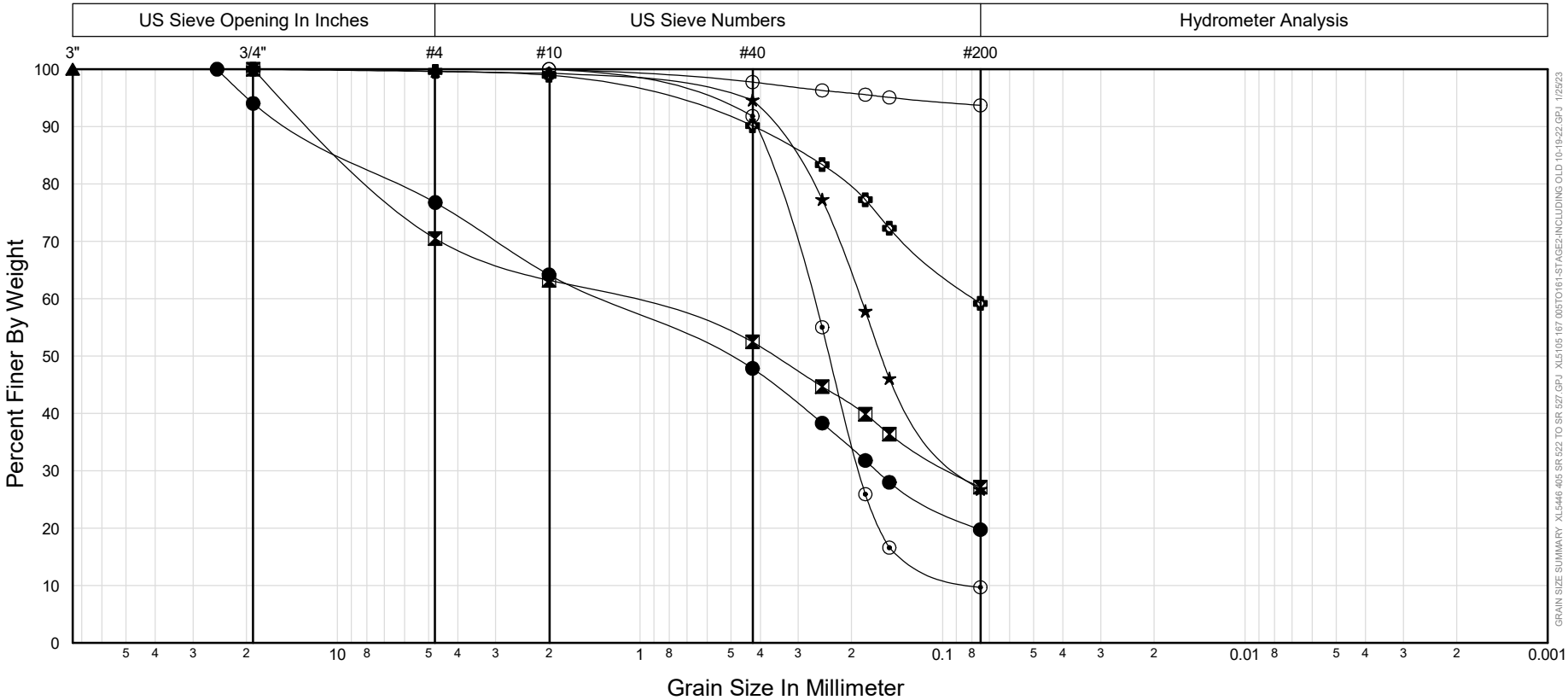
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-29-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	15.0	D-6	SM	SILTY SAND with GRAVEL	6-6-19	10	n/a	n/a	NP			23.2	57.0	19.7			13.744	1.347	0.521	0.165	0.077	
⊠	30.0	D-12	SM	SILTY SAND with GRAVEL	6-6-19	12	n/a	n/a	NP			29.5	43.3	27.1			11.881	1.260	0.359	0.093		
▲	38.0	D-15A		MC & LOI Only	6-6-19	81						N/A	N/A									
★	38.5	D-15B	SM	SILTY SAND	6-6-19	21	n/a	n/a	NP			0.4	72.8	26.8			0.369	0.187	0.159	0.084		
⊙	45.0	D-18	SP-SM	POORLY GRADED SAND with SILT	6-6-19	25	n/a	n/a	NP			0.0	90.3	9.7	1.7	3	0.414	0.269	0.236	0.188	0.160	0.077
✿	50.0	D-19A	MH	SANDY ELASTIC SILT	6-6-19	73	57	42	15			0.4	40.4	59.2			0.420	0.078				
○	70.0	D-23	CL	LEAN CLAY	6-6-19	34	34	20	14			0.0	6.3	93.7								

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

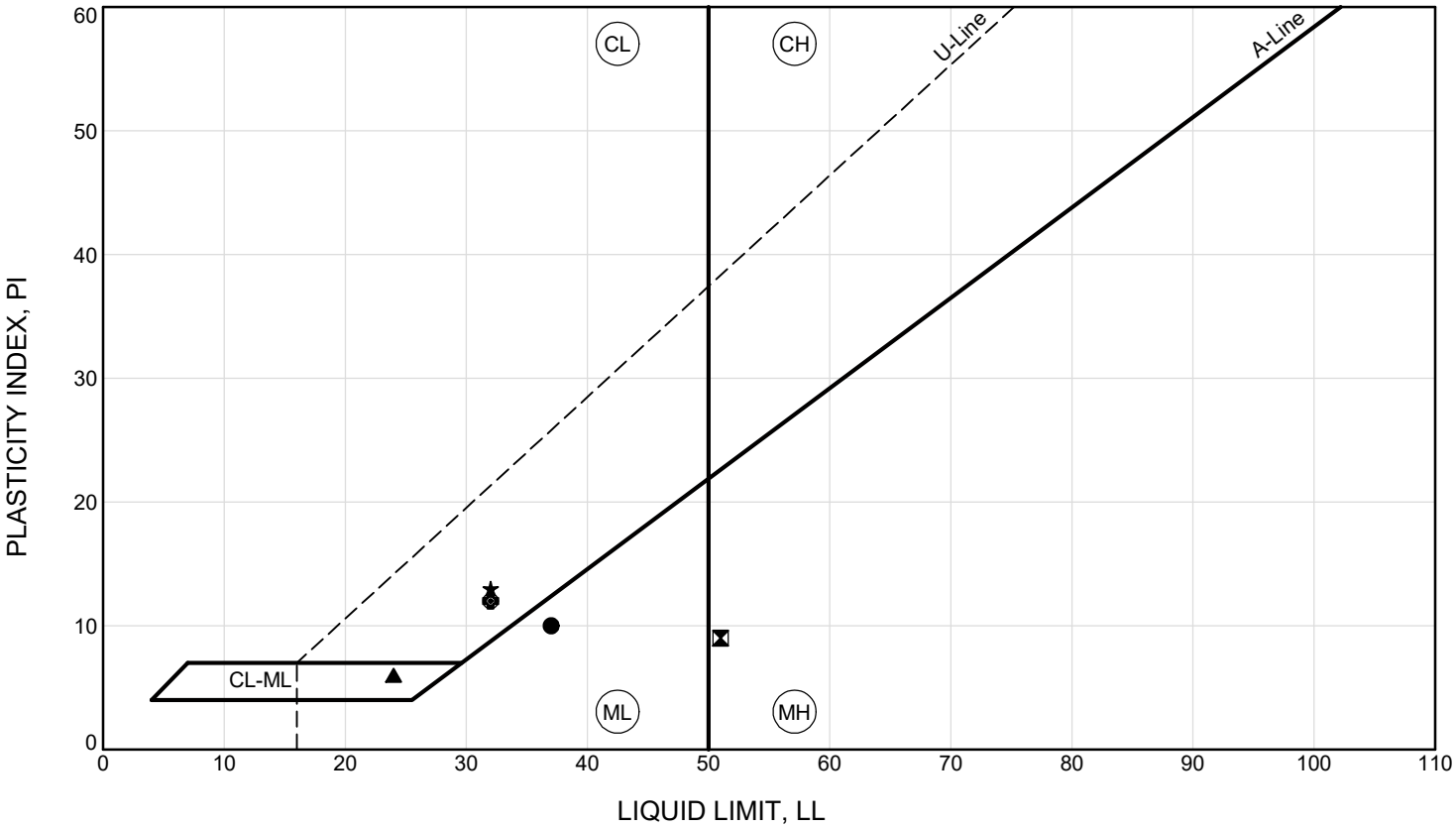


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-30vw-19	13.0	D-5A	ML	SANDY SILT		45	37	27	10	67.0		
⊠	NE-30vw-19	23.0	D-9	MH	SANDY ELASTIC SILT		64	51	42	9	51.2		
▲	NE-30vw-19	31.5	S-12	CL-ML	SILTY CLAY		30	24	18	6	90.9	73.4	17.4
★	NE-30vw-19	36.8	S-14		MC & AL Only		45	32	19	13			
⊙	NE-30vw-19	37.0	D-15	CL	LEAN CLAY		51	32	20	12	98.0		
✿	NE-30vw-19	40.0	S-16		MC & AL Only		42	32	20	12			
	NE-30vw-19	80.0	D-24	SM	SILTY SAND		23	n/a	n/a	NP	32.3		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

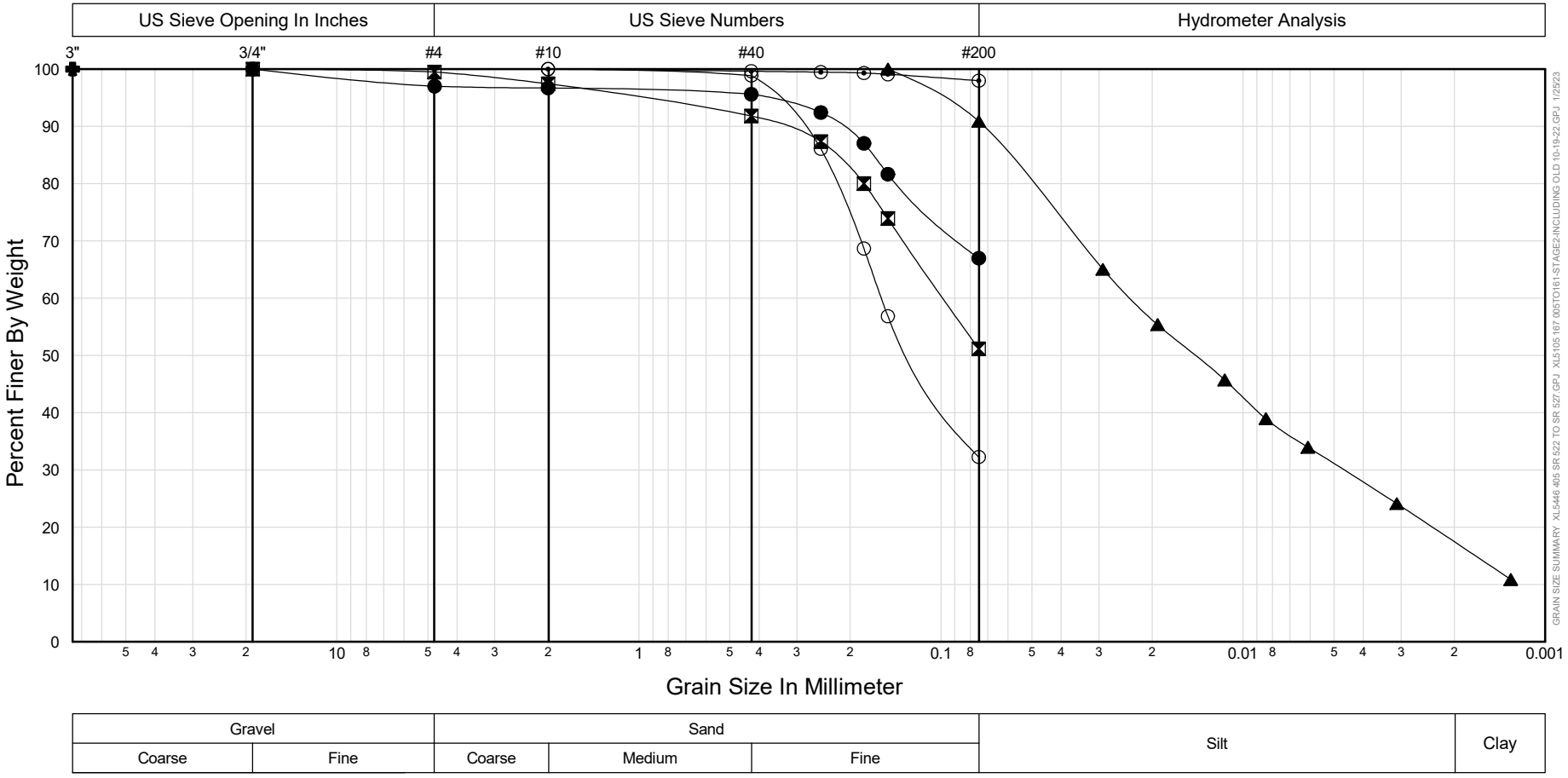
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-30vw-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	13.0	D-5A	ML	SANDY SILT	6-5-19	45	37	27	10			3.0	30.0	67.0			0.216					
⊠	23.0	D-9	MH	SANDY ELASTIC SILT	6-5-19	64	51	42	9			0.5	48.3	51.2			0.343	0.098				
▲	31.5	S-12	CL-ML	SILTY CLAY	6-20-19	30	24	18	6	123	2.76	0.0	9.1	90.9			0.073	0.023	0.014	0.005	0.002	
★	36.8	S-14		MC & AL Only	7-17-19	45	32	19	13			N/A	N/A									
⊙	37.0	D-15	CL	LEAN CLAY	6-5-19	51	32	20	12			0.0	2.0	98.0								
✿	40.0	S-16		MC & AL Only	7-3-19	42	32	20	12			N/A	N/A									
○	80.0	D-24	SM	SILTY SAND	6-5-19	23	n/a	n/a	NP			0.0	67.7	32.3			0.294	0.157	0.124			

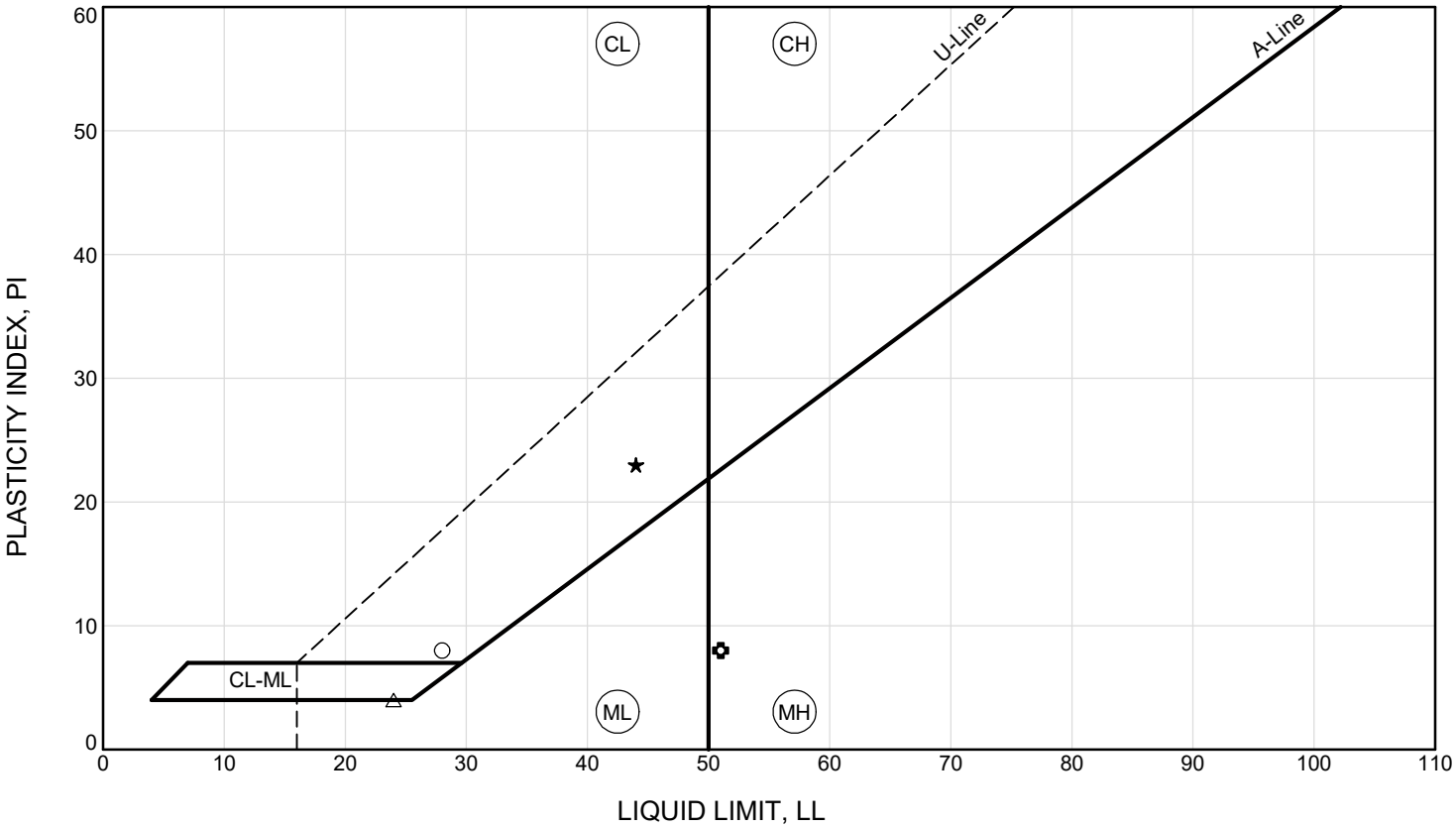
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-31p-19	7.0	D-3	SM	SILTY SAND		14	n/a	n/a	NP	31.0		
	NE-31p-19	12.0	D-5	SW-SM	WELL-GRADED SAND with SILT		16	n/a	n/a	NP	7.1		
	NE-31p-19	17.0	D-7		MC and LOI Only		73	n/a	n/a	NP			
★	NE-31p-19	19.0	D-8	CL	LEAN CLAY with SAND		40	44	21	23	84.8		
	NE-31p-19	22.0	D-9	SP-SM	POORLY GRADED SAND with SILT		27	n/a	n/a	NP	9.0		
✿	NE-31p-19	24.0	D-10	MH	with organics		79	51	43	8	65.5		
○	NE-31p-19	32.5	D-13	CL	LEAN CLAY		42	28	20	8	95.5		
△	NE-31p-19	59.0	D-20		MC & AL Only		32	24	20	4			
	NE-31p-19	64.0	D-21	SM	SILTY SAND		32	n/a	n/a	NP	35.4		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

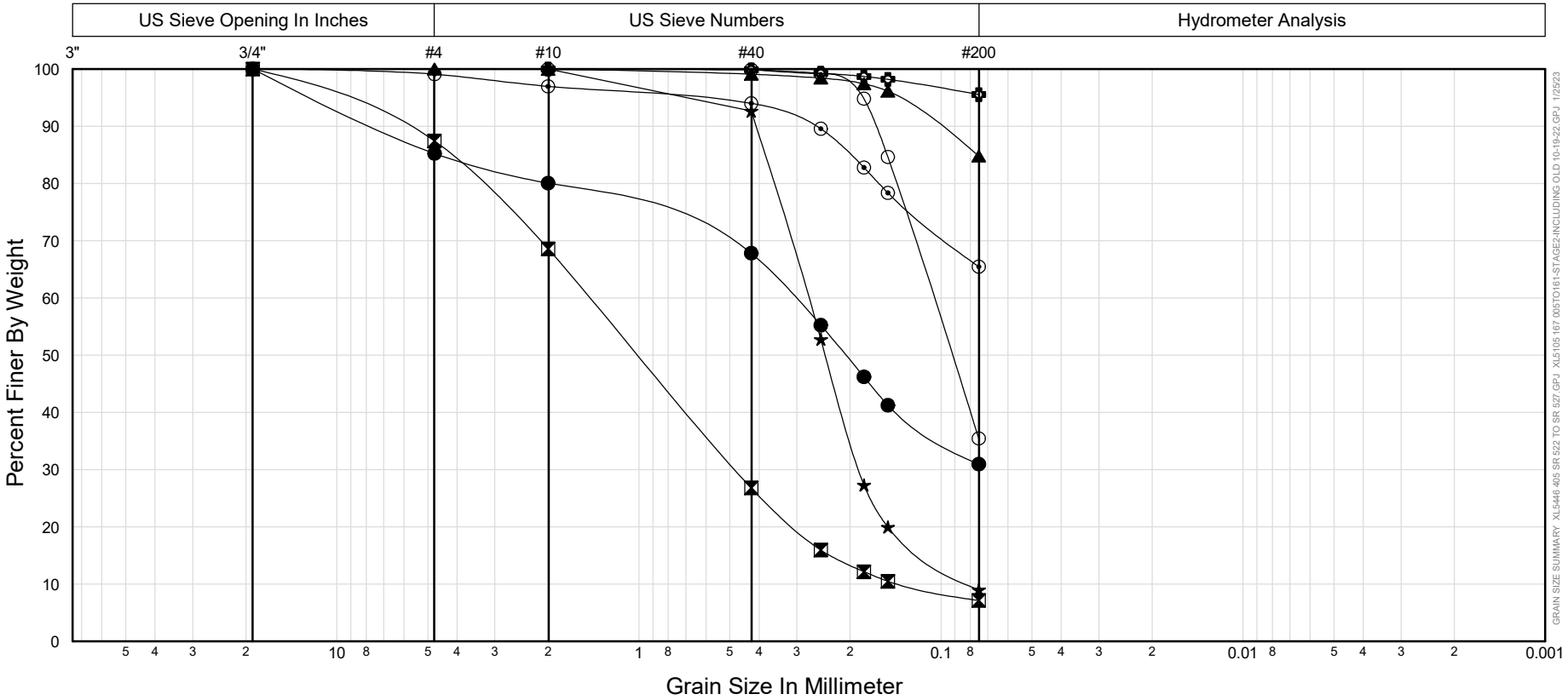
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-31p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SM	SILTY SAND	10-10-19	14	n/a	n/a	NP			14.8	54.3	31.0			7.425	0.306	0.207			
⊠	12.0	D-5	SW-SM	WELL-GRADED SAND with SILT	10-10-19	16	n/a	n/a	NP			12.6	80.3	7.1	1.2	11	6.301	1.455	1.004	0.479	0.305	0.135
▲	19.0	D-8	CL	LEAN CLAY with SAND	10-10-19	40	44	21	23			0.0	15.2	84.8			0.103					
★	22.0	D-9	SP-SM	POORLY GRADED SAND with SILT	10-10-19	27	n/a	n/a	NP			0.0	91.0	9.0	1.6	3	0.410	0.275	0.241	0.186	0.150	0.080
⊙	24.0	D-10	MH	SANDY ELASTIC SILT with organics	10-10-19	79	51	43	8			0.9	33.6	65.5			0.263					
✿	32.5	D-13	CL	LEAN CLAY	10-10-19	42	28	20	8			0.0	4.5	95.5								
○	64.0	D-21	SM	SILTY SAND	10-10-19	32	n/a	n/a	NP			0.0	64.6	35.4			0.165	0.106	0.092			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

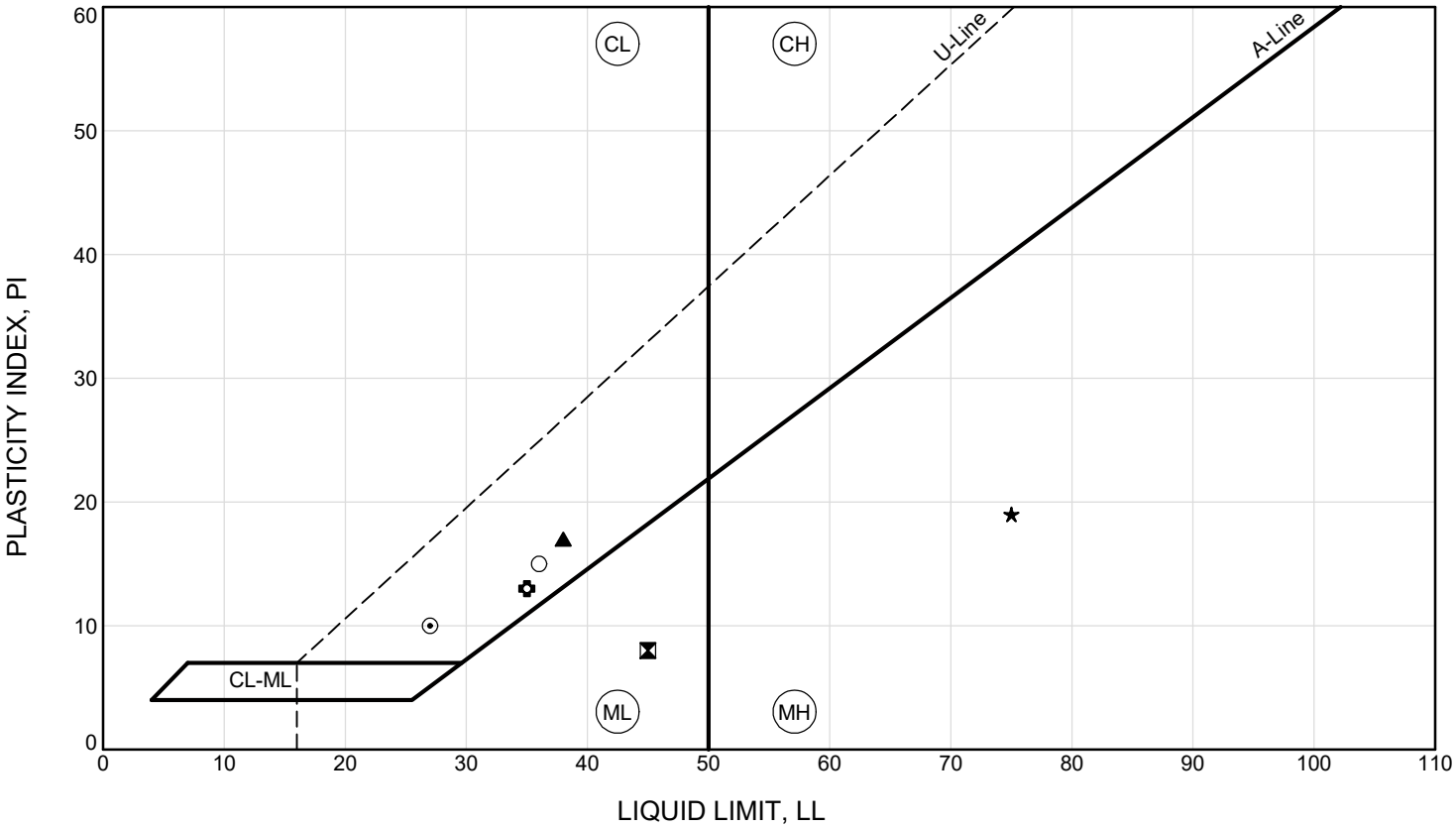


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-32p-19	4.0	D-2	GM	SILTY GRAVEL with SAND		12	n/a	n/a	NP	42.9		
⊠	NE-32p-19	12.0	D-5		MC & AL Only		49	45	37	8			
▲	NE-32p-19	14.0	D-6		MC & AL Only		43	38	21	17			
★	NE-32p-19	17.7	S-7		MC & AL Only		95	75	56	19			
⊙	NE-32p-19	25.7	S-10	CL	LEAN CLAY		44	27	17	10	87.2	60.1	27.1
✿	NE-32p-19	26.0	D-11	CL	LEAN CLAY		44	35	22	13	100.0	74.4	25.6
○	NE-32p-19	31.0	D-13		MC & AL Only		48	36	21	15			
	NE-32p-19	39.0	D-16	SM	SILTY SAND		24	n/a	n/a	NP	39.9		
	NE-32p-19	54.0	D-19	ML	SILT with SAND		28	n/a	n/a	NP	73.8		
	NE-32p-19	59.0	D-20	SM	SILTY SAND		21	n/a	n/a	NP	47.9		
	NE-32p-19	69.0	D-22		MC & AL Only		24	n/a	n/a	NP			

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/12/22

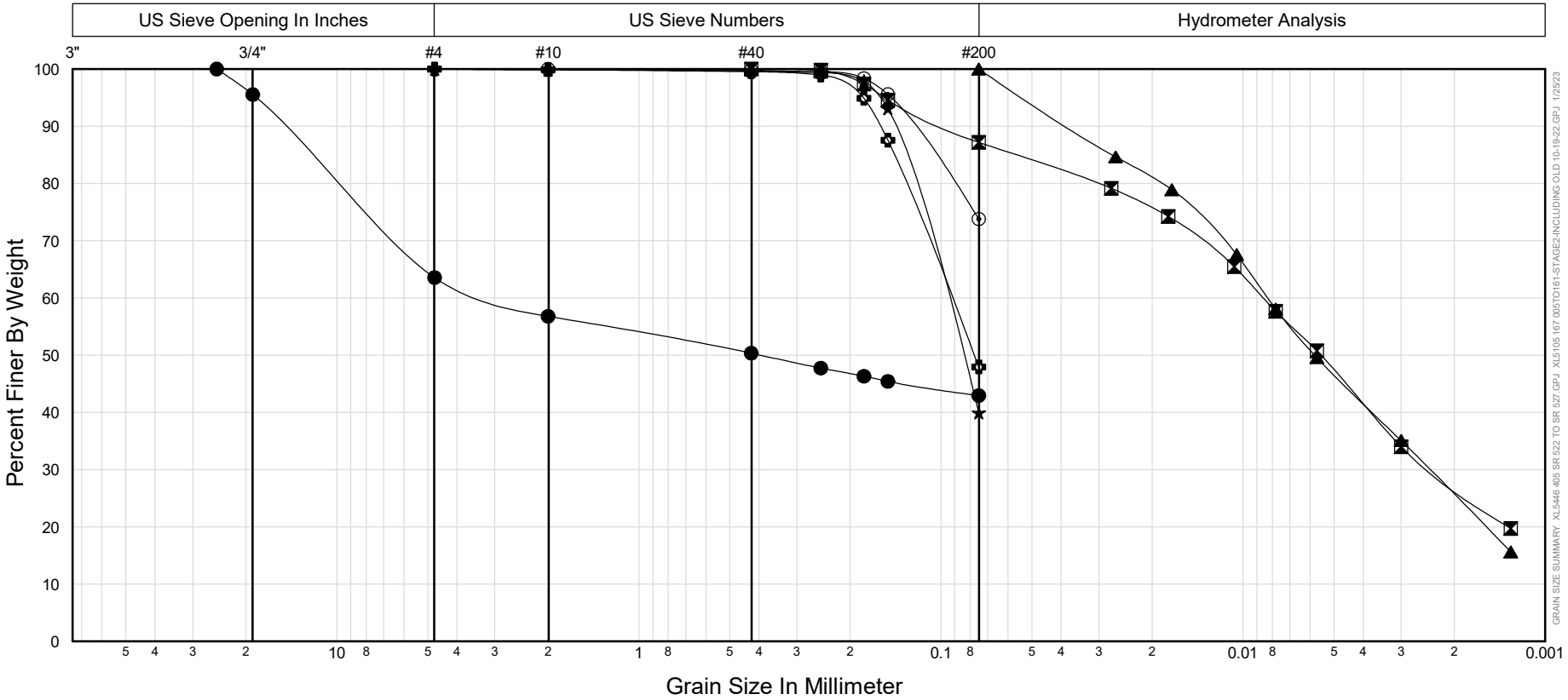
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-32p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	GM	SILTY GRAVEL with SAND	6-21-19	12	n/a	n/a	NP			36.4	20.6	42.9			14.948	3.015	0.396			
⊠	25.7	S-10	CL	LEAN CLAY	7-22-19	44	27	17	10	105	2.76	0.0	12.8	87.2			0.098	0.009	0.006	0.002	0.001	
▲	26.0	D-11	CL	LEAN CLAY	6-26-19	44	35	22	13		2.76	N/A	N/A	100.0			0.038	0.008	0.006	0.002	0.002	
★	39.0	D-16	SM	SILTY SAND	6-21-19	24	n/a	n/a	NP			0.0	60.1	39.9			0.144	0.097	0.086			
⊙	54.0	D-19	ML	SILT with SAND	6-21-19	28	n/a	n/a	NP			0.0	26.2	73.8			0.126					
✿	59.0	D-20	SM	SILTY SAND	6-21-19	21	n/a	n/a	NP			0.0	52.1	47.9			0.159	0.093	0.078			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

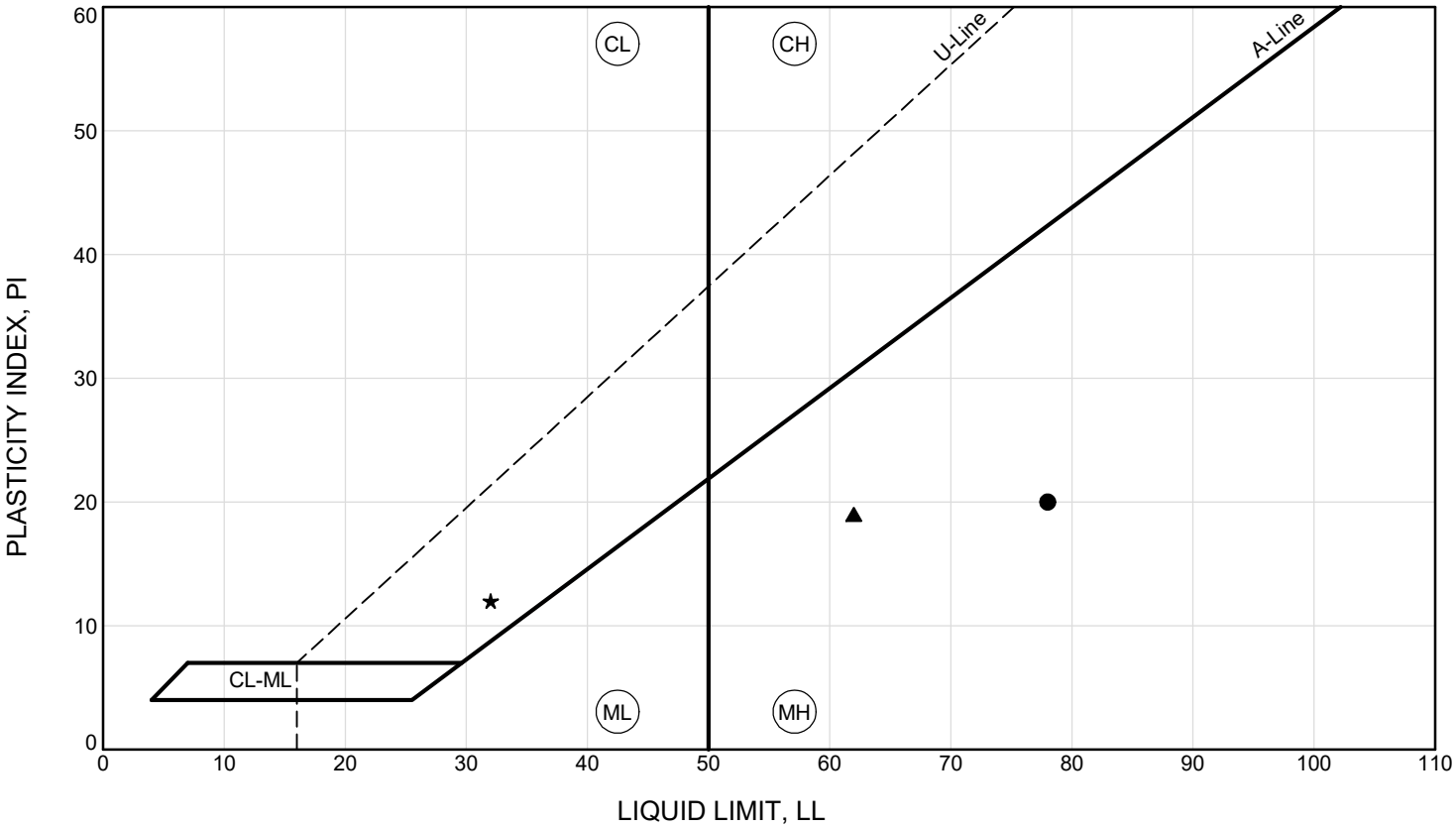


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-33-19	8.0	D-3		MC & AL Only, with Organics		106	78	58	20			
	NE-33-19	11.7	S-4		MC Only		239	n/a	n/a	NP			
▲	NE-33-19	12.0	D-5		MC & AL Only		101	62	43	19			
★	NE-33-19	16.7	S-6		MC & AL Only		53	32	20	12			
	NE-33-19	20.0	D-8	ML	SANDY SILT		30	n/a	n/a	NP	56.8		
	NE-33-19	28.0	D-11	SM	SILTY SAND		30	n/a	n/a	NP	48.8		
	NE-33-19	40.0	D-14	SM	SILTY SAND		27	n/a	n/a	NP	18.8		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

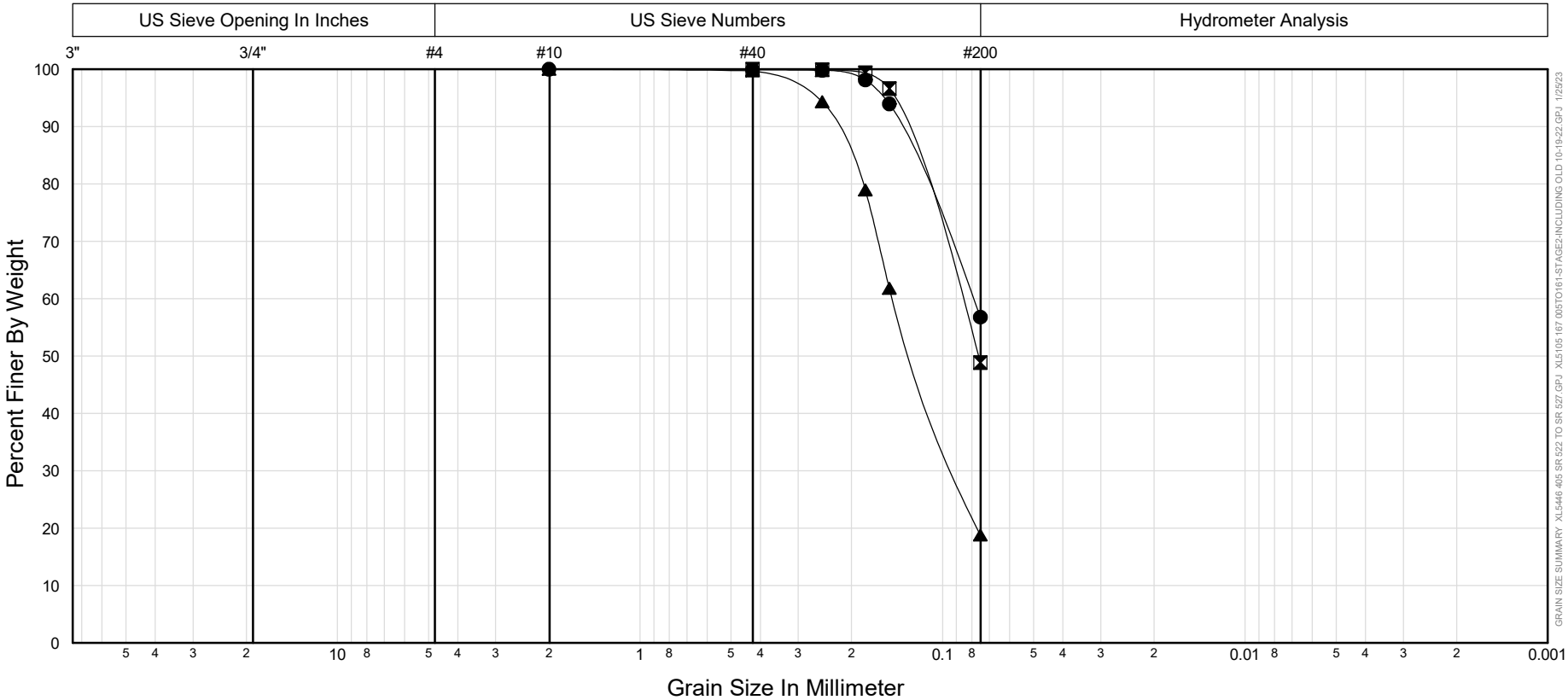
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-33-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	20.0	D-8	ML	SANDY SILT	7-23-19	30	n/a	n/a	NP			0.0	43.2	56.8			0.139	0.080				
⊠	28.0	D-11	SM	SILTY SAND	7-23-19	30	n/a	n/a	NP			0.0	51.2	48.8			0.136	0.088	0.076			
▲	40.0	D-14	SM	SILTY SAND	7-23-19	27	n/a	n/a	NP			0.0	81.2	18.8			0.228	0.146	0.124	0.090	0.076	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

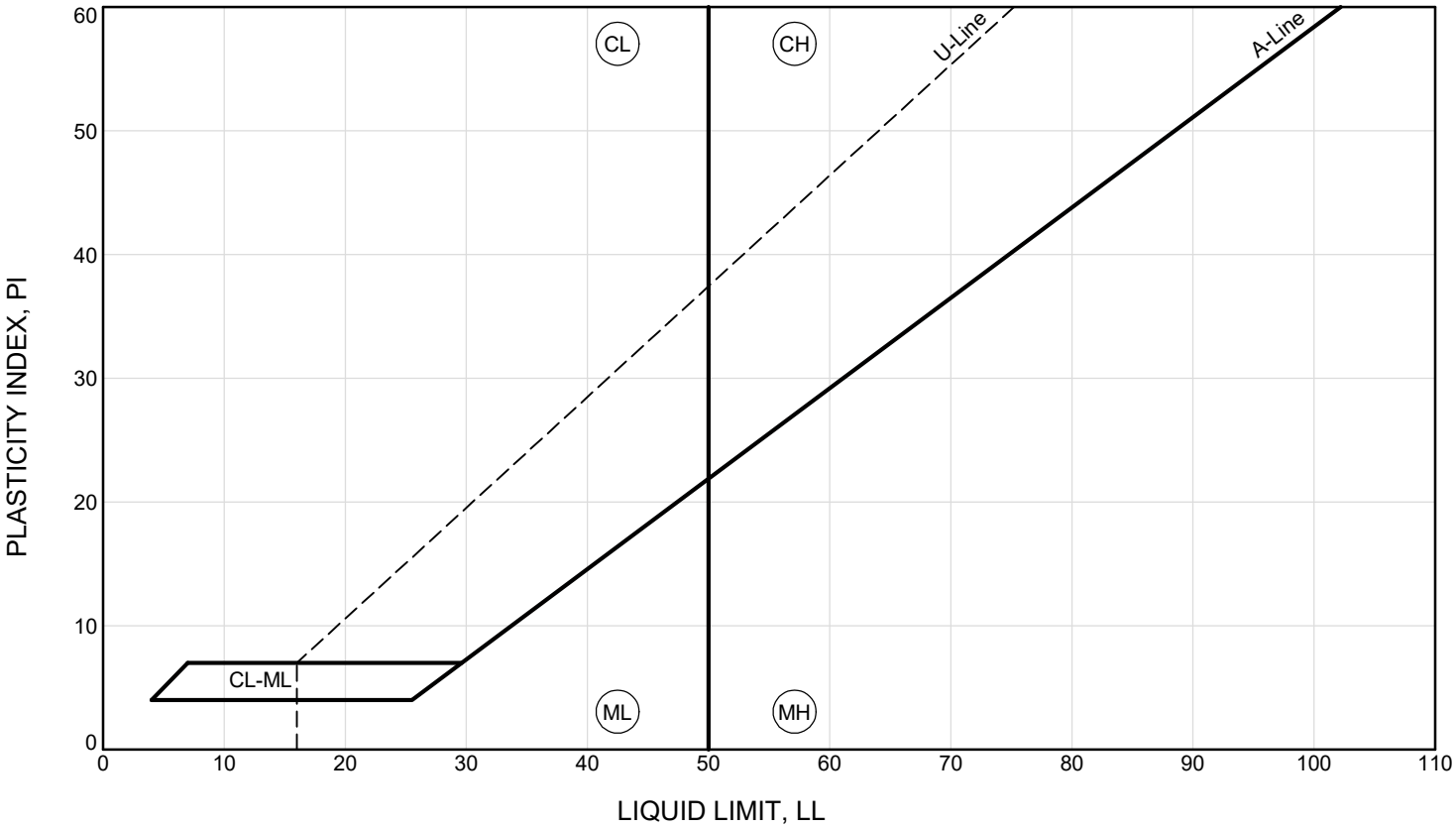


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-34p-19	4.0	D-2	SM	SILTY SAND		15	n/a	n/a	NP	14.6		
	NE-34p-19	12.0	D-5	SW-SM	WELL-GRADED SAND with SILT		19	n/a	n/a	NP	11.5	9.8	1.7
	NE-34p-19	19.0	D-8	SW-SM	WELL-GRADED SAND with SILT		16	n/a	n/a	NP	10.5		
	NE-34p-19	24.0	D-10	SP-SM	POORLY GRADED SAND with SILT		21	n/a	n/a	NP	7.2		
	NE-34p-19	29.0	D-12	SP-SM	POORLY GRADED SAND with SILT		21	n/a	n/a	NP	6.9		
	NE-34p-19	34.0	D-14	SP-SM	POORLY GRADED SAND with SILT		21	n/a	n/a	NP	8.6		
	NE-34p-19	42.0	D-17	SM	SILTY SAND with GRAVEL		6	n/a	n/a	NP	22.2		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

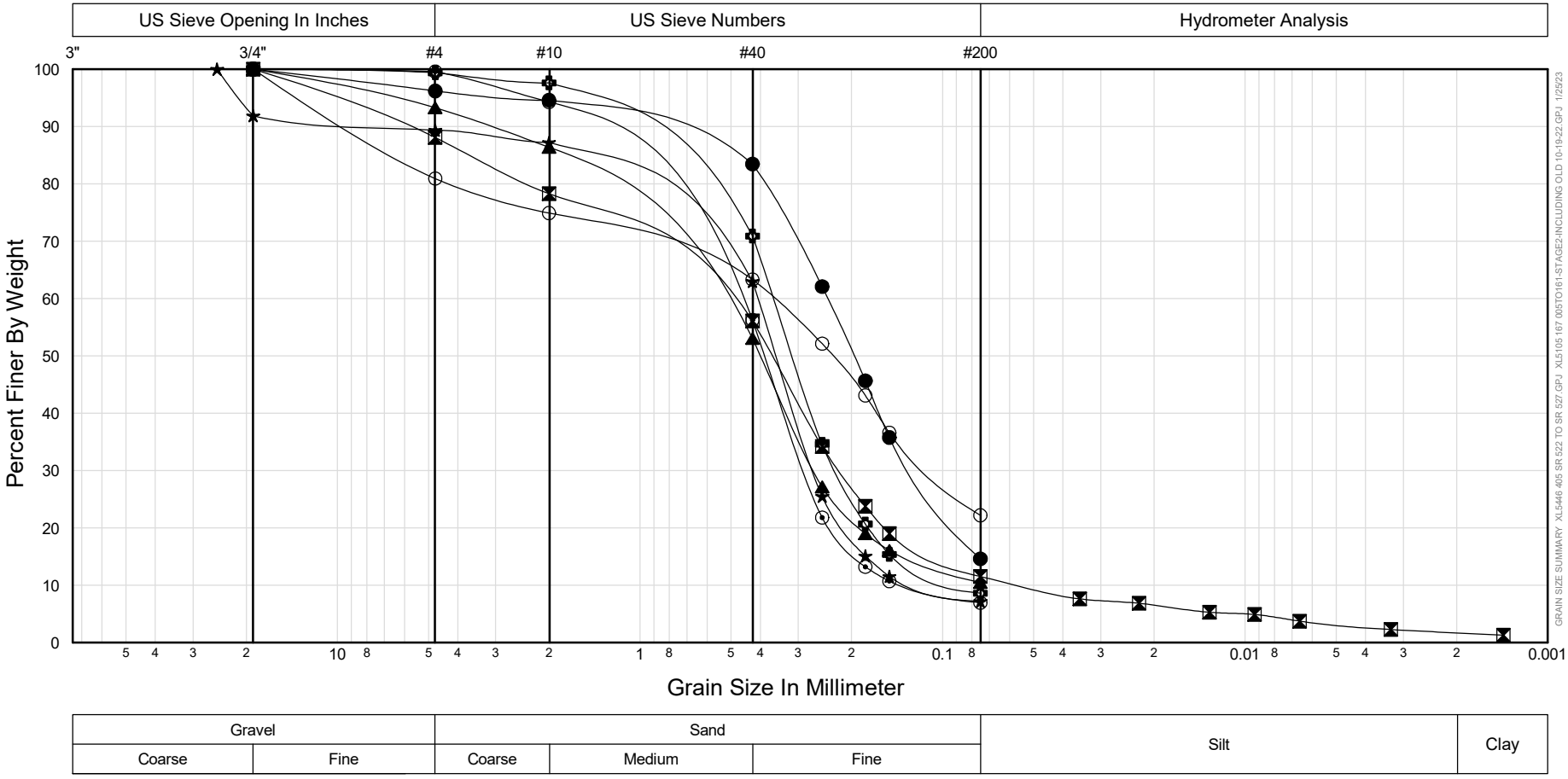
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-34p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND	5-9-19	15	n/a	n/a	NP			3.8	81.6	14.6			1.057	0.240	0.196	0.124	0.090	
⊠	12.0	D-5	SW-SM	WELL-GRADED SAND with SILT	5-10-19	19	n/a	n/a	NP		2.71	11.9	76.6	11.5	1.5	10	5.931	0.559	0.367	0.219	0.156	0.056
▲	19.0	D-8	SW-SM	WELL-GRADED SAND with SILT	5-9-19	16	n/a	n/a	NP			6.7	82.8	10.5	1.7	8	3.148	0.588	0.400	0.265	0.188	
★	24.0	D-10	SP-SM	POORLY GRADED SAND with SILT	5-9-19	21	n/a	n/a	NP			10.6	82.2	7.2	1.5	3	6.756	0.407	0.354	0.266	0.210	0.117
⊙	29.0	D-12	SP-SM	POORLY GRADED SAND with SILT	5-9-19	21	n/a	n/a	NP			0.4	92.6	6.9	1.2	4	1.680	0.495	0.386	0.284	0.233	0.132
✿	34.0	D-14	SP-SM	POORLY GRADED SAND with SILT	5-9-19	21	n/a	n/a	NP			0.6	90.8	8.6	1.6	4	1.287	0.362	0.313	0.224	0.176	0.087
○	42.0	D-17	SM	SILTY SAND with GRAVEL	5-9-19	6	n/a	n/a	NP			19.1	58.7	22.2			9.186	0.363	0.231	0.109		

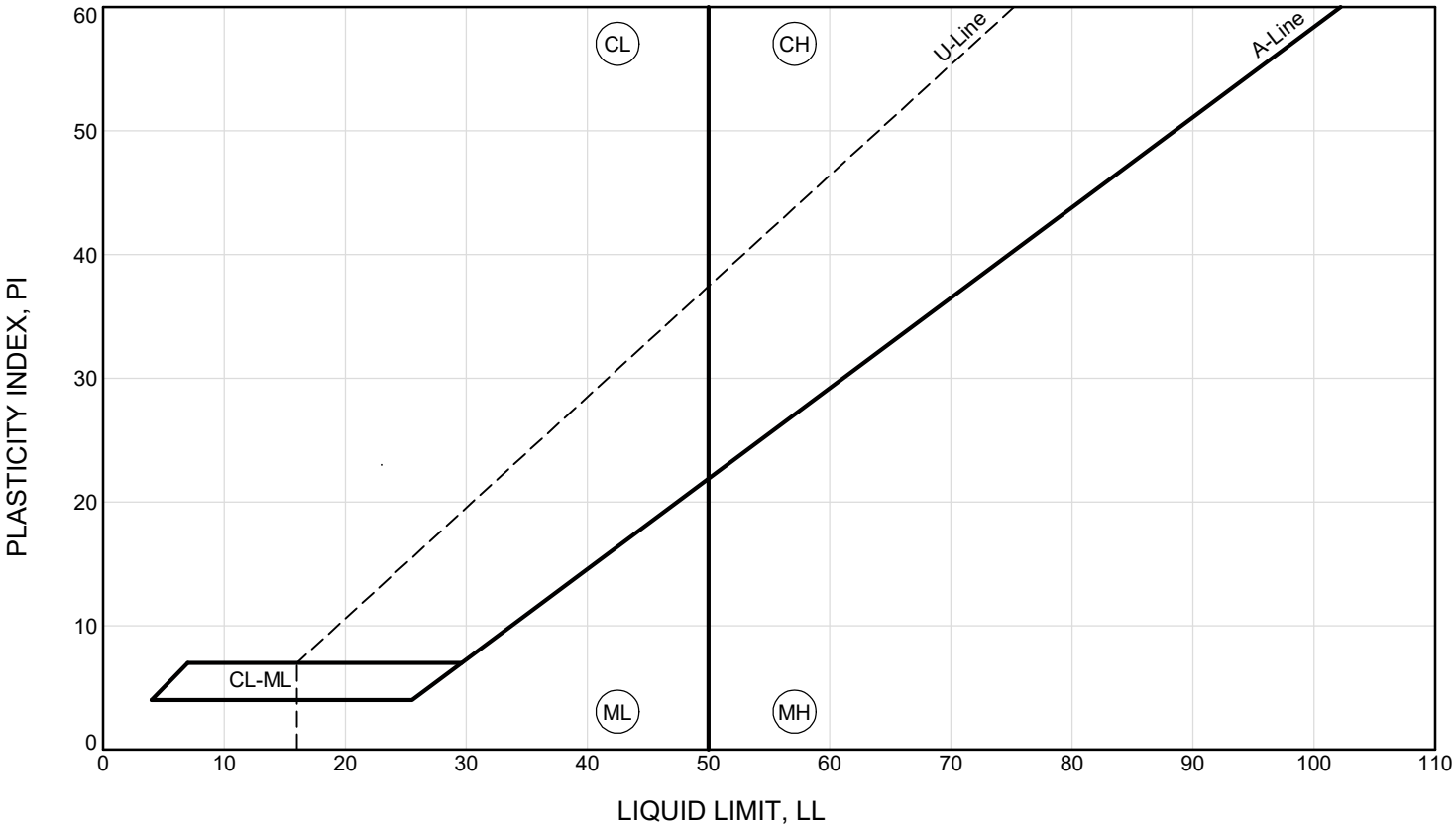
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-35p-19	9.0	D-4	SM	SILTY SAND with GRAVEL		20	n/a	n/a	NP	14.2		
	NE-35p-19	17.0	D-7	SM	SILTY SAND		22	n/a	n/a	NP	31.0		
	NE-35p-19	22.0	D-9	ML	SILT with SAND		29	23	n/a	NP	82.1		
	NE-35p-19	29.0	D-12	ML	SANDY SILT		27	n/a	n/a	NP	55.2		
	NE-35p-19	37.0	D-15	SM	SILTY SAND		20	n/a	n/a	NP	22.3		
	NE-35p-19	44.0	D-18	SM	SILTY SAND		24	n/a	n/a	NP	18.7		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

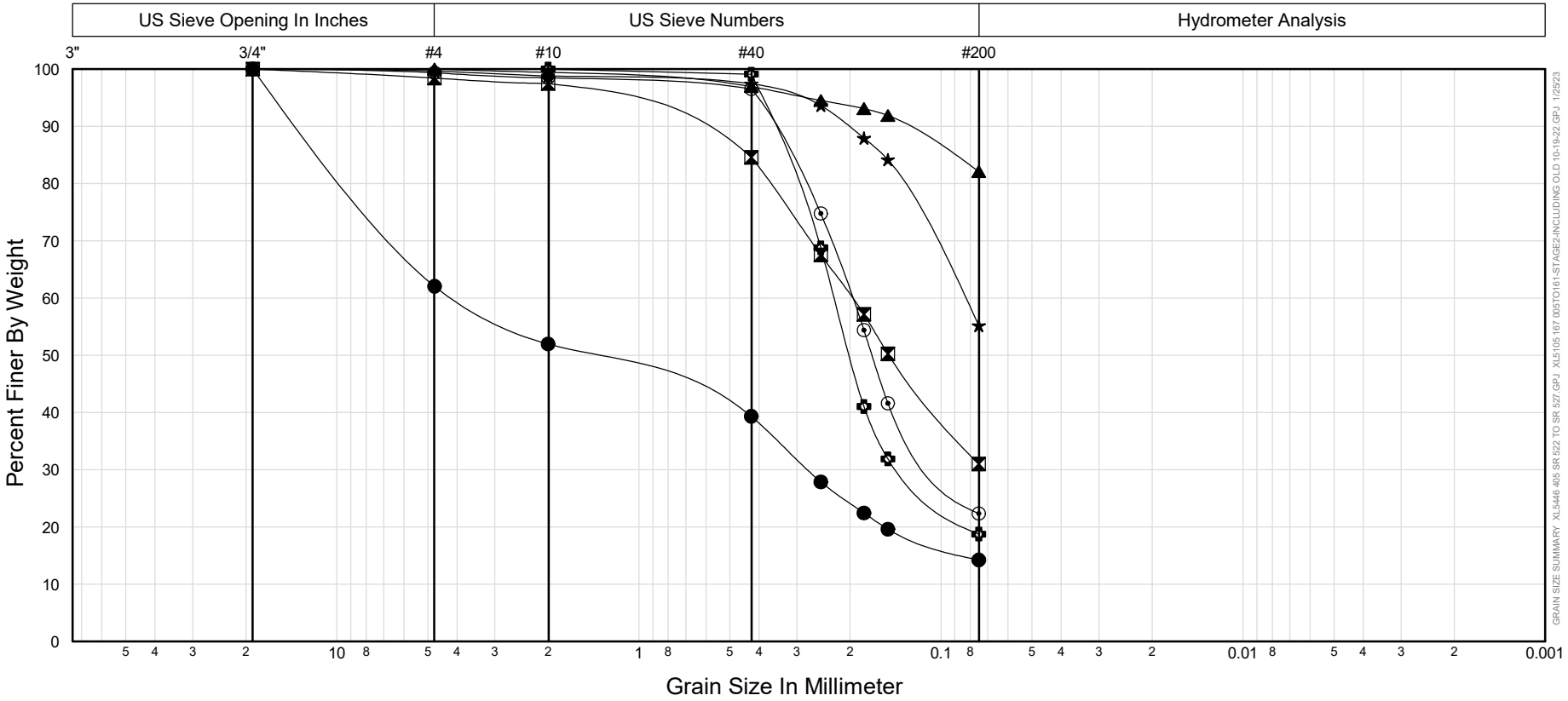
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-35p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-4	SM	SILTY SAND with GRAVEL	5-8-19	20	n/a	n/a	NP			38.0	47.8	14.2			13.186	3.984	1.571	0.276	0.154	
⊠	17.0	D-7	SM	SILTY SAND	5-8-19	22	n/a	n/a	NP			1.6	67.4	31.0			0.815	0.197	0.149			
▲	22.0	D-9	ML	SILT with SAND	5-8-19	29	23	n/a	NP			0.0	17.9	82.1			0.131					
★	29.0	D-12	ML	SANDY SILT	5-8-19	27	n/a	n/a	NP			0.3	44.5	55.2			0.203	0.084				
⊙	37.0	D-15	SM	SILTY SAND	5-8-19	20	n/a	n/a	NP			0.7	77.0	22.3			0.362	0.197	0.169	0.099		
✿	44.0	D-18	SM	SILTY SAND	5-8-19	24	n/a	n/a	NP			0.0	81.3	18.7			0.362	0.225	0.200	0.136	0.080	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

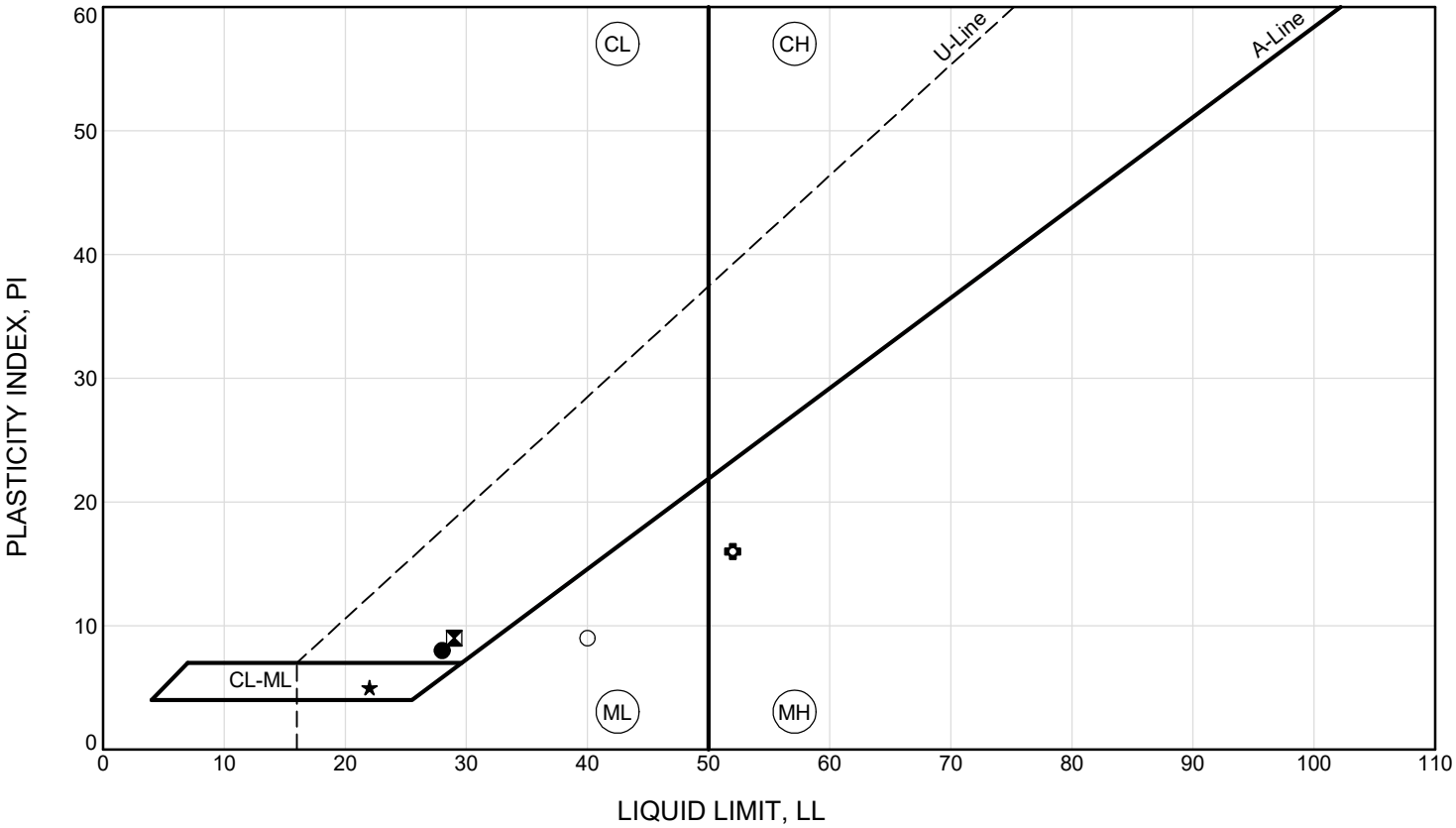


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-36p-19	4.0	D-2	CL	with organics		26	28	20	8	67.0		
⊠	NE-36p-19	12.0	D-5	CL	with organics		26	29	20	9	58.1		
	NE-36p-19	17.0	D-7	SM	SILTY SAND		14	n/a	n/a	NP	15.7		
★	NE-36p-19	27.0	D-11	CL-ML	SANDY SILTY CLAY		22	22	17	5	57.8		
	NE-36p-19	32.0	D-13	SM	with organics		15	n/a	n/a	NP	30.1		
✿	NE-36p-19	54.6	D-19	MH	with organics		38	52	36	16	67.9		
○	NE-36p-19	64.0	D-21	ML	with organics		54	40	31	9	70.4		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

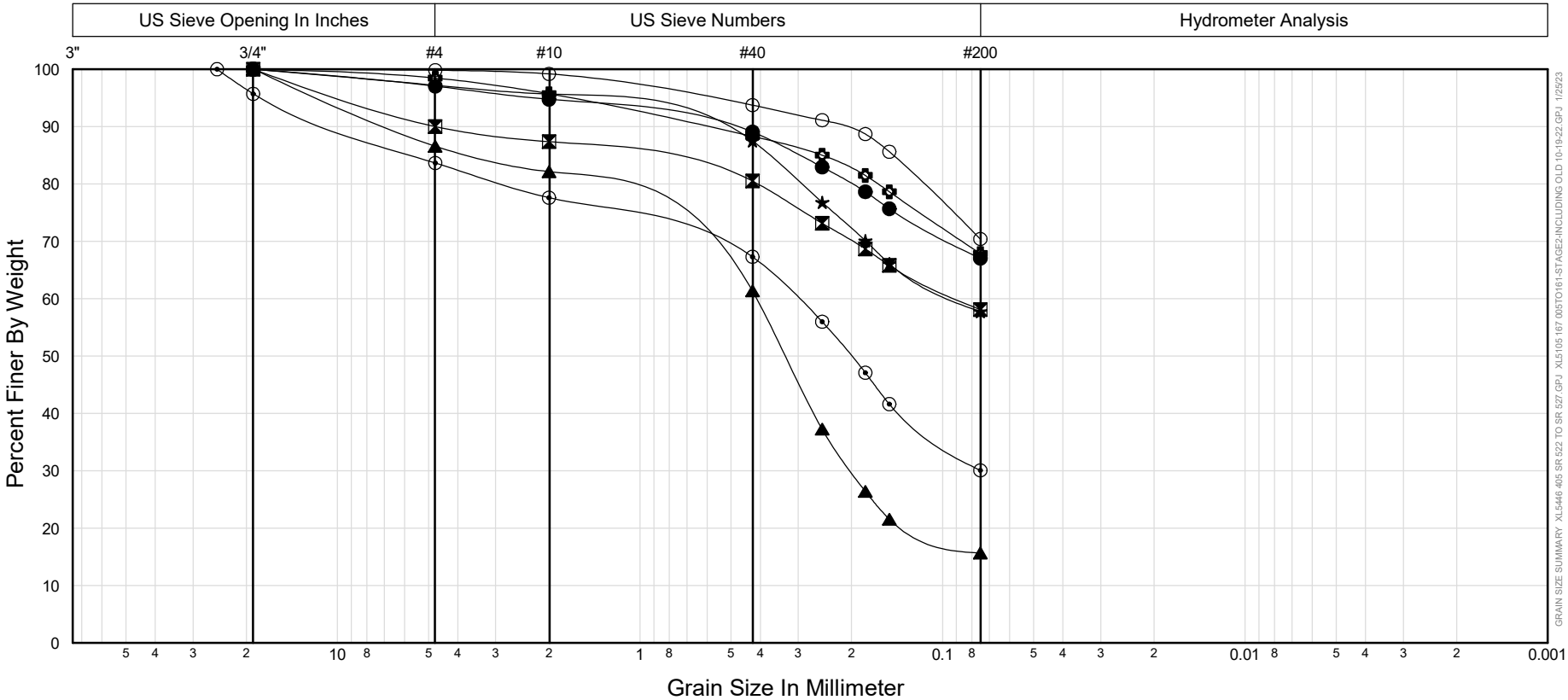
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-36p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	CL	SANDY LEAN CLAY with organics	6-25-19	26	28	20	8			3.0	30.0	67.0			0.547					
⊠	12.0	D-5	CL	SANDY LEAN CLAY with organics	6-25-19	26	29	20	9			10.0	31.9	58.1			4.750	0.089				
▲	17.0	D-7	SM	SILTY SAND	6-25-19	14	n/a	n/a	NP			13.4	70.9	15.7			6.760	0.412	0.331	0.201	0.125	
★	27.0	D-11	CL-ML	SANDY SILTY CLAY	6-25-19	22	22	17	5			2.8	39.4	57.8			0.681	0.090				
⊙	32.0	D-13	SM	SILTY SAND with GRAVEL with organics	6-25-19	15	n/a	n/a	NP			16.4	53.6	30.1			9.860	0.302	0.200			
✿	54.6	D-19B	MH	SANDY ELASTIC SILT with organics	6-25-19	38	52	36	16			1.5	30.6	67.9			0.606					
○	64.0	D-21	ML	SILT with SAND with organics	6-25-19	54	40	31	9			0.2	29.4	70.4			0.215					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

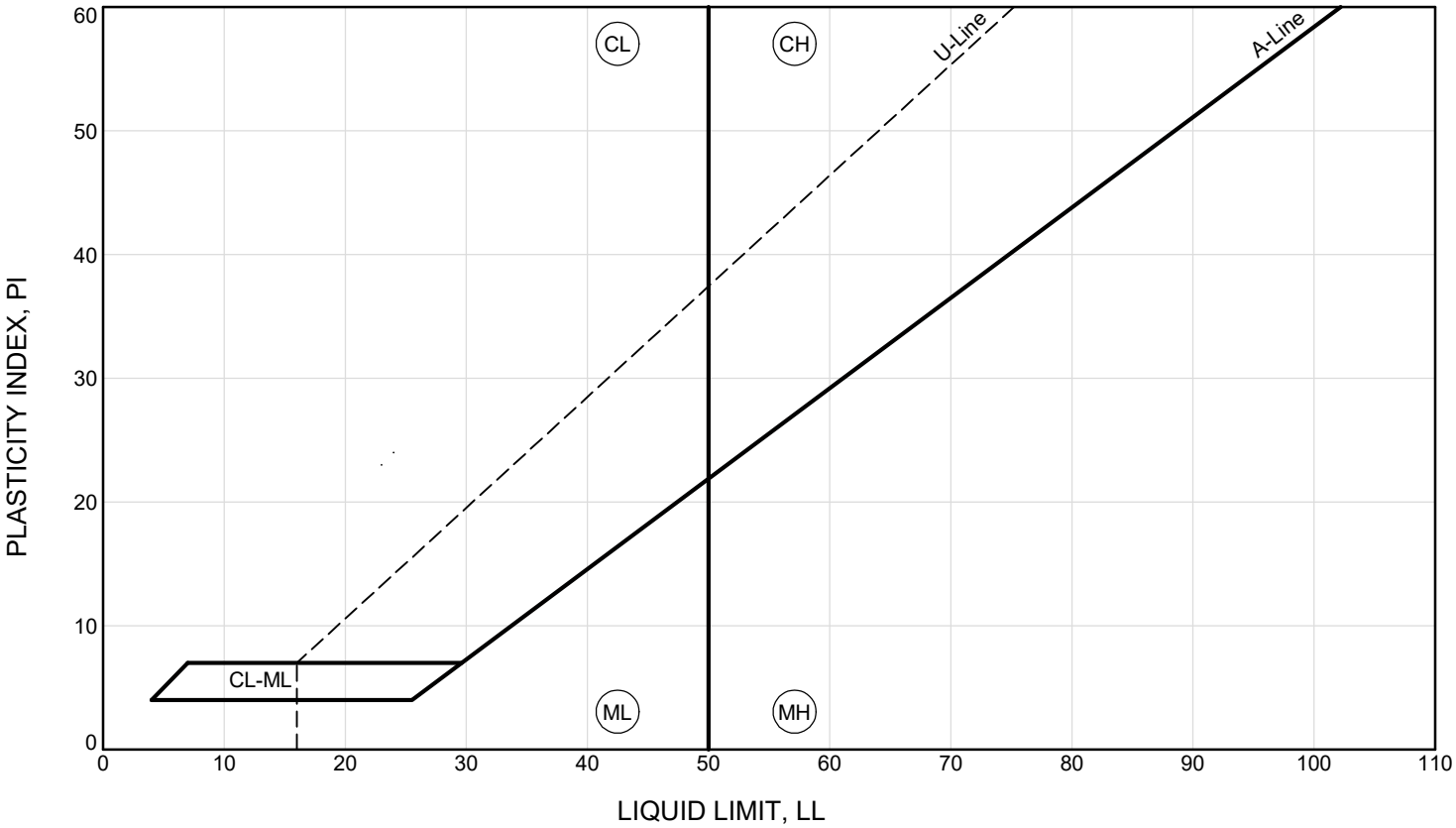


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-37-19	9.0	D-4	SM	SILTY SAND with GRAVEL		31	23	n/a	NP	31.1		
	NE-37-19	12.0	D-5	SM	with Organics		30	24	n/a	NP	38.6		
	NE-37-19	19.0	D-8	SM	and Organics		34	n/a	n/a	NP	20.8		
	NE-37-19	29.0	D-12	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		18	n/a	n/a	NP	9.1		
	NE-37-19	42.0	D-17	SM	SILTY SAND		24	n/a	n/a	NP	19.1		
	NE-37-19	54.0	D-20	SM	SILTY SAND		21	n/a	n/a	NP	20.6		
	NE-37-19	64.0	D-22	SM	SILTY SAND		16	n/a	n/a	NP	45.2		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

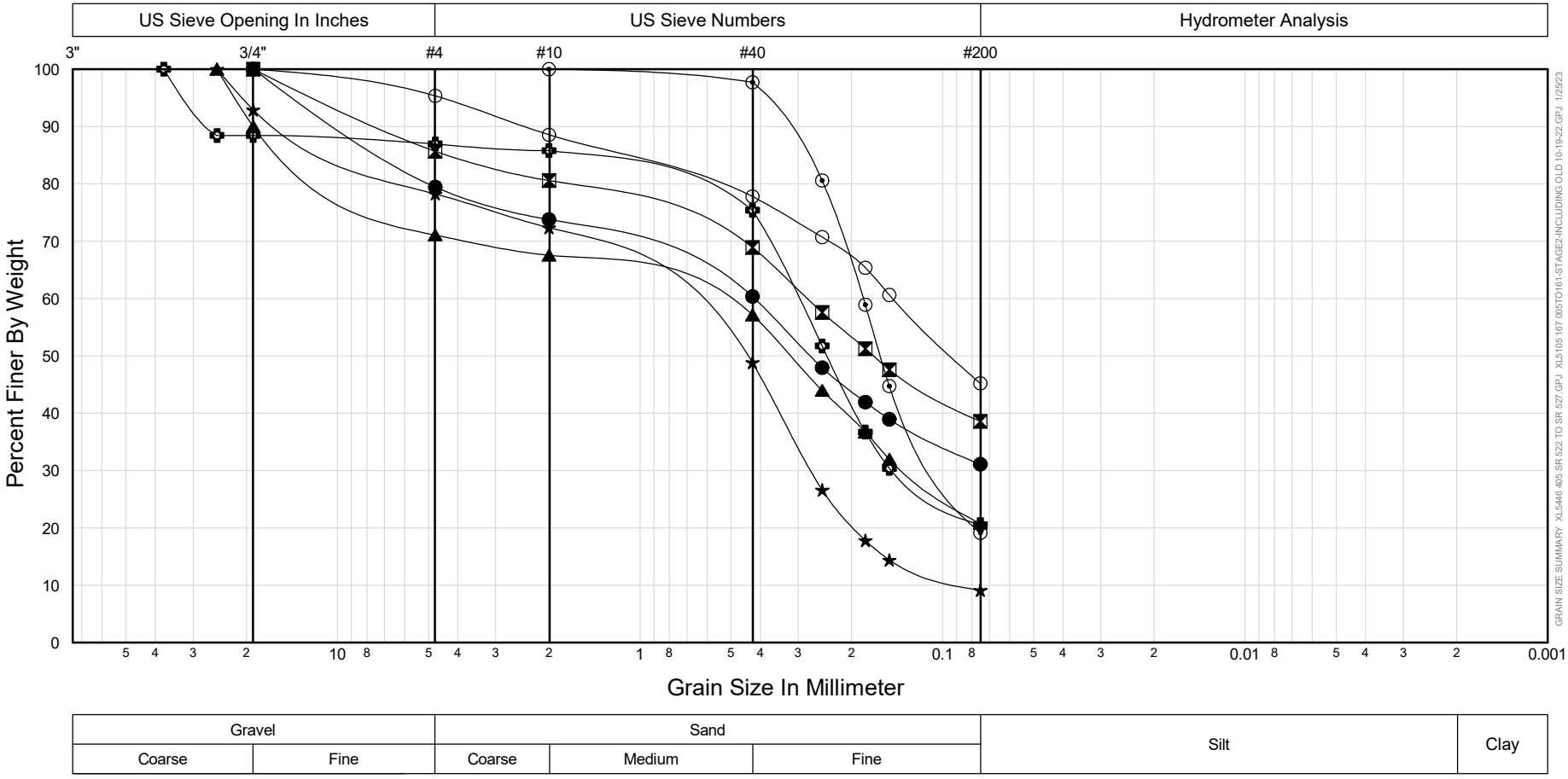
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-37-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-4	SM	SILTY SAND with GRAVEL	6-10-19	31	23	n/a	NP			20.6	48.3	31.1			9.681	0.418	0.273			
⊠	12.0	D-5	SM	SILTY SAND with Organics	6-10-19	30	24	n/a	NP			14.3	47.1	38.6			7.217	0.280	0.169			
▲	19.0	D-8	SM	SILTY SAND with GRAVEL and Organics	6-10-19	34	n/a	n/a	NP			28.9	50.3	20.8			19.000	0.650	0.319	0.133		
★	29.0	D-12	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	6-10-19	18	n/a	n/a	NP			21.8	69.1	9.1	1.0	11	14.435	0.887	0.459	0.271	0.195	0.084
⊙	42.0	D-17	SM	SILTY SAND	6-10-19	24	n/a	n/a	NP			0.0	80.9	19.1			0.335	0.183	0.161	0.101	0.077	
✿	54.0	D-20	SM	SILTY SAND	6-10-19	21	n/a	n/a	NP			13.0	66.4	20.6			26.409	0.301	0.241	0.146		
○	64.0	D-22	SM	SILTY SAND	6-10-19	16	n/a	n/a	NP			4.7	50.1	45.2			2.404	0.146	0.093			

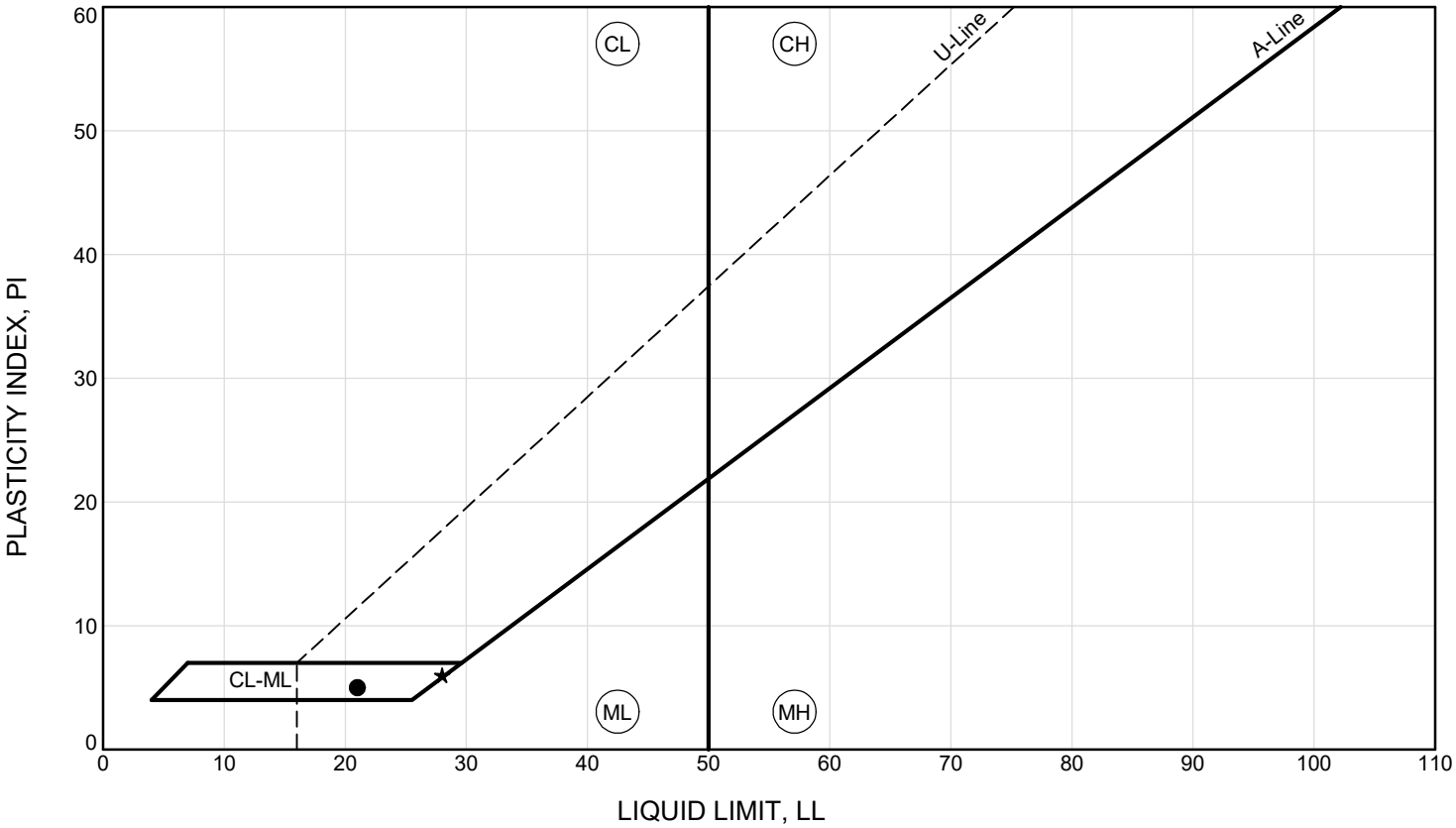
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-38-19	3.5	D-2	CL-ML	SANDY SILTY CLAY		21	21	16	5	51.8		
	NE-38-19	11.5	D-5	SM	SILTY SAND		19	n/a	n/a	NP	21.4		
	NE-38-19	16.5	D-7	SM	SILTY SAND		25	n/a	n/a	NP	40.5		
★	NE-38-19	21.5	D-9	CL-ML	SILTY CLAY		24	28	22	6	85.2		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

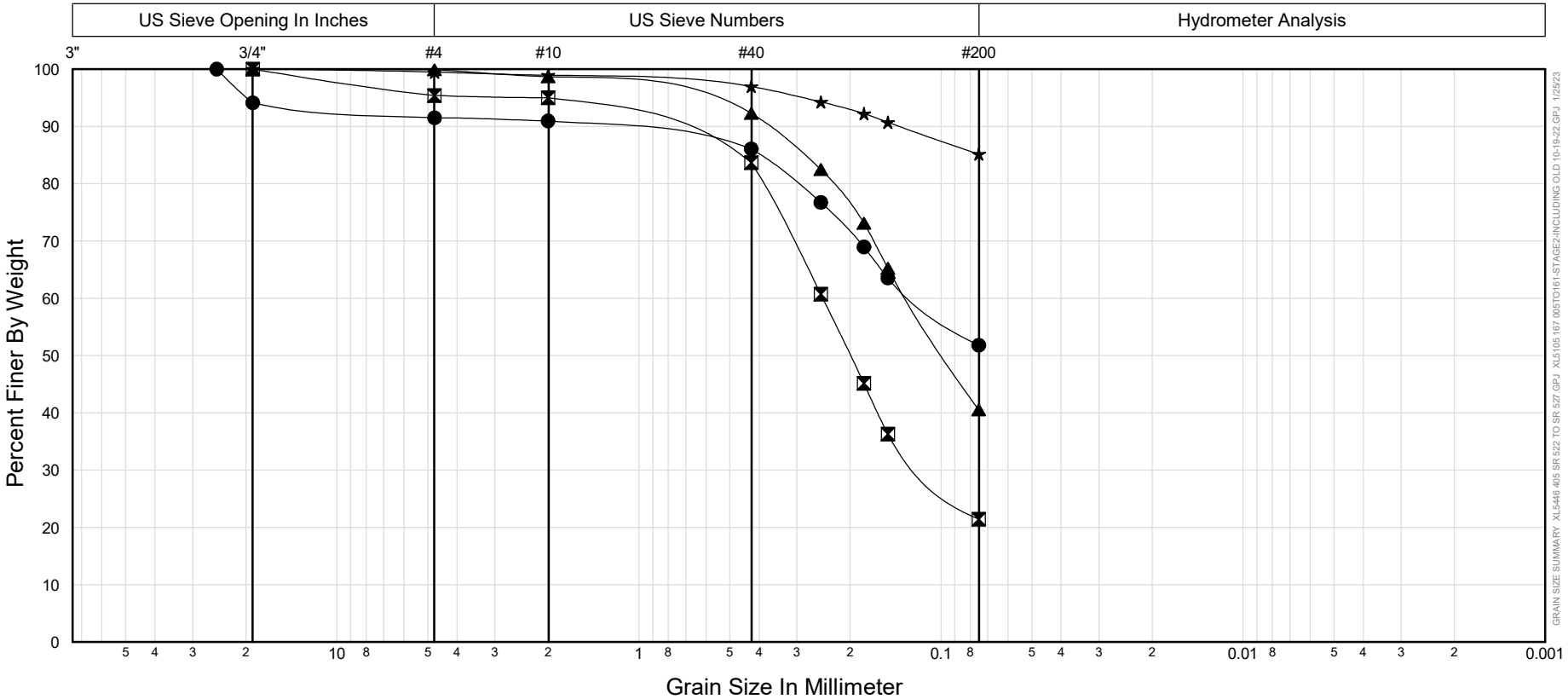
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-38-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	3.5	D-2	CL-ML	SANDY SILTY CLAY	6-10-19	21	21	16	5			8.5	39.7	51.8			1.479	0.122				
⊠	11.5	D-5	SM	SILTY SAND	6-10-19	19	n/a	n/a	NP			4.6	74.0	21.4			1.010	0.246	0.199	0.112		
▲	16.5	D-7	SM	SILTY SAND	6-10-19	25	n/a	n/a	NP			0.1	59.4	40.5			0.375	0.130	0.098			
★	21.5	D-9	CL-ML	SILTY CLAY	6-10-19	24	28	22	6			0.5	14.3	85.2			0.137					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

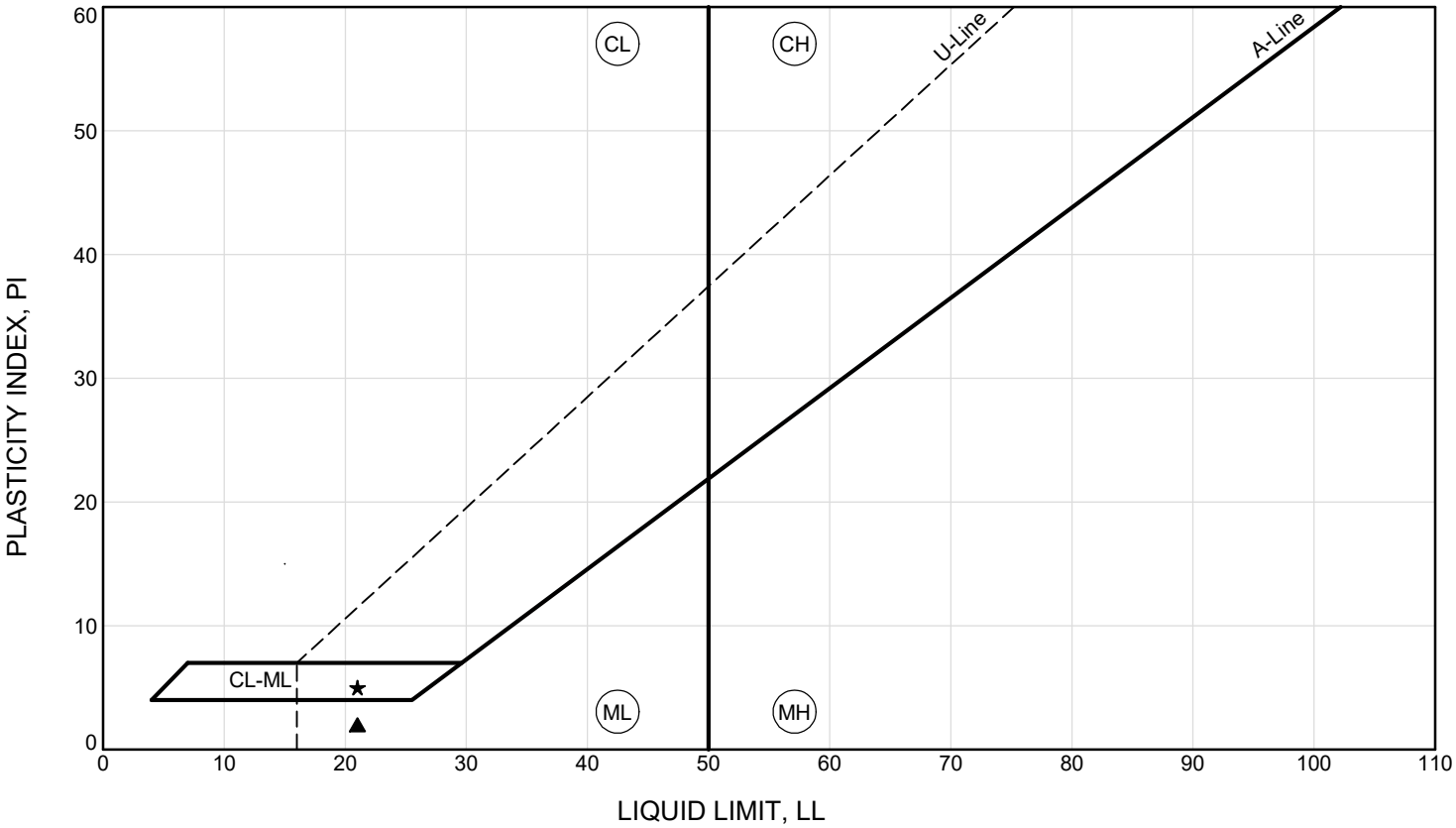


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-39-19	0.0	D-1	SM	and Organics		19	n/a	n/a	NP	31.0		
	NE-39-19	13.0	D-5	SM	SILTY SAND with GRAVEL		15	15	n/a	NP	23.9		
▲	NE-39-19	25.0	D-8	ML	SANDY SILT with GRAVEL		20	21	19	2	51.9		
★	NE-39-19	30.0	D-9	SC-SM	SILTY, CLAYEY SAND with GRAVEL		11	21	16	5	49.1		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/12/22

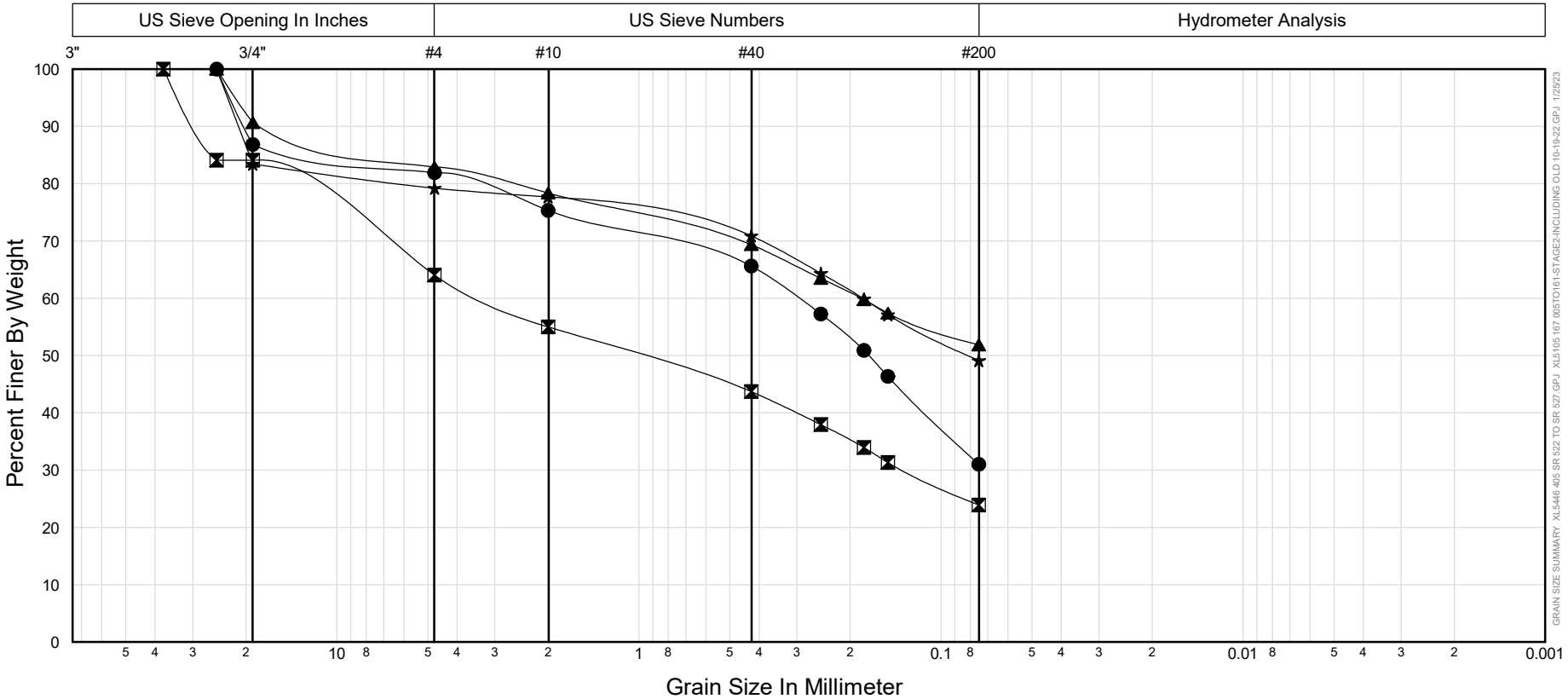
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-39-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	0.0	D-1	SM	SILTY SAND with GRAVEL and Organics	6-10-19	19	n/a	n/a	NP			18.1	50.9	31.0			20.293	0.298	0.174			
⊠	13.0	D-5	SM	SILTY SAND with GRAVEL	6-10-19	15	15	n/a	NP			35.9	40.2	23.9			29.066	3.225	1.009	0.133		
▲	25.0	D-8	ML	SANDY SILT with GRAVEL	6-10-19	20	21	19	2			17.1	31.0	51.9			16.837	0.184				
★	30.0	D-9	SC-SM	SILTY, CLAYEY SAND with GRAVEL	6-10-19	11	21	16	5			20.8	30.1	49.1			21.185	0.182	0.081			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

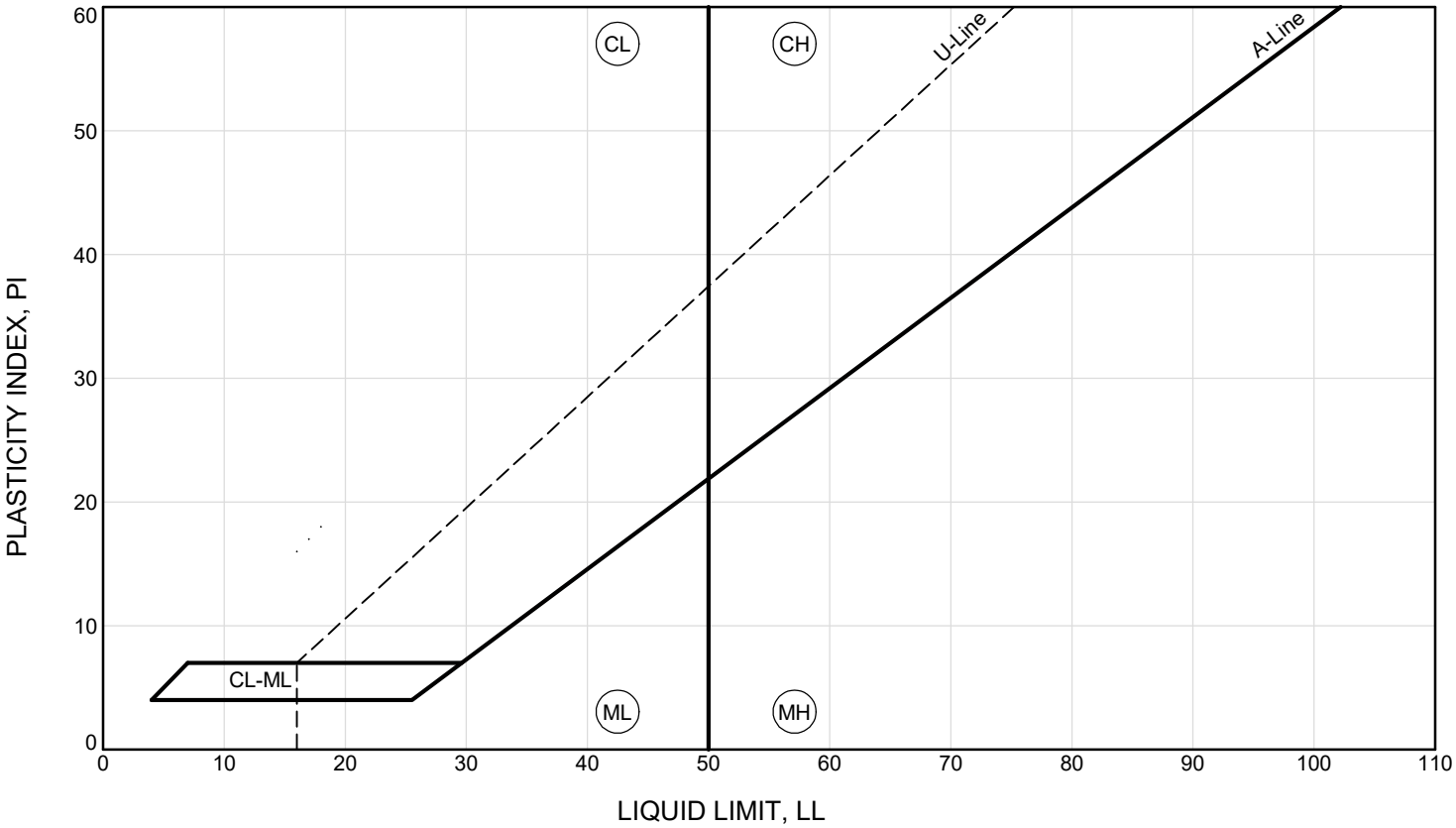


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-40-19	9.0	D-4	SM	SILTY SAND with GRAVEL		17	18	n/a	NP	28.0		
	NE-40-19	17.0	D-7	SM	SILTY SAND with GRAVEL		12	17	n/a	NP	14.7		
	NE-40-19	19.0	D-8	SM	SILTY SAND		15	16	n/a	NP	33.7		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

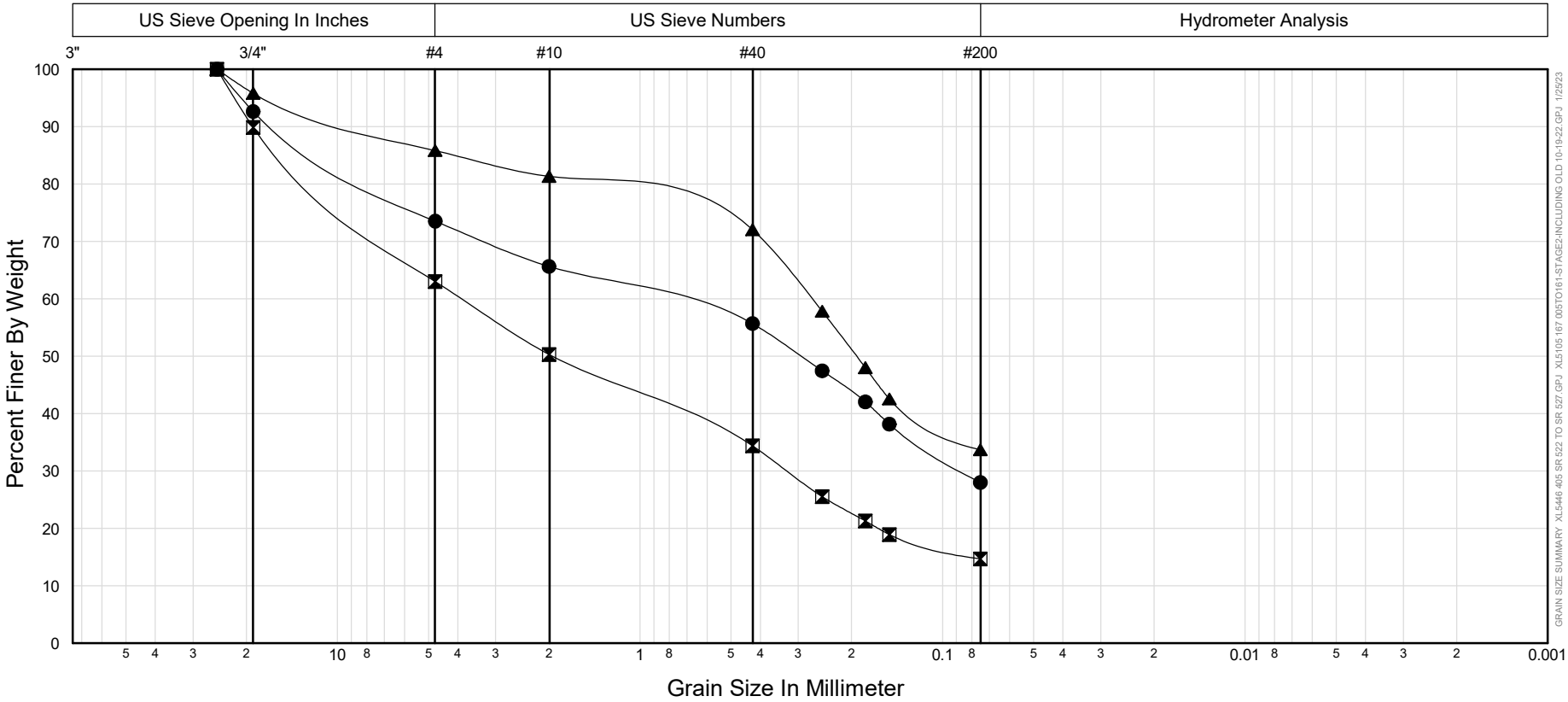
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-40-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-4	SM	SILTY SAND with GRAVEL	6-10-19	17	18	n/a	NP			26.5	45.5	28.0			15.707	0.832	0.295	0.086		
⊠	17.0	D-7	SM	SILTY SAND with GRAVEL	6-10-19	12	17	n/a	NP			37.0	48.3	14.7			19.078	3.875	1.942	0.327	0.163	
▲	19.0	D-8	SM	SILTY SAND	6-10-19	15	16	n/a	NP			14.2	52.1	33.7			8.486	0.271	0.192			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

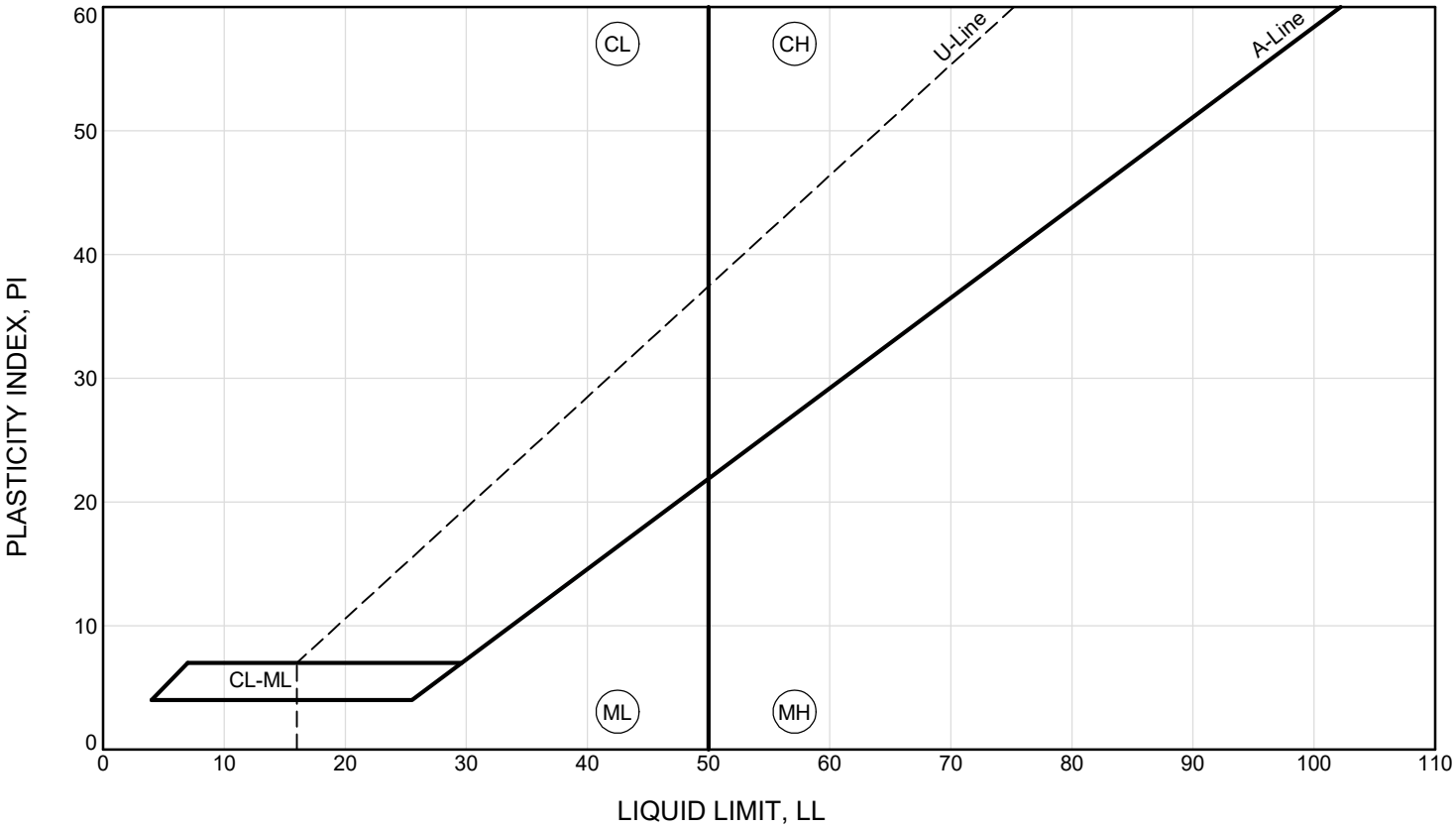


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-41-19	4.0	D-2	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	20.2		
	NE-41-19	12.0	D-5	SM	SILTY SAND with GRAVEL		14	n/a	n/a	NP	18.5		
	NE-41-19	19.0	D-8	SM	SILTY SAND with GRAVEL		12	n/a	n/a	NP	22.9		
	NE-41-19	22.0	D-9	SM	SILTY SAND		13	n/a	n/a	NP	40.2		
	NE-41-19	37.0	D-15	SM	SILTY SAND		24	n/a	n/a	NP	26.1		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

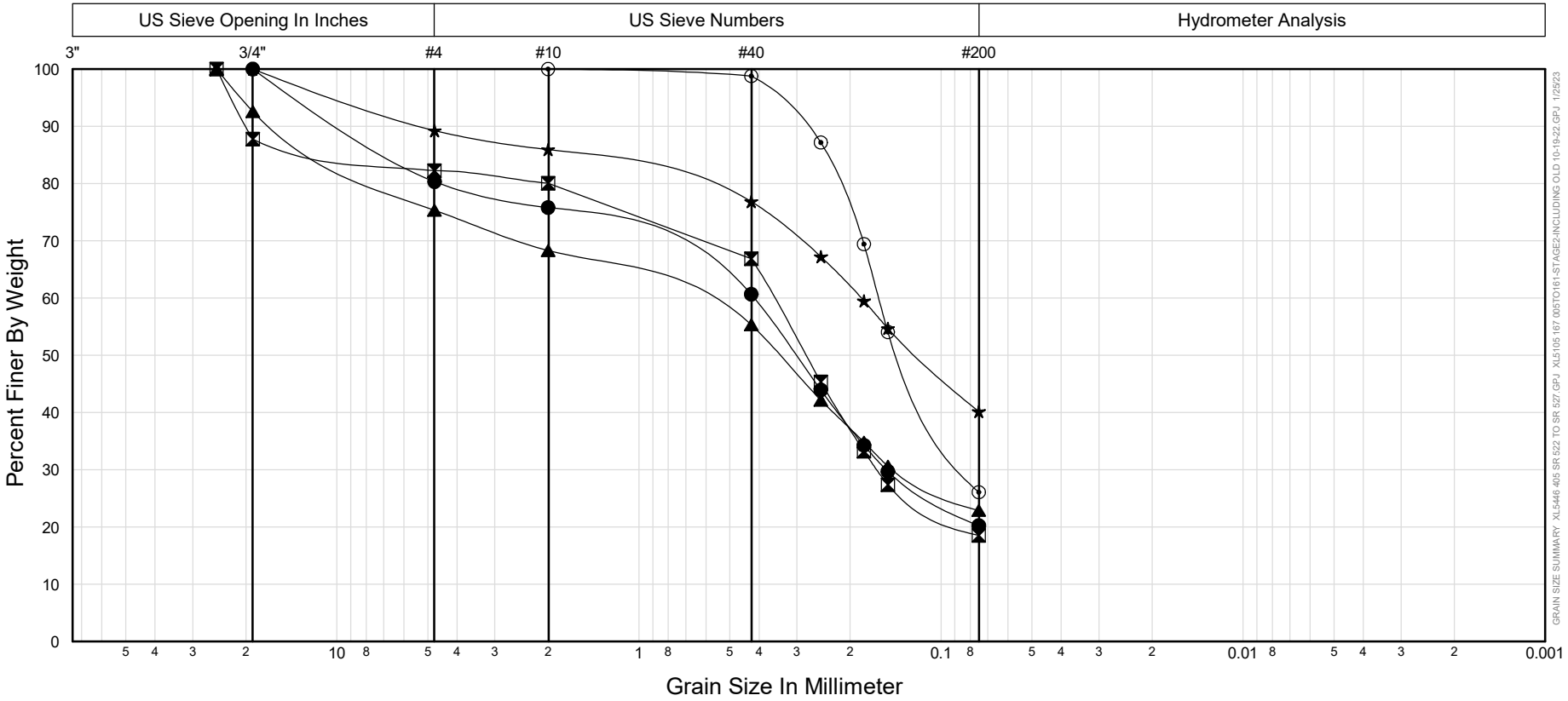
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-41-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND with GRAVEL	6-21-19	11	n/a	n/a	NP			19.7	60.1	20.2			9.390	0.416	0.303	0.152		
⊠	12.0	D-5	SM	SILTY SAND with GRAVEL	6-21-19	14	n/a	n/a	NP			17.8	63.7	18.5			19.977	0.359	0.280	0.163	0.084	
▲	19.0	D-8	SM	SILTY SAND with GRAVEL	6-21-19	12	n/a	n/a	NP			24.7	52.5	22.9			15.441	0.742	0.343	0.142		
★	22.0	D-9	SM	SILTY SAND	6-21-19	13	n/a	n/a	NP			10.8	49.1	40.2			5.238	0.184	0.120			
⊙	37.0	D-15	SM	SILTY SAND	6-21-19	24	n/a	n/a	NP			0.0	73.9	26.1			0.285	0.161	0.136	0.083		

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

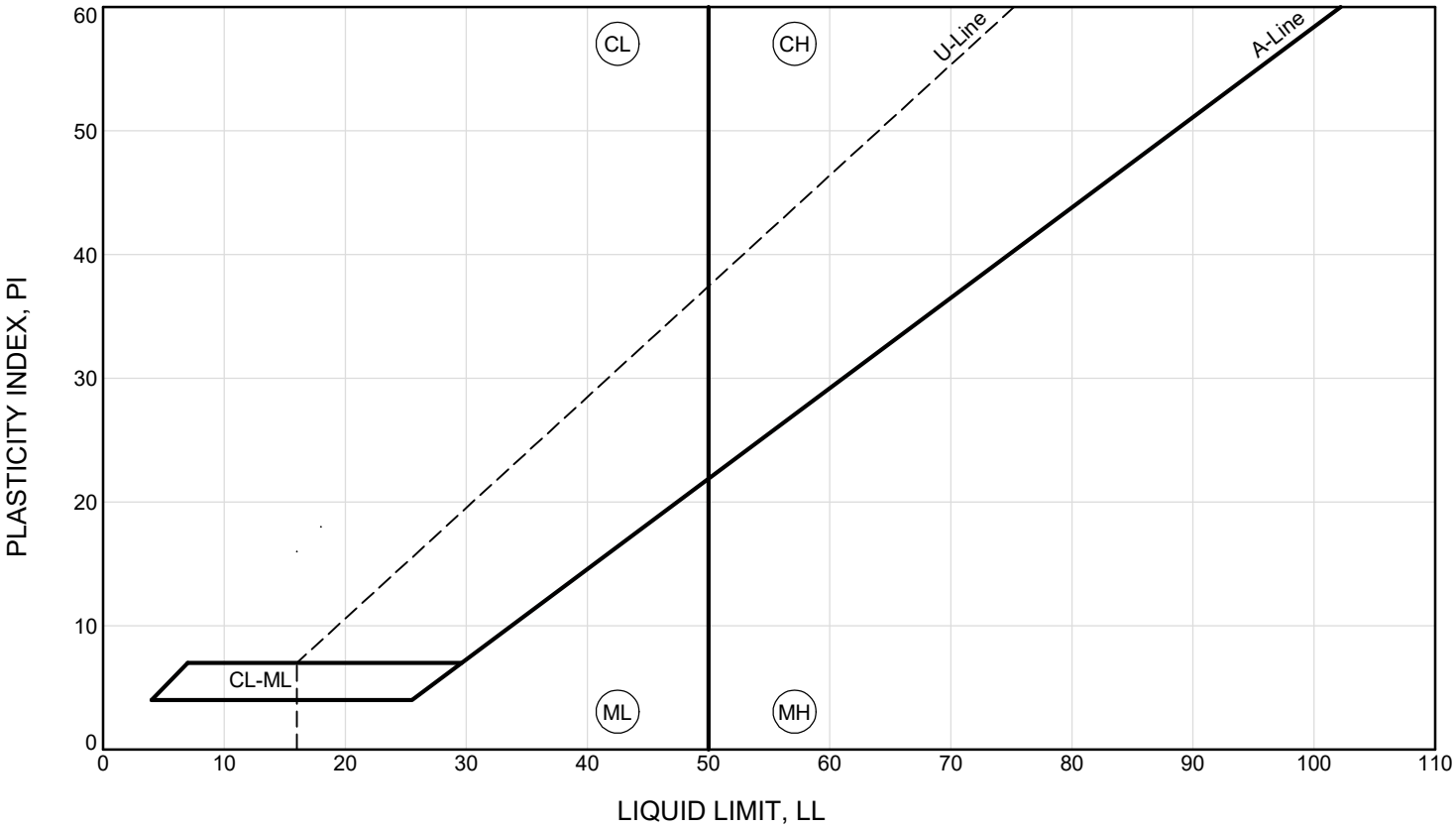


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-42p-19	7.0	D-3	SM	SILTY SAND with GRAVEL		32	18	n/a	NP	29.2		
	NE-42p-19	9.0	D-4	SM	SILTY SAND with GRAVEL		19	n/a	n/a	NP	24.2		
	NE-42p-19	17.0	D-7	SM	SILTY SAND with GRAVEL		17	16	n/a	NP	27.1		
	NE-42p-19	24.0	D-10	SM	with organics		12	n/a	n/a	NP	16.1		
	NE-42p-19	32.0	D-13	SM	SILTY SAND		21	n/a	n/a	NP	13.7		
	NE-42p-19	37.0	D-15	SM	SILTY SAND with GRAVEL		9	n/a	n/a	NP	23.4		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

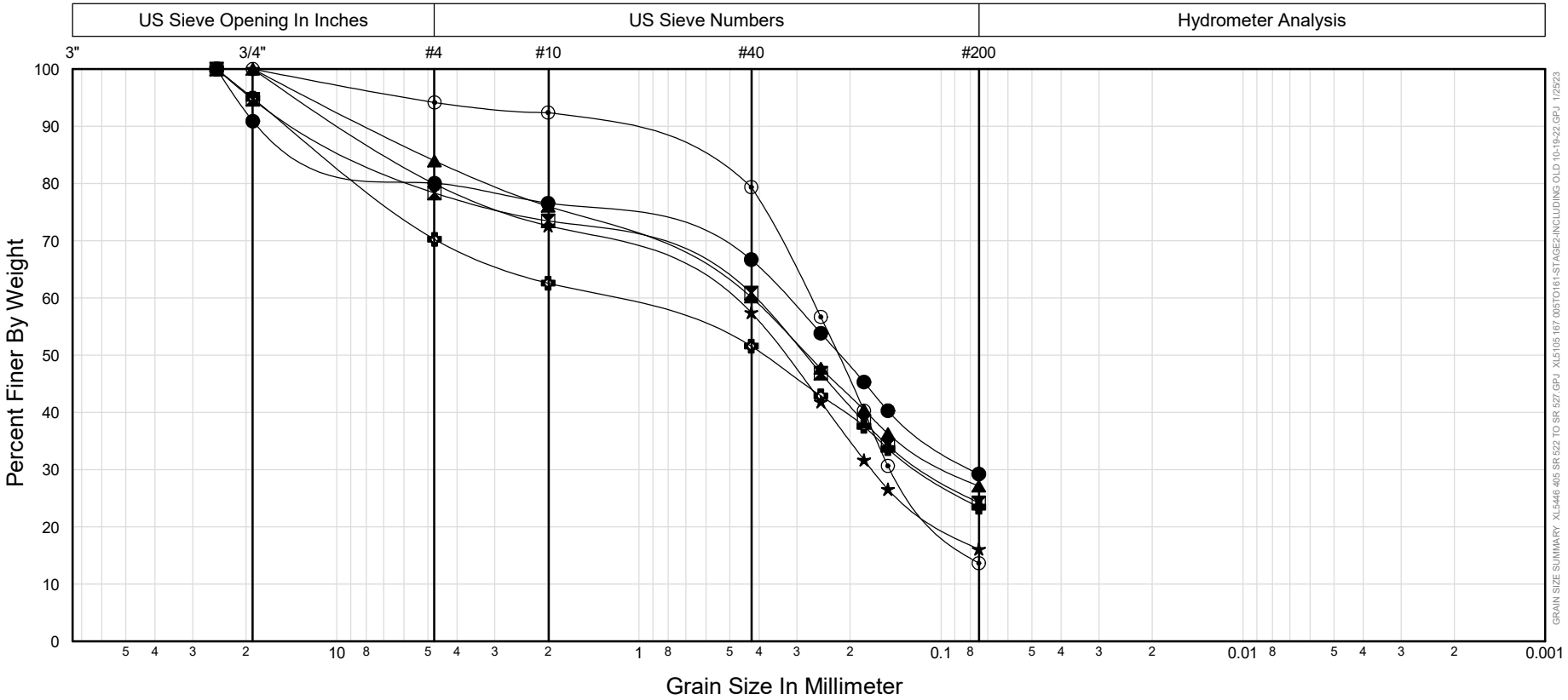
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-42p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SM	SILTY SAND with GRAVEL	6-25-19	32	18	n/a	NP			20.0	50.8	29.2			16.957	0.322	0.216	0.079		
⊠	9.0	D-4	SM	SILTY SAND with GRAVEL	6-25-19	19	n/a	n/a	NP			21.7	54.1	24.2			12.762	0.411	0.282	0.112		
▲	17.0	D-7	SM	SILTY SAND with GRAVEL	6-25-19	17	16	n/a	NP			16.0	56.8	27.1			8.003	0.422	0.276	0.093		
★	24.0	D-10	SM	SILTY SAND with GRAVEL with organics	6-25-19	12	n/a	n/a	NP			20.1	63.8	16.1			9.523	0.551	0.330	0.169	0.097	
⊙	32.0	D-13	SM	SILTY SAND	6-25-19	21	n/a	n/a	NP			5.8	80.5	13.7			1.504	0.270	0.219	0.146	0.097	
✿	37.0	D-15	SM	SILTY SAND with GRAVEL	6-25-19	9	n/a	n/a	NP			29.8	46.8	23.4			14.418	1.390	0.386	0.117		

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

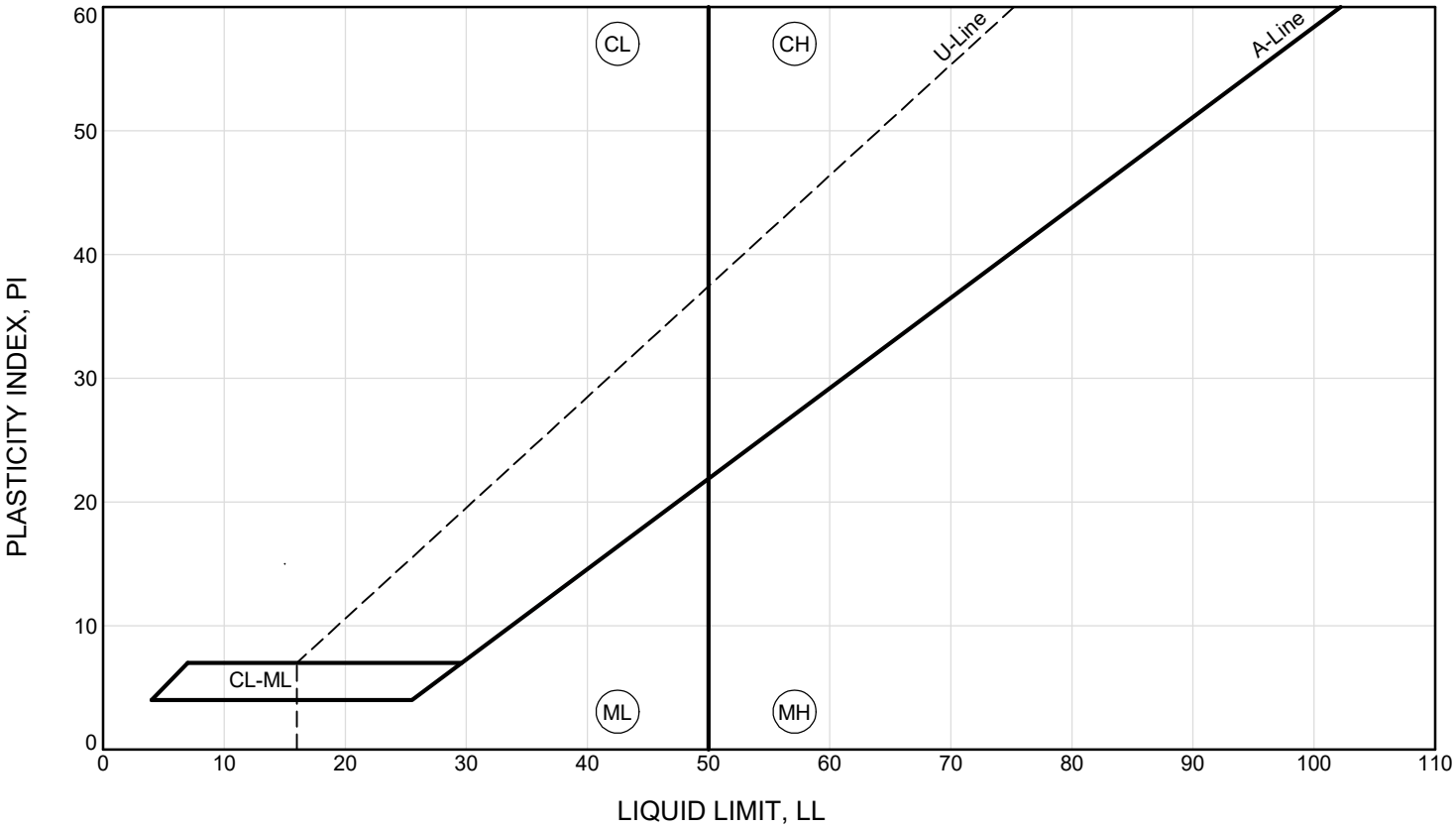


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-43-19	8.0	D-3	SM	SILTY SAND with GRAVEL		11	15	n/a	NP	26.2		
	NE-43-19	15.0	D-6	SM	SILTY SAND with GRAVEL		15	n/a	n/a	NP	17.8		
	NE-43-19	20.0	D-8	SM	SILTY SAND with GRAVEL		16	n/a	n/a	NP	20.2		
	NE-43-19	23.0	D-9	SM	SILTY SAND		24	n/a	n/a	NP	17.4		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

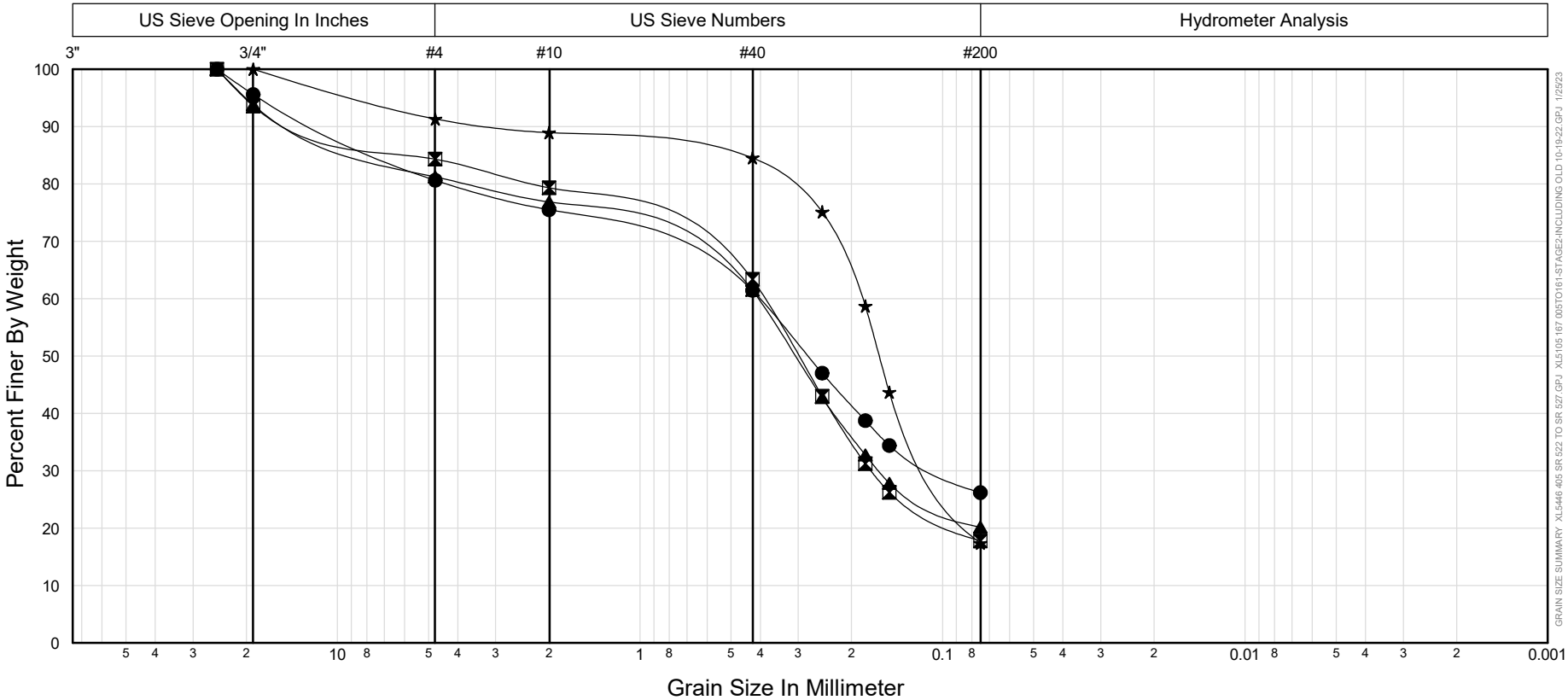
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-43-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	8.0	D-3	SM	SILTY SAND with GRAVEL	6-21-19	11	15	n/a	NP			19.4	54.4	26.2			11.316	0.403	0.279	0.103		
⊠	15.0	D-6	SM	SILTY SAND with GRAVEL	6-21-19	15	n/a	n/a	NP			15.7	66.5	17.8			11.110	0.389	0.300	0.172	0.090	
▲	20.0	D-8	SM	SILTY SAND with GRAVEL	6-21-19	16	n/a	n/a	NP			18.8	61.1	20.2			12.516	0.408	0.307	0.163		
★	23.0	D-9	SM	SILTY SAND	6-21-19	24	n/a	n/a	NP			8.7	73.9	17.4			2.939	0.185	0.162	0.105	0.080	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

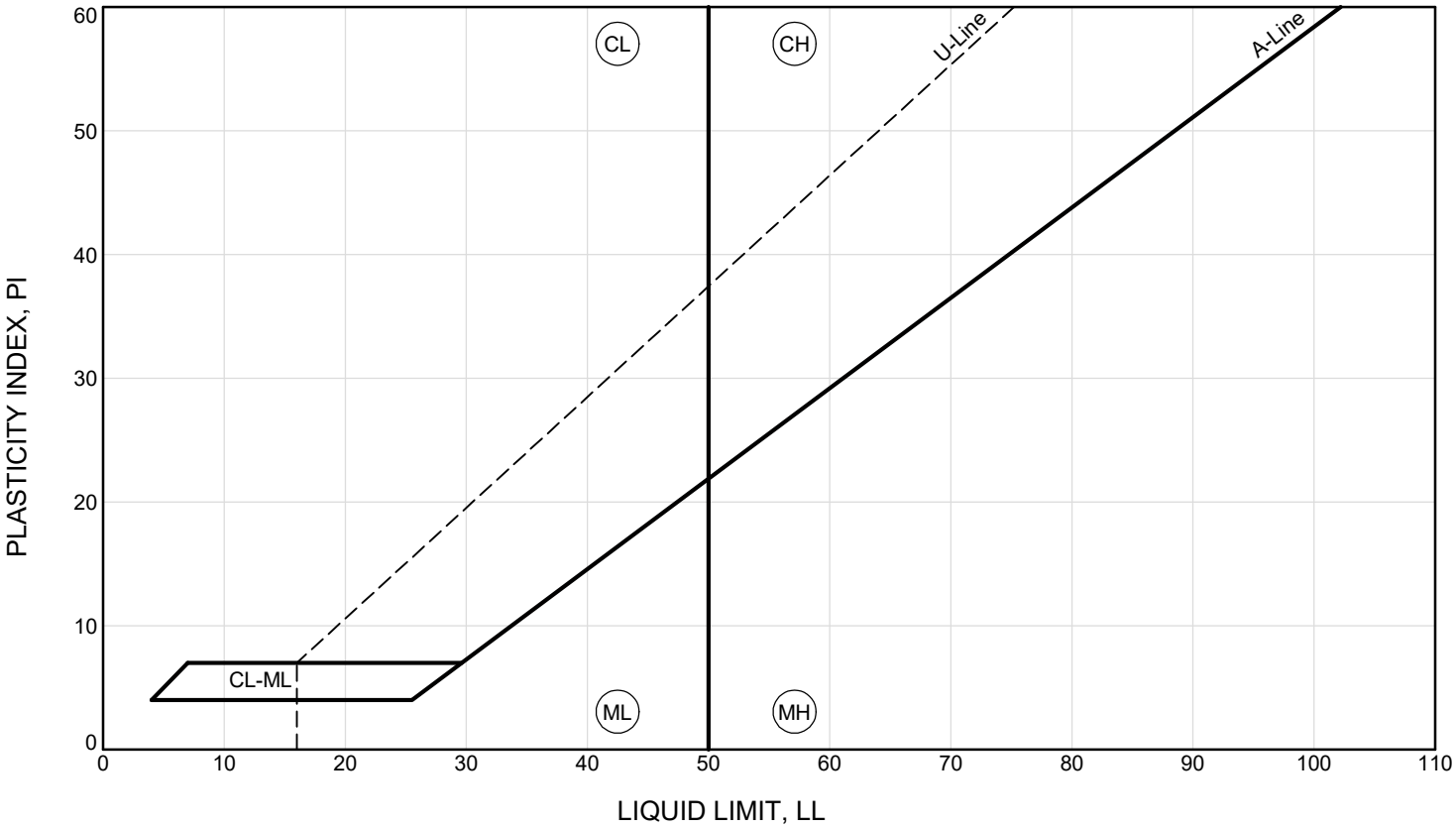


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-44p-19	7.0	D-3	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		10	n/a	n/a	NP	11.4		
	NE-44p-19	14.0	D-6	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		12	n/a	n/a	NP	7.7		
	NE-44p-19	22.0	D-9	SM	SILTY SAND		20	n/a	n/a	NP	16.6		
	NE-44p-19	24.0	D-10	SM	SILTY SAND		20	n/a	n/a	NP	13.6		
	NE-44p-19	27.0	D-11	SM	SILTY SAND with GRAVEL		16	n/a	n/a	NP	30.4		
	NE-44p-19	39.0	D-14	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	42.8		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

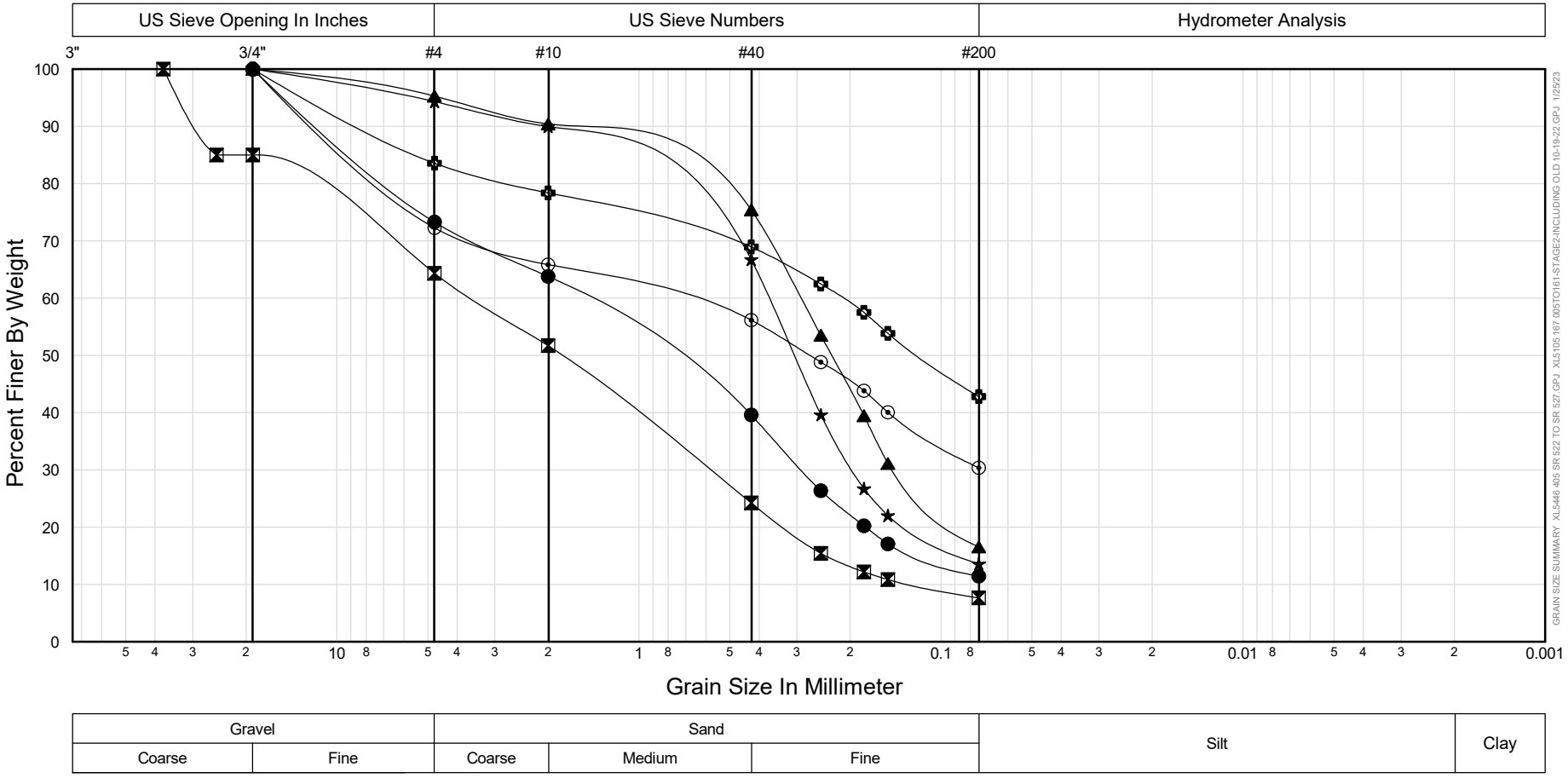
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-44p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	8-15-19	10	n/a	n/a	NP			26.7	61.8	11.4	0.8	25	11.308	1.568	0.827	0.289	0.177	
⊠	14.0	D-6	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	8-15-19	12	n/a	n/a	NP			35.6	56.7	7.7	0.8	28	28.625	3.528	1.818	0.589	0.329	0.125
▲	22.0	D-9	SM	SILTY SAND	8-15-19	20	n/a	n/a	NP			4.7	78.7	16.6			1.916	0.293	0.230	0.142	0.088	
★	24.0	D-10	SM	SILTY SAND	8-15-19	20	n/a	n/a	NP			5.7	80.7	13.6			2.011	0.372	0.306	0.196	0.127	
⊙	27.0	D-11	SM	SILTY SAND with GRAVEL	8-15-19	16	n/a	n/a	NP			27.7	41.9	30.4			11.524	0.785	0.272			
✿	39.0	D-14	SM	SILTY SAND with GRAVEL	8-15-19	13	n/a	n/a	NP			16.4	40.8	42.8			8.177	0.212	0.118			

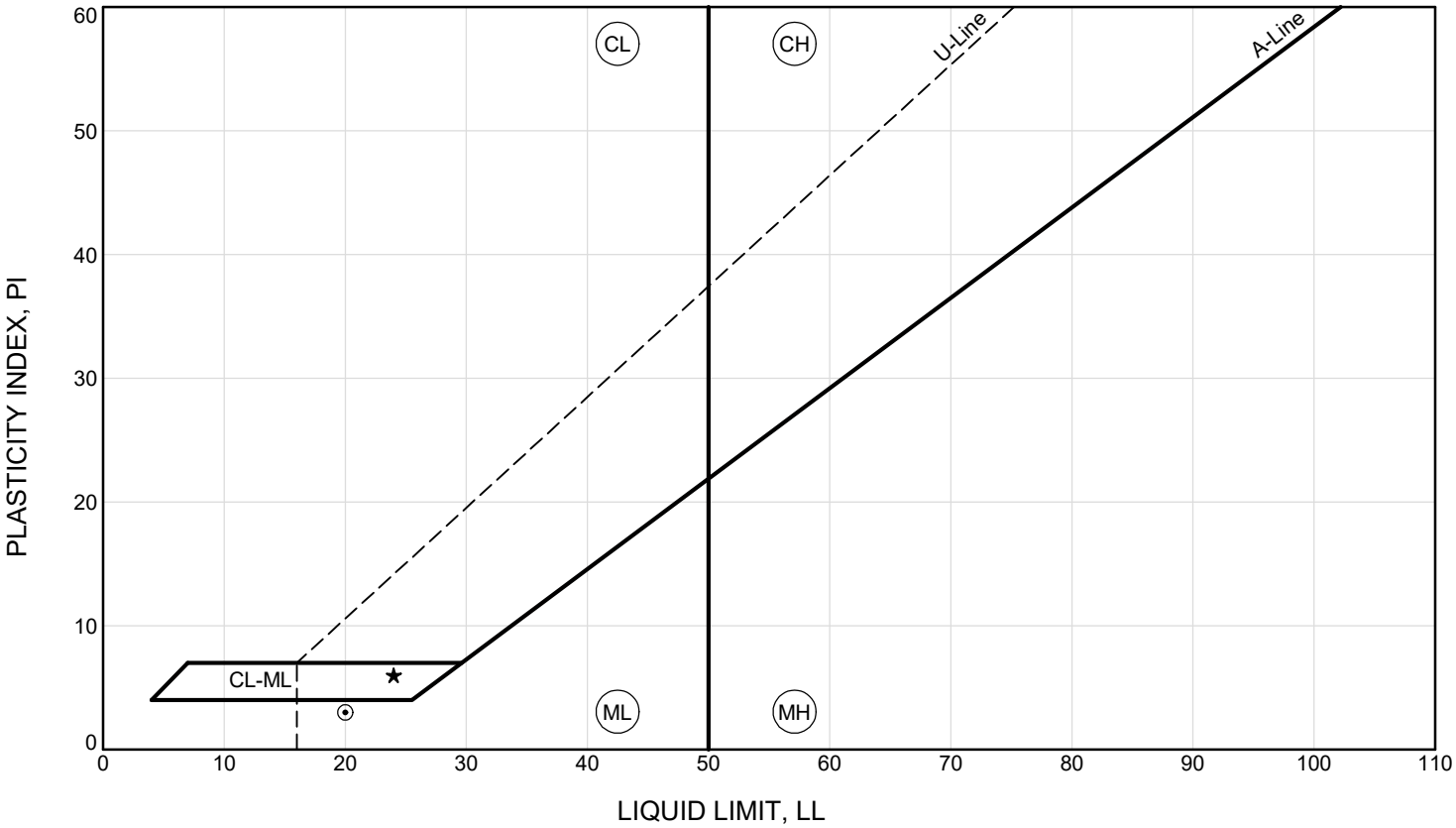
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-45-19	9.0	D-4	SP-SM	POORLY GRADED SAND with SILT		21	n/a	n/a	NP	10.4		
	NE-45-19	17.0	D-7	SM	SILTY SAND		15	n/a	n/a	NP	39.1		
	NE-45-19	22.0	D-9	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	29.9		
★	NE-45-19	32.0	D-13	CL-ML	SILTY CLAY with SAND		21	24	18	6	82.1		
⊙	NE-45-19	42.0	D-17		MC & AL Only		18	20	17	3			

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

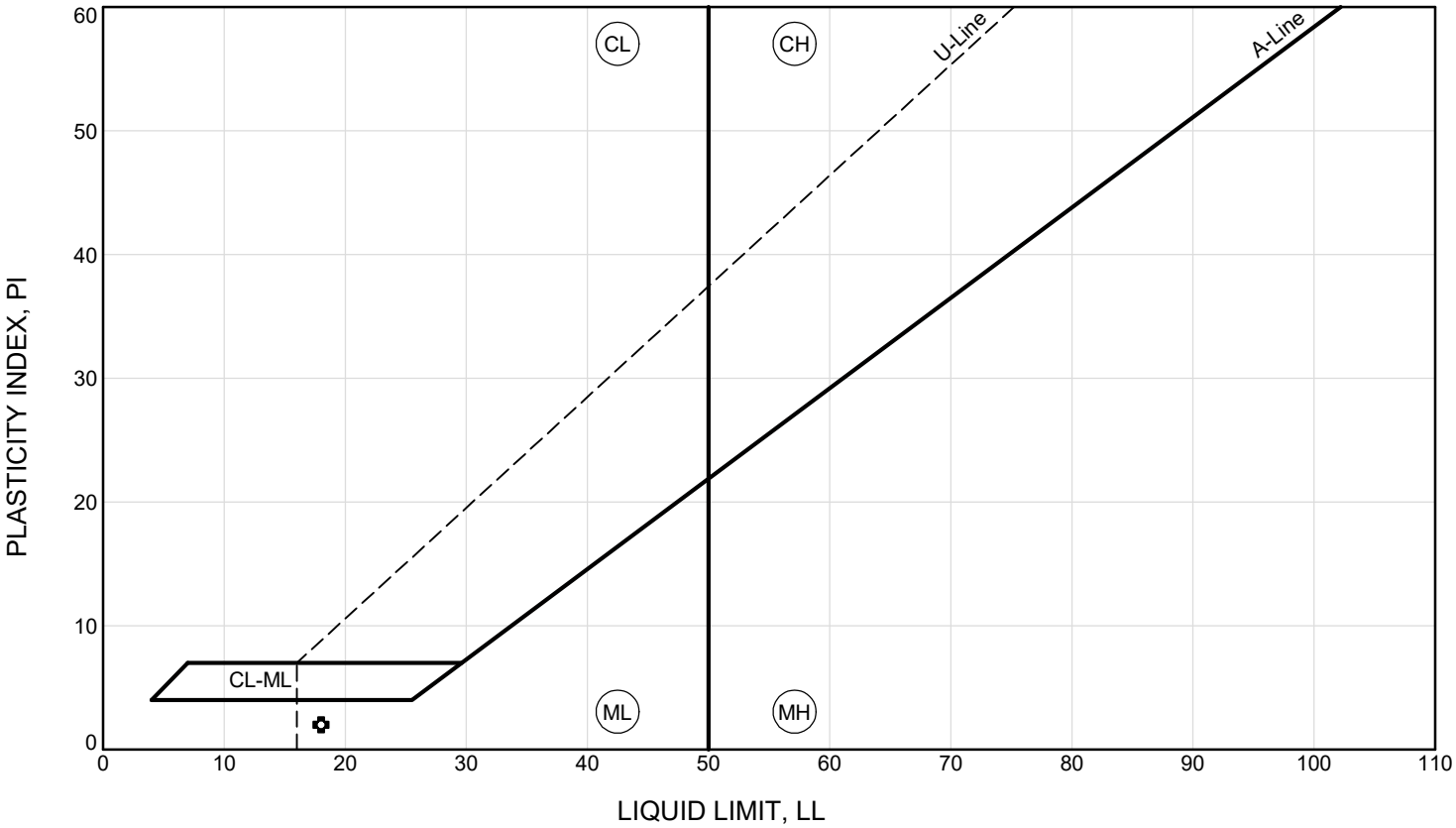
ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/12/22

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-46p-19	9.0	D-4	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		16	n/a	n/a	NP	5.6		
	NE-46p-19	14.0	D-6	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		22	n/a	n/a	NP	10.3		
	NE-46p-19	22.0	D-9	SM	SILTY SAND		17	n/a	n/a	NP	40.5		
	NE-46p-19	24.0	D-10	SM	SILTY SAND		15	n/a	n/a	NP	38.5		
	NE-46p-19	29.0	D-12	ML	SANDY SILT		20	n/a	n/a	NP	65.3		
✿	NE-46p-19	44.0	D-15	ML	SANDY SILT		16	18	16	2	61.3		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

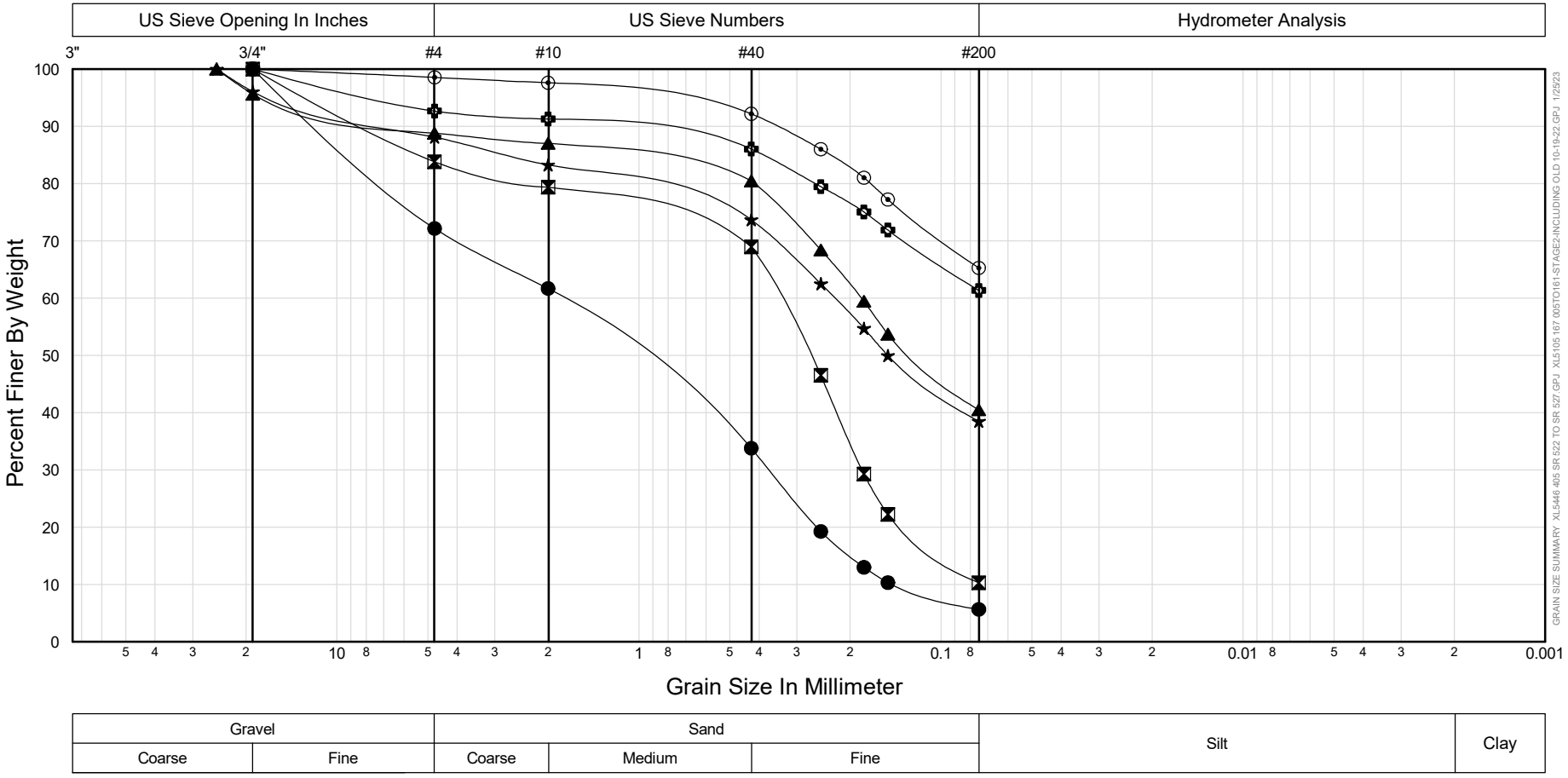
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-46p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-4	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	8-15-19	16	n/a	n/a	NP			27.8	66.5	5.6	0.5	13	11.547	1.821	1.045	0.370	0.257	0.143
⊠	14.0	D-6	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	8-15-19	22	n/a	n/a	NP			16.2	73.5	10.3	1.3	5	8.061	0.344	0.271	0.183	0.132	
▲	22.0	D-9	SM	SILTY SAND	8-15-19	17	n/a	n/a	NP			11.2	48.3	40.5			6.066	0.184	0.123			
★	24.0	D-10	SM	SILTY SAND	8-15-19	15	n/a	n/a	NP			11.9	49.6	38.5			6.606	0.225	0.150			
⊙	29.0	D-12	ML	SANDY SILT	8-15-19	20	n/a	n/a	NP			1.5	33.3	65.3			0.352					
✿	44.0	D-15	ML	SANDY SILT	8-15-19	16	18	16	2			7.3	31.3	61.3			1.369					

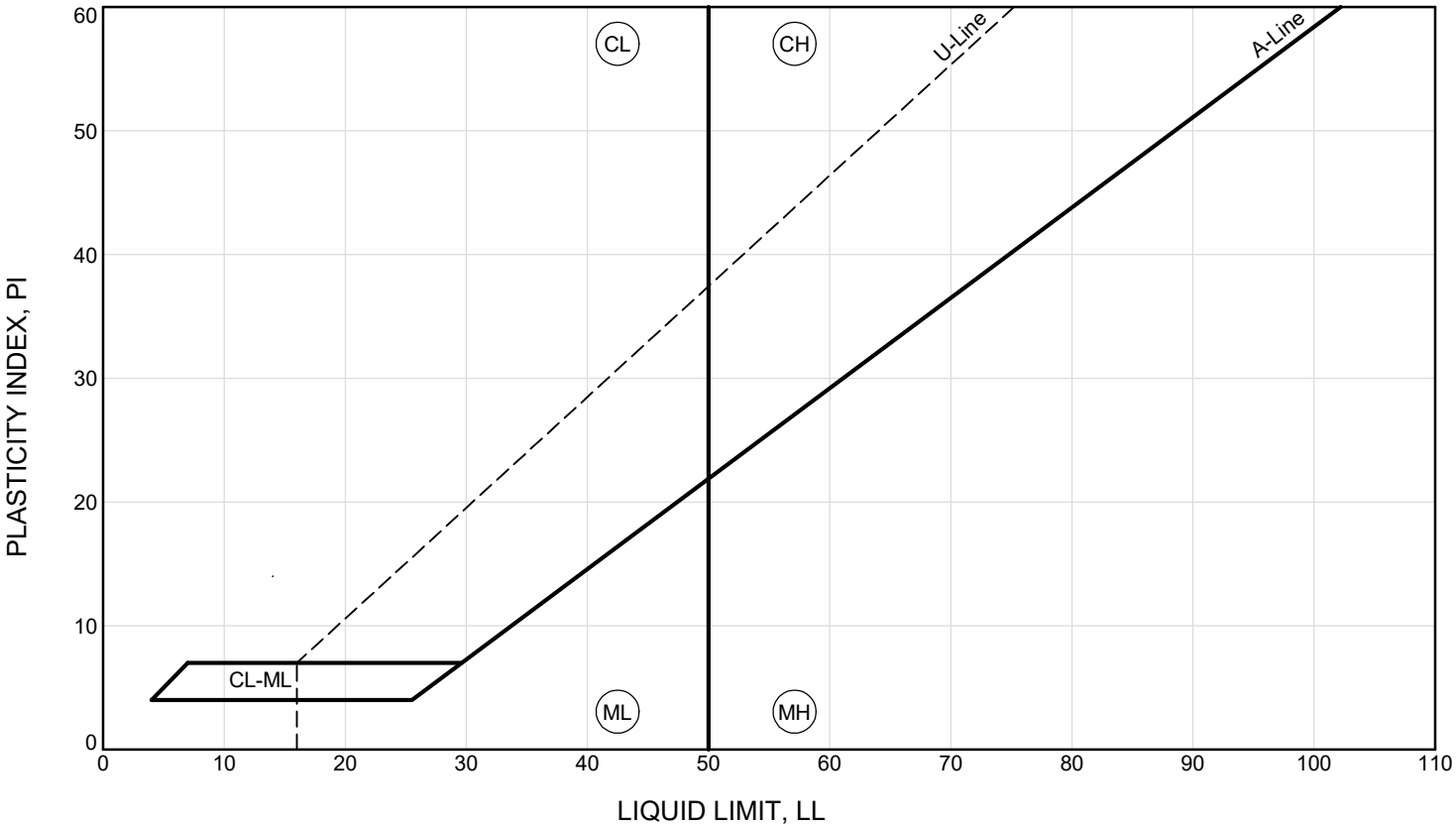
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-47-19	8.0	D-3	SP-SM	POORLY GRADED SAND with SILT		25	n/a	n/a	NP	7.3		
	NE-47-19	13.0	D-5	SM	SILTY SAND		25	n/a	n/a	NP	30.5		
	NE-47-19	20.0	D-8	SM	SILTY SAND		11	n/a	n/a	NP	39.8		
	NE-47-19	28.0	D-11	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	38.0		
	NE-47-19	35.0	D-14	SM	SILTY SAND with GRAVEL		13	14	n/a	NP	45.2		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

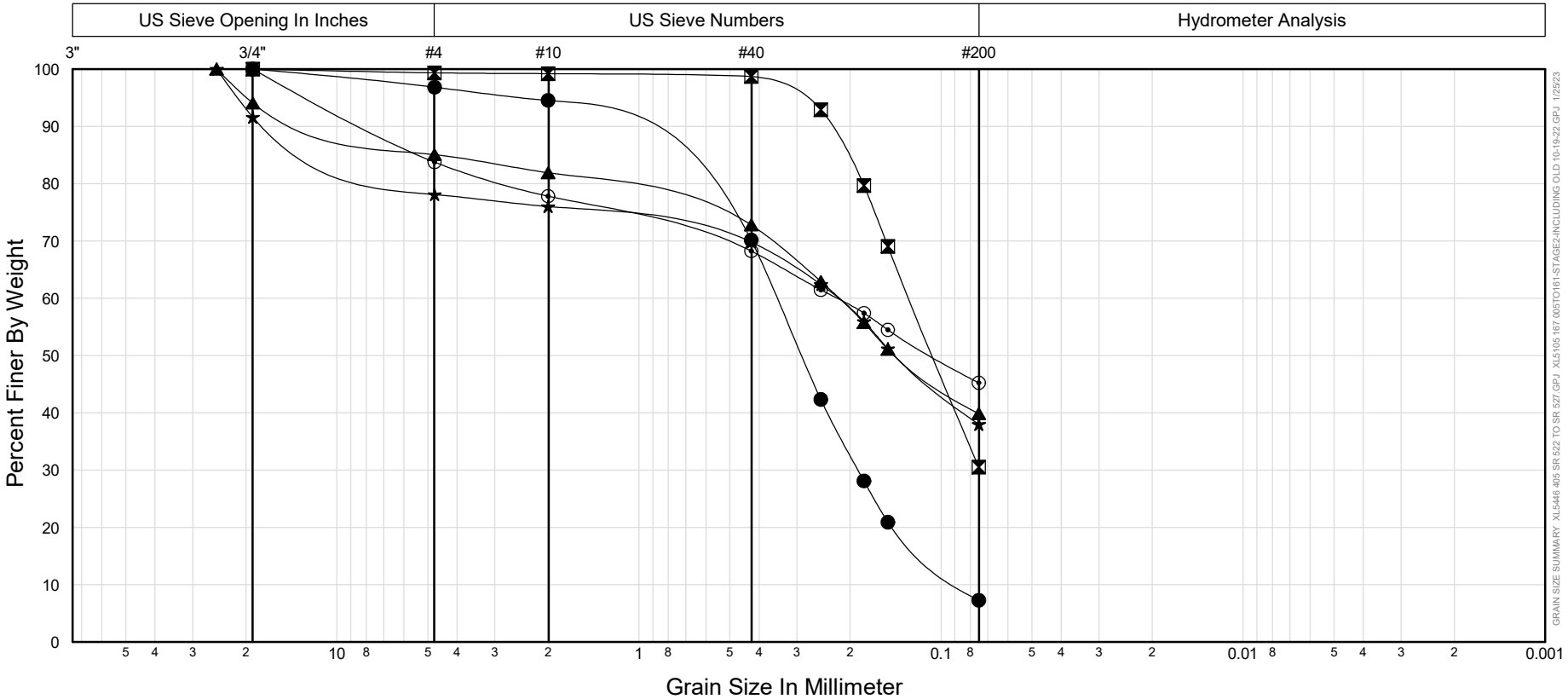
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-47-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	8.0	D-3	SP-SM	POORLY GRADED SAND with SILT	6-25-19	25	n/a	n/a	NP			3.2	89.6	7.3	1.2	4	1.499	0.350	0.289	0.188	0.143	0.086
⊠	13.0	D-5	SM	SILTY SAND	6-25-19	25	n/a	n/a	NP			0.7	68.8	30.5			0.233	0.127	0.106			
▲	20.0	D-8	SM	SILTY SAND	6-25-19	11	n/a	n/a	NP			14.9	45.2	39.8			10.155	0.219	0.140			
★	28.0	D-11	SM	SILTY SAND with GRAVEL	6-25-19	13	n/a	n/a	NP			21.9	40.1	38.0			16.120	0.221	0.141			
⊙	35.0	D-14	SM	SILTY SAND with GRAVEL	6-25-19	13	14	n/a	NP			16.2	38.5	45.2			8.086	0.222	0.107			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

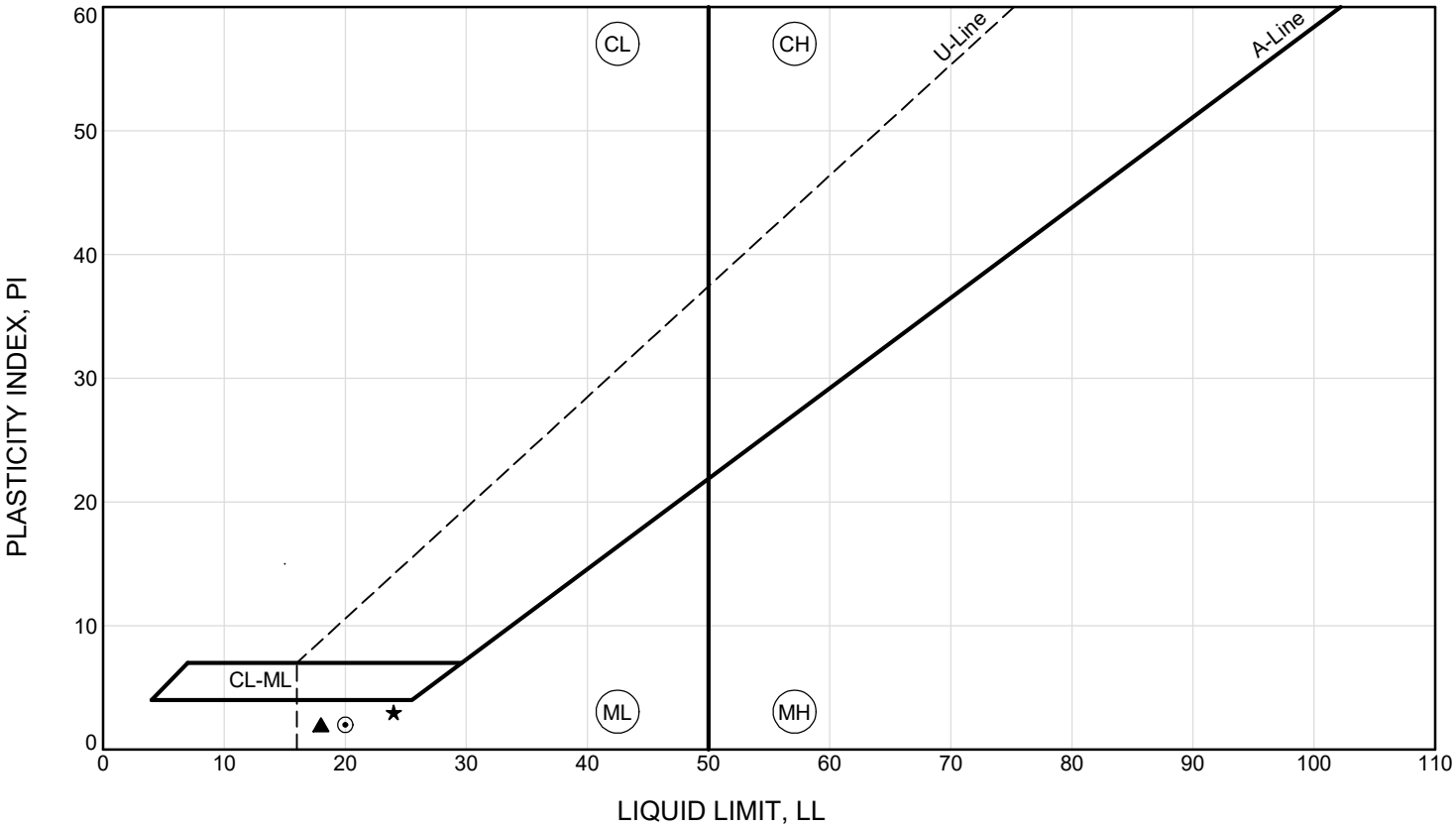


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-48vw-19	8.0	D-3	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		17	n/a	n/a	NP	8.8		
	NE-48vw-19	23.0	D-9	ML	SANDY SILT		19	15	n/a	NP	58.3		
▲	NE-48vw-19	28.0	D-11	ML	SILT with SAND		19	18	16	2	73.8		
★	NE-48vw-19	40.0	D-15	ML	SILT		26	24	21	3	90.3		
⊙	NE-48vw-19	60.0	D-19	ML	SANDY SILT		19	20	18	2	69.7		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

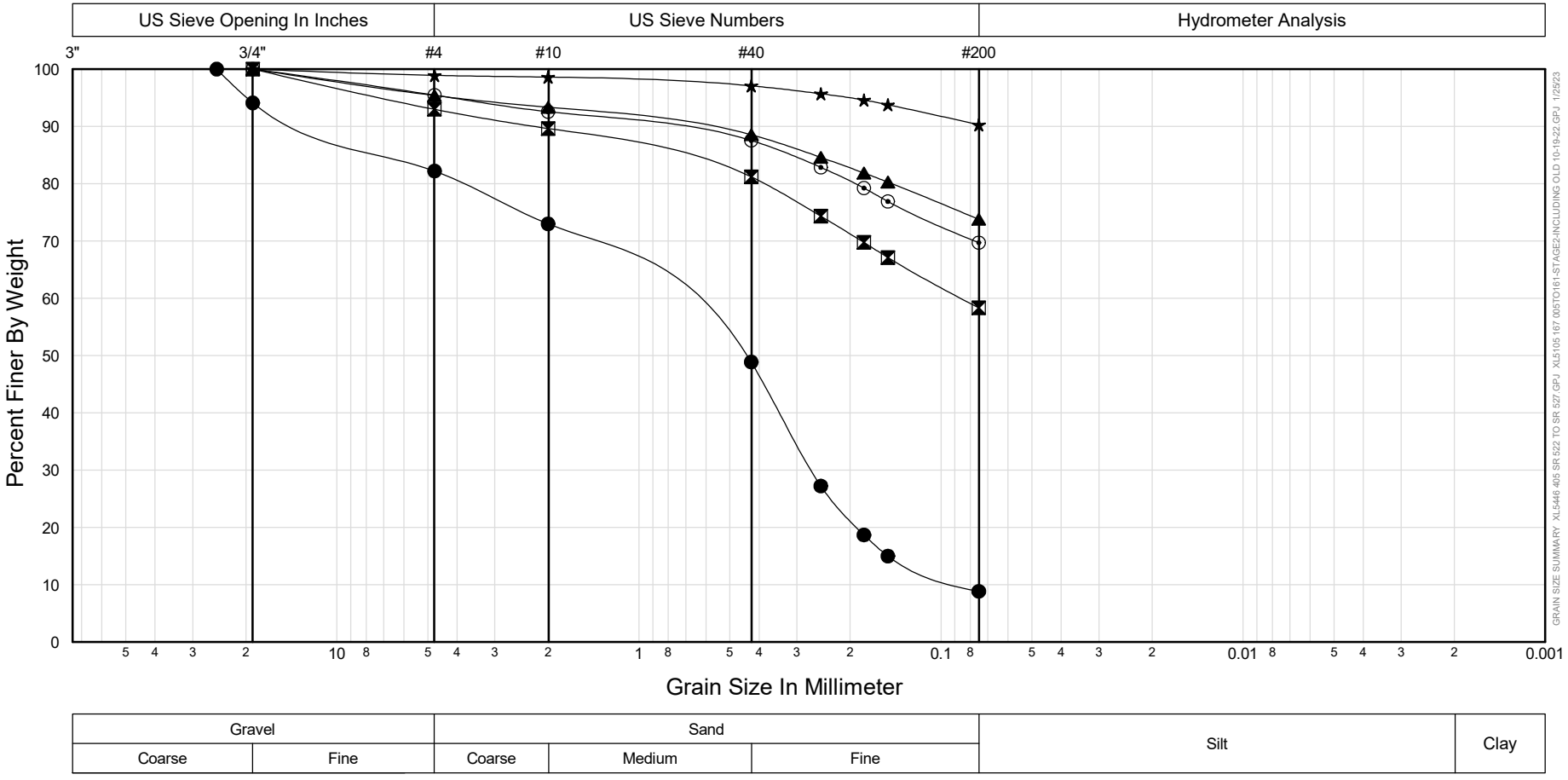
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-48vw-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	8.0	D-3	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10-10-19	17	n/a	n/a	NP			17.8	73.4	8.8	1.0	10	11.788	0.869	0.457	0.268	0.189	0.086
⊠	23.0	D-9	ML	SANDY SILT	10-10-19	19	15	n/a	NP			7.0	34.7	58.3			2.199	0.086				
▲	28.0	D-11	ML	SILT with SAND	10-10-19	19	18	16	2			4.6	21.6	73.8			0.679					
★	40.0	D-15	ML	SILT	10-10-19	26	24	21	3			1.1	8.6	90.3								
⊙	60.0	D-19	ML	SANDY SILT	10-10-19	19	20	18	2			4.5	25.8	69.7			0.907					

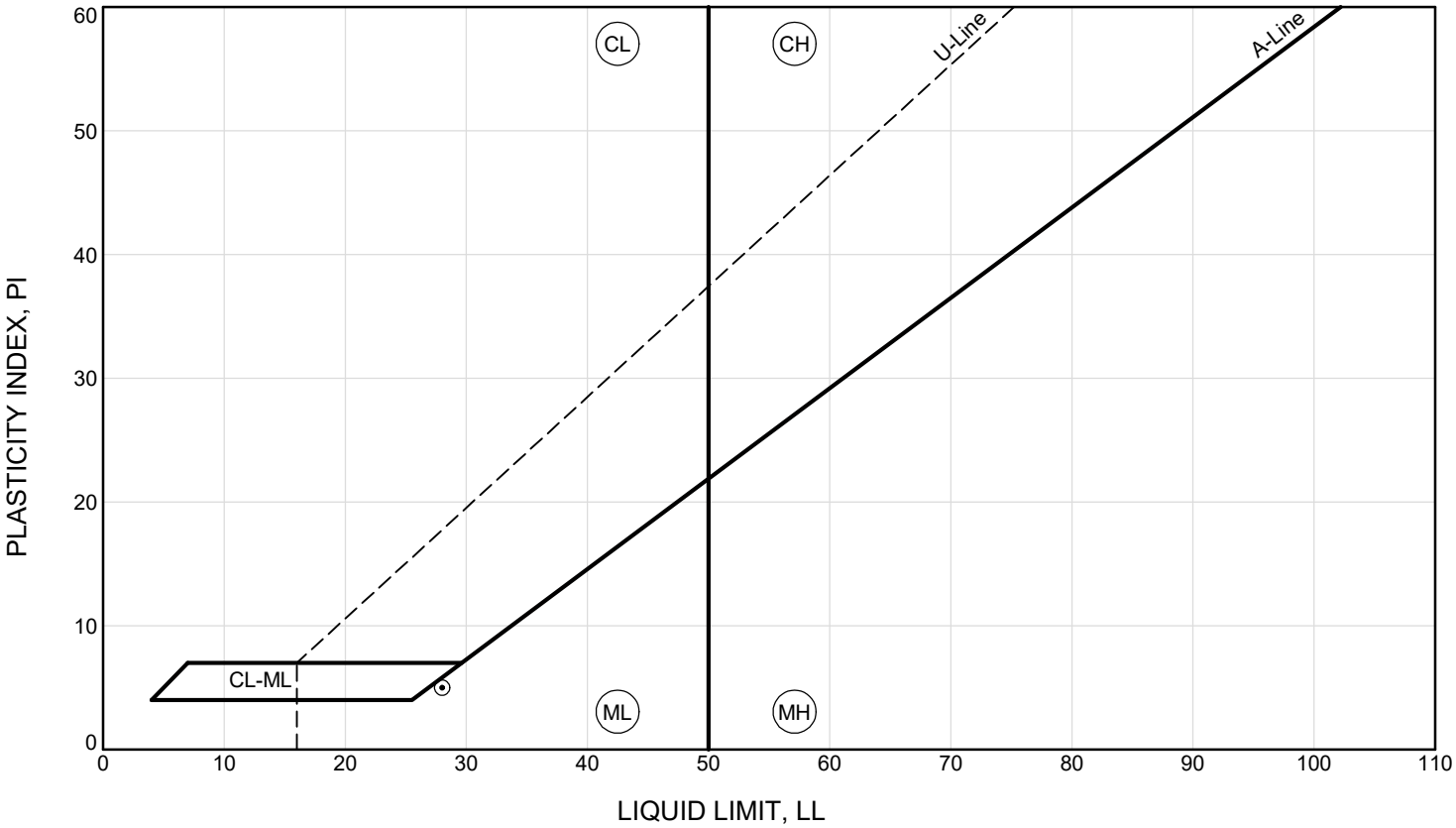
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-49vw-19	9.0	D-4	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		20	n/a	n/a	NP	9.7		
	NE-49vw-19	17.0	D-7	SP-SM	POORLY GRADED SAND with SILT		25	n/a	n/a	NP	9.5		
	NE-49vw-19	22.0	D-9	ML	SANDY SILT		25	n/a	n/a	NP	59.0		
	NE-49vw-19	29.0	D-12	SM	SILTY SAND with GRAVEL		14	n/a	n/a	NP	28.5		
⊙	NE-49vw-19	59.0	D-18	ML	SILT		25	28	23	5	94.3		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/12/22

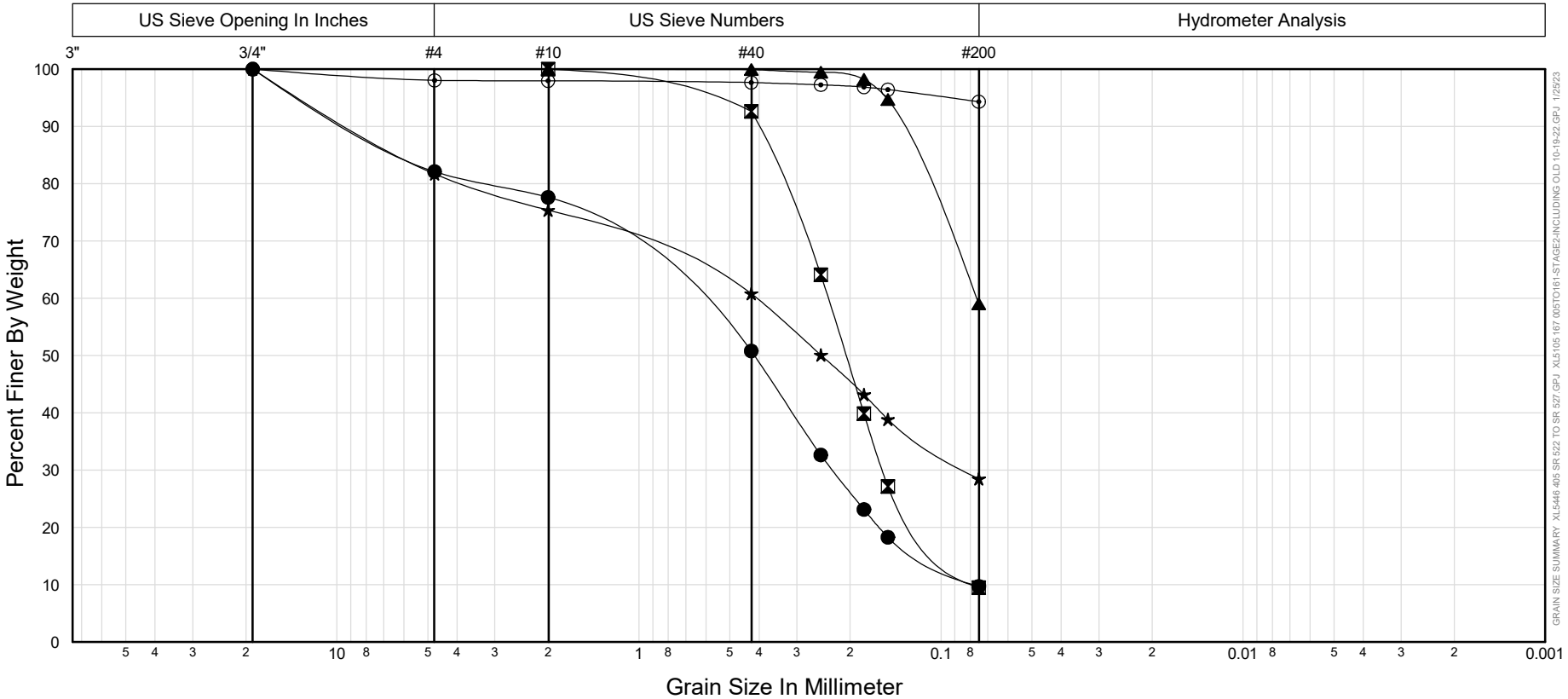
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-49vw-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-4	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10-28-19	20	n/a	n/a	NP			17.9	72.4	9.7	0.9	9	8.754	0.723	0.415	0.228	0.160	0.077
⊠	17.0	D-7	SP-SM	POORLY GRADED SAND with SILT	10-28-19	25	n/a	n/a	NP			0.0	90.5	9.5	1.3	3	0.405	0.236	0.207	0.156	0.113	0.077
▲	22.0	D-9	ML	SANDY SILT	10-28-19	25	n/a	n/a	NP			0.0	41.0	59.0			0.137	0.076				
★	29.0	D-12	SM	SILTY SAND with GRAVEL	10-28-19	14	n/a	n/a	NP			18.3	53.2	28.5			8.909	0.408	0.249	0.083		
⊙	59.0	D-18	ML	SILT	10-28-19	25	28	23	5			2.0	3.7	94.3								

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

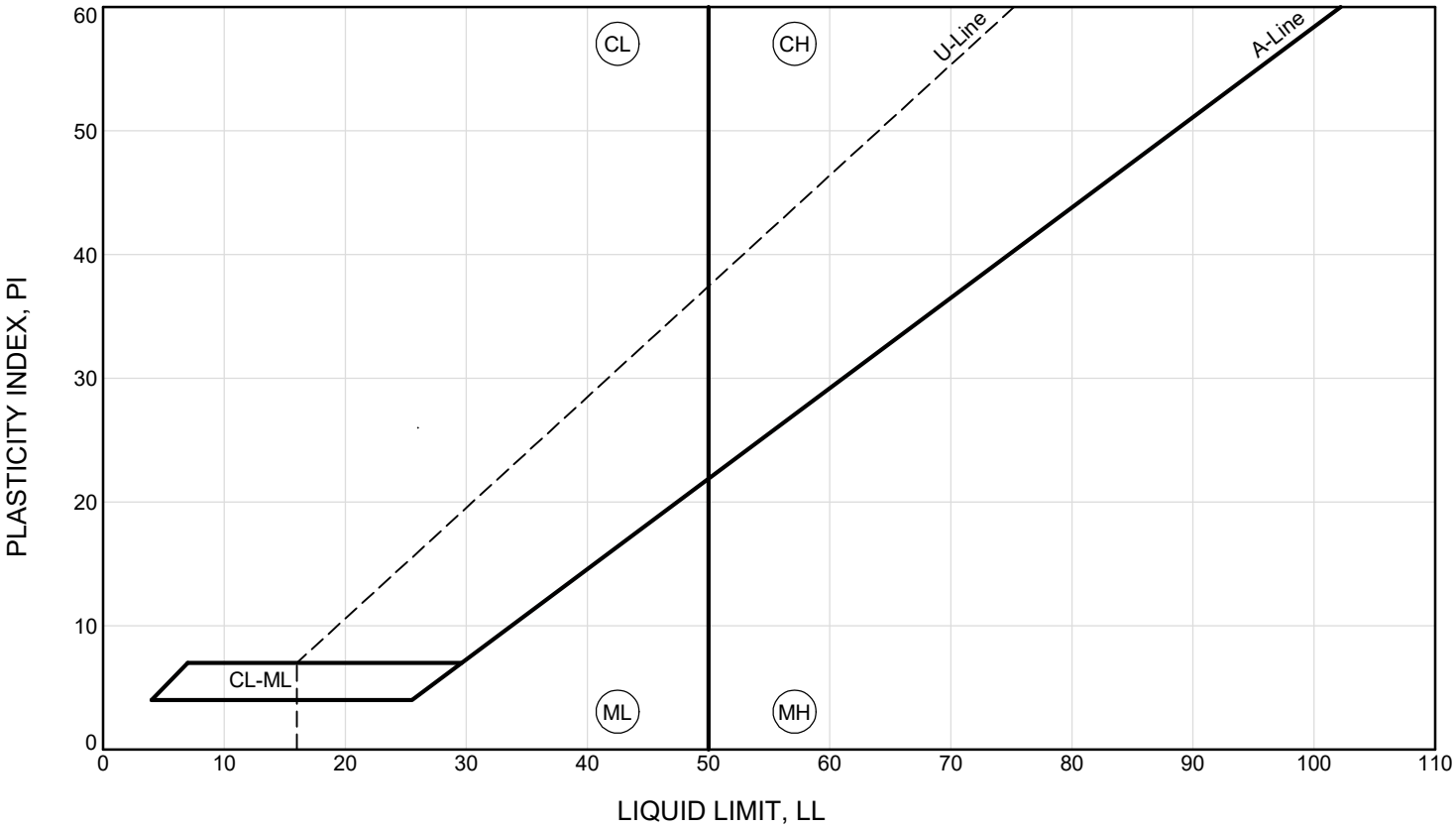


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-50-19	9.0	D-4	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		14	n/a	n/a	NP	5.2		
	NE-50-19	14.0	D-6	SP-SM	POORLY GRADED SAND with SILT		25	n/a	n/a	NP	7.5		
	NE-50-19	19.0	D-8	SM	SILTY SAND		25	n/a	n/a	NP	39.7		
	NE-50-19	34.0	D-13	ML	SILT		25	26	n/a	NP	97.3	89.9	7.4

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

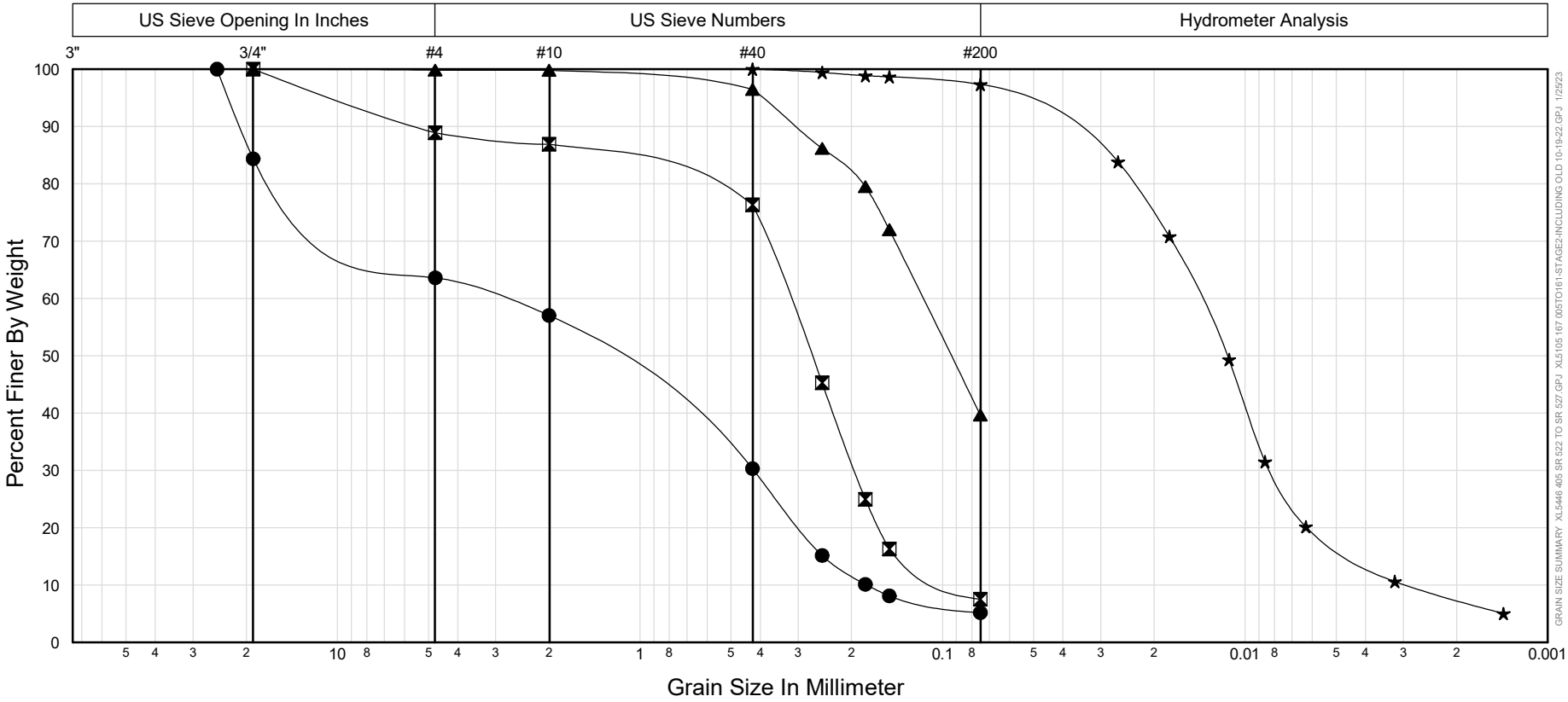
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-50-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-4	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	6-10-19	14	n/a	n/a	NP			36.4	58.4	5.2	0.3	17	20.976	2.957	1.331	0.420	0.296	0.178
⊠	14.0	D-6	SP-SM	POORLY GRADED SAND with SILT	6-10-19	25	n/a	n/a	NP			11.1	81.4	7.5	1.3	4	5.460	0.321	0.271	0.195	0.162	0.091
▲	19.0	D-8	SM	SILTY SAND	6-10-19	25	n/a	n/a	NP			0.2	60.2	39.7			0.304	0.116	0.094			
★	34.0	D-13	ML	SILT	6-10-19	25	26	n/a	NP		2.74	0.0	2.7	97.3	1.6	5	0.042	0.014	0.011	0.008	0.006	0.003

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

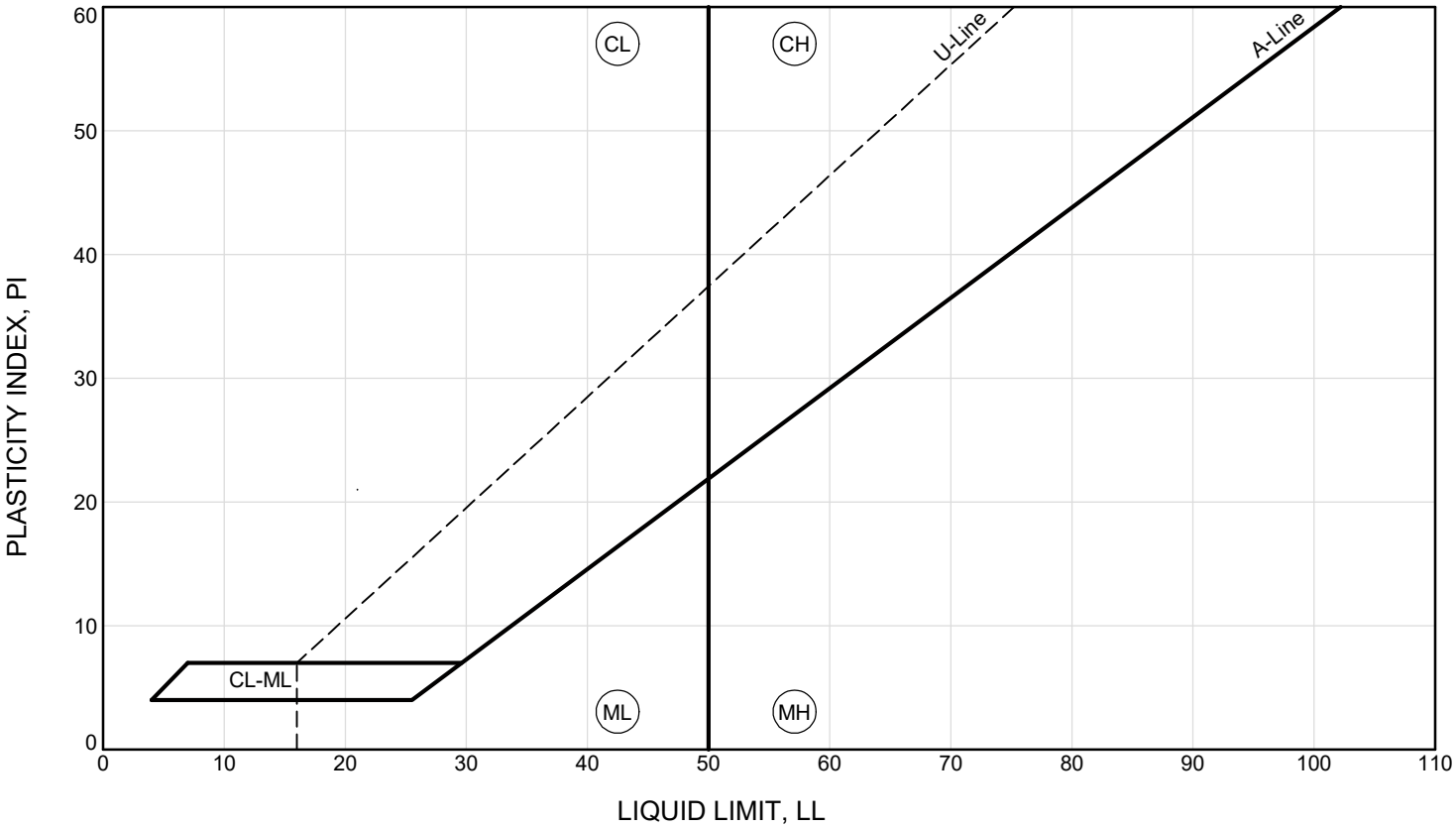


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-51vw-19	7.0	D-3	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		14	n/a	n/a	NP	8.6		
	NE-51vw-19	19.0	D-8	SM	SILTY SAND with GRAVEL		9	n/a	n/a	NP	36.1		
	NE-51vw-19	29.0	D-10	ML	SILT		20	21	n/a	NP	85.5		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

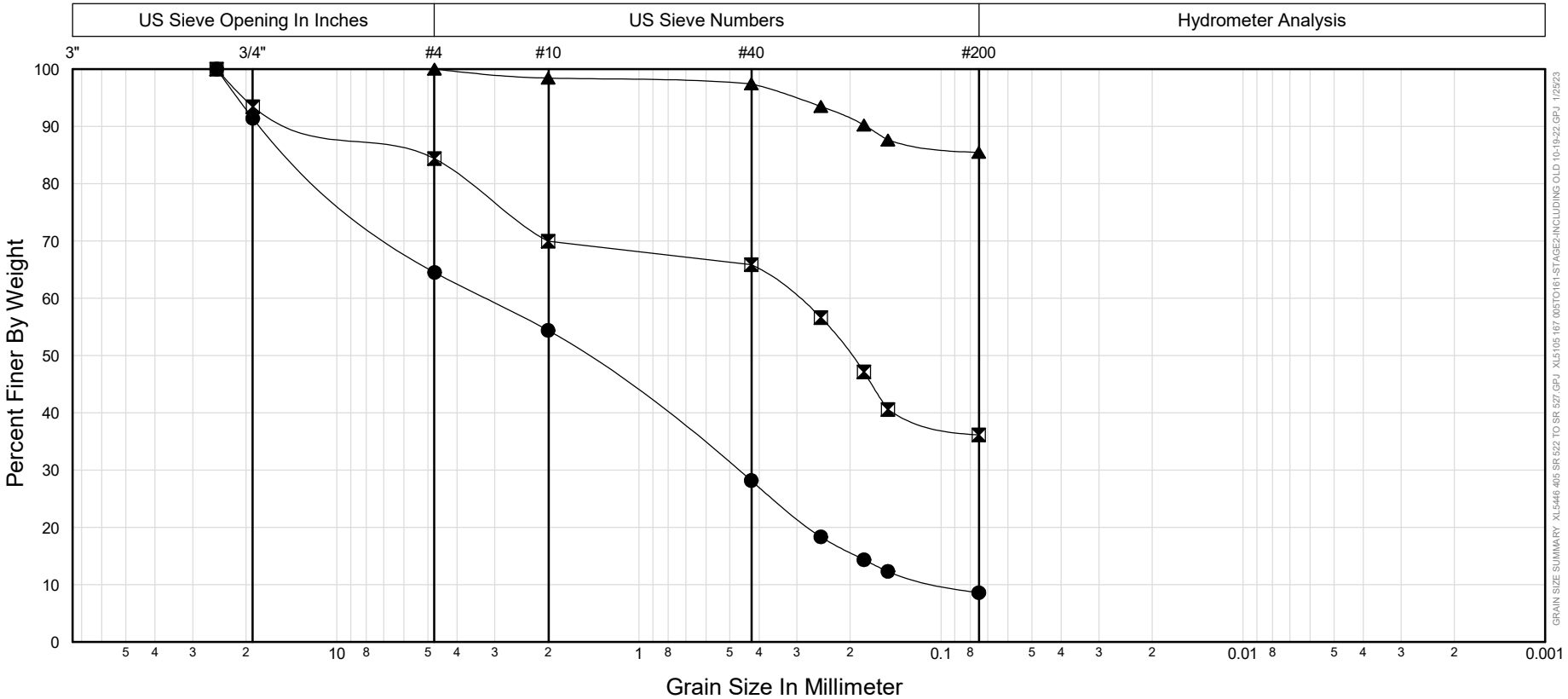
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-51vw-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	6-10-19	14	n/a	n/a	NP			35.5	55.9	8.6	0.7	33	17.675	3.231	1.543	0.473	0.273	0.097
⊠	19.0	D-8	SM	SILTY SAND with GRAVEL	6-10-19	9	n/a	n/a	NP			15.6	48.2	36.1			11.226	0.303	0.199			
▲	29.0	D-10	ML	SILT	6-10-19	20	21	n/a	NP			0.0	14.5	85.5			0.177					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

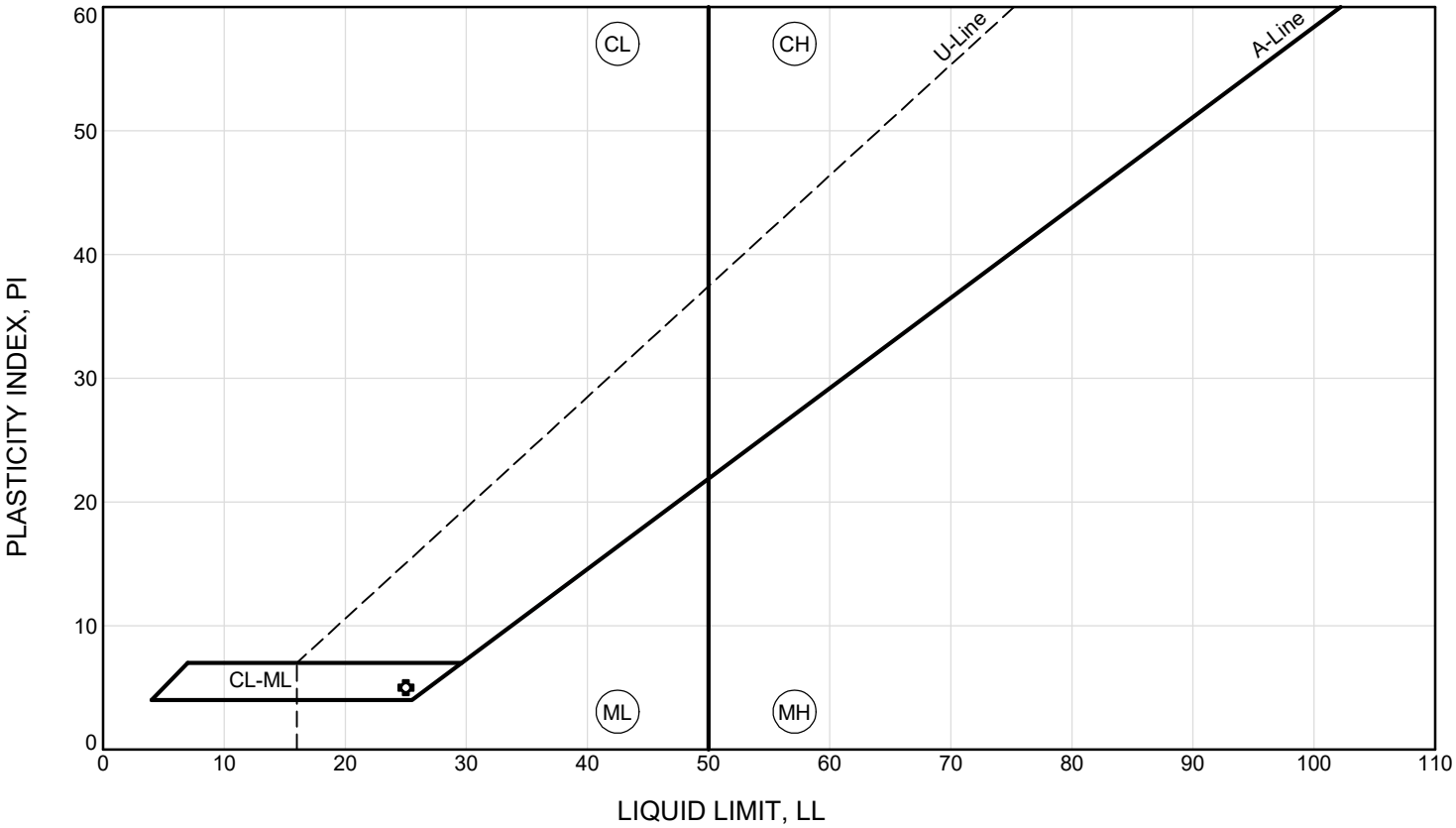


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-53-19	7.0	D-3	ML	SILT with SAND		32	n/a	n/a	NP	77.1		
	NE-53-19	12.0	D-5	SP	POORLY GRADED SAND		29	n/a	n/a	NP	4.8		
	NE-53-19	17.0	D-7	SM	SILTY SAND with GRAVEL		16	n/a	n/a	NP	29.1		
	NE-53-19	27.0	D-11	SM	SILTY SAND with GRAVEL		18	n/a	n/a	NP	37.0		
	NE-53-19	34.0	D-13	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		11	n/a	n/a	NP	9.1		
✿	NE-53-19	64.0	D-19	CL-ML	SILTY CLAY		26	25	20	5	88.5		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

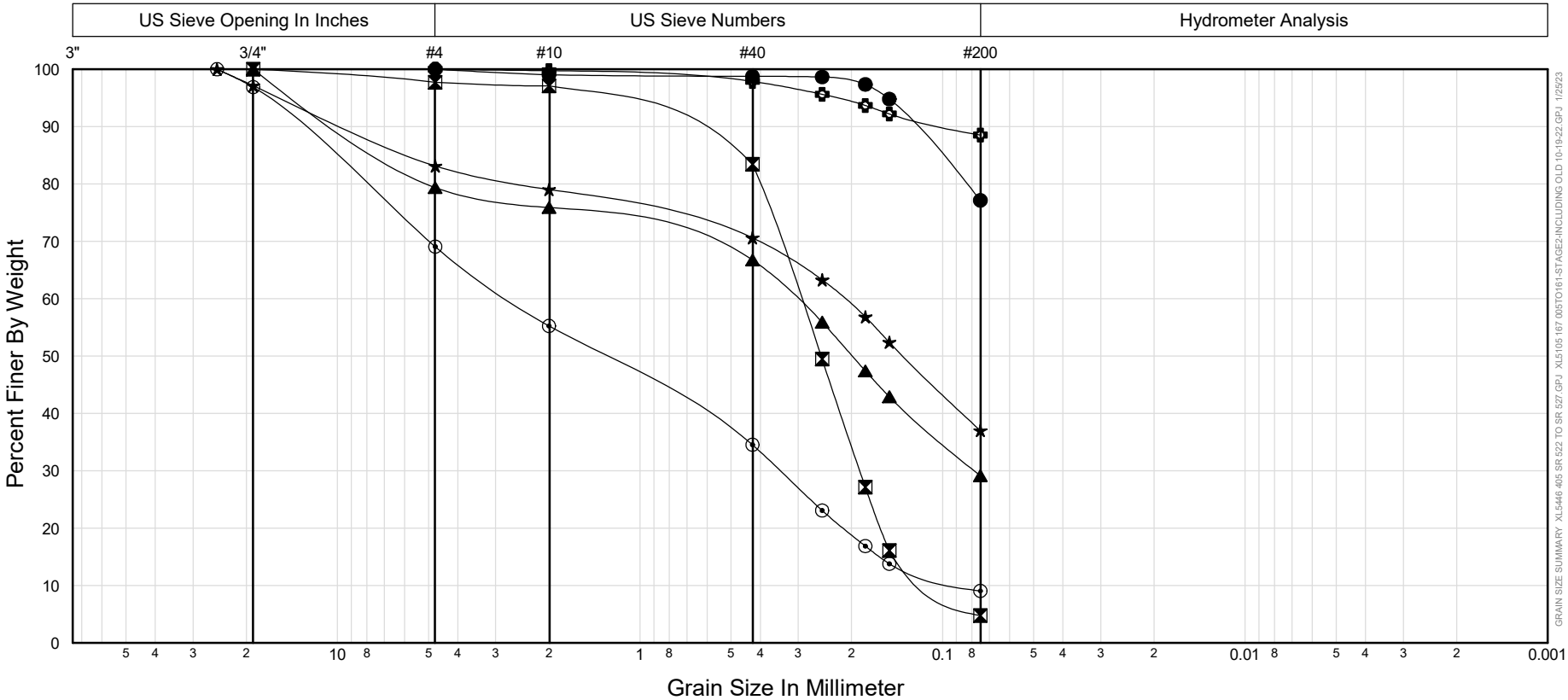
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-53-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	ML	SILT with SAND	10-10-19	32	n/a	n/a	NP			0.0	22.9	77.1			0.124					
⊠	12.0	D-5	SP	POORLY GRADED SAND	10-10-19	29	n/a	n/a	NP			2.3	93.0	4.8	1.2	3	0.896	0.295	0.252	0.188	0.160	0.103
▲	17.0	D-7	SM	SILTY SAND with GRAVEL	10-10-19	16	n/a	n/a	NP			20.6	50.2	29.1			9.707	0.305	0.199	0.078		
★	27.0	D-11	SM	SILTY SAND with GRAVEL	10-10-19	18	n/a	n/a	NP			16.9	46.1	37.0			9.375	0.211	0.135			
⊙	34.0	D-13	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10-10-19	11	n/a	n/a	NP			30.9	60.0	9.1	0.5	31	13.487	2.693	1.351	0.345	0.212	0.086
✿	64.0	D-19	CL-ML	SILTY CLAY	10-10-19	26	25	20	5			0.0	11.5	88.5			0.099					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

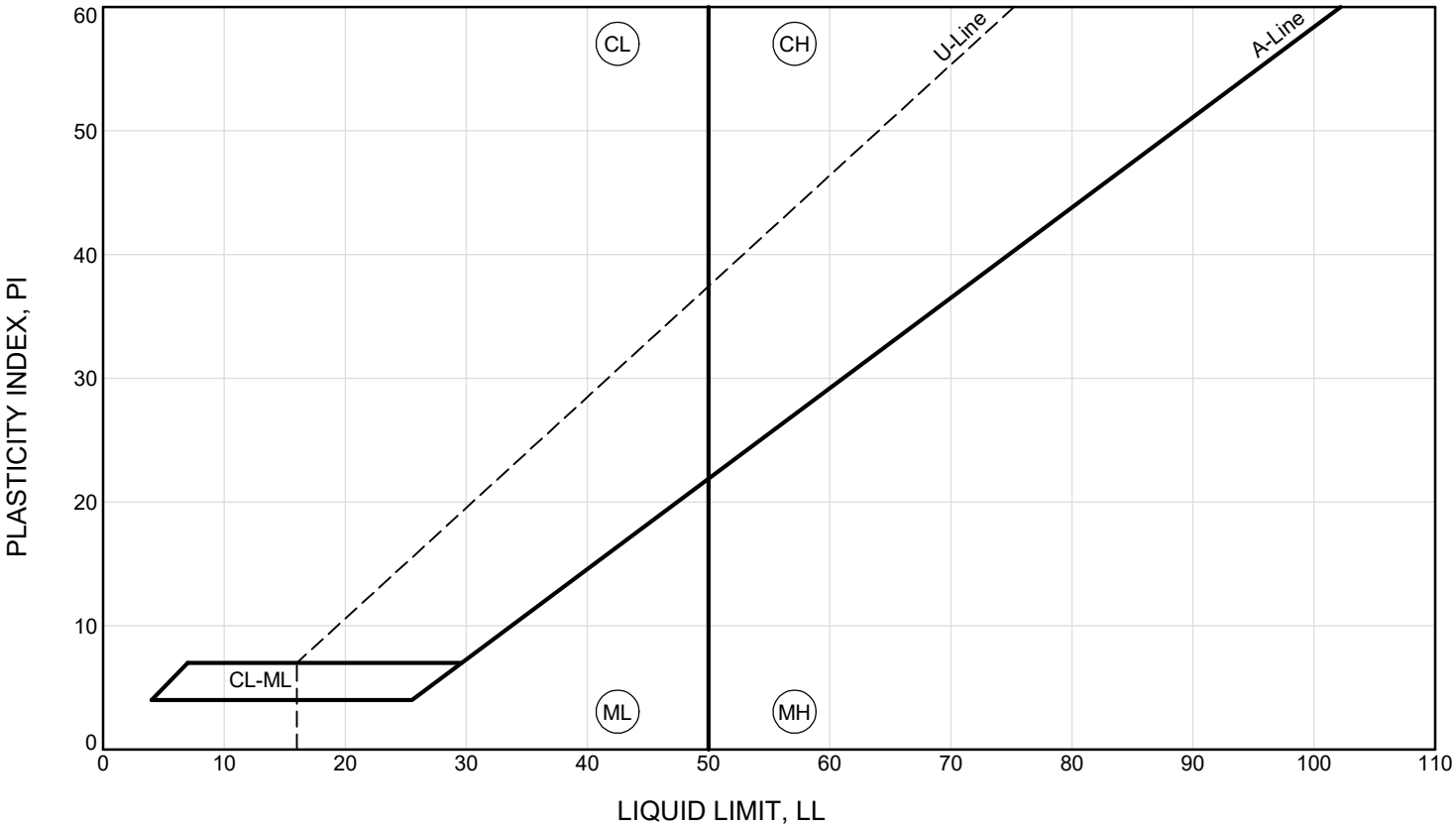


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-54-19	4.0	D-2	SP-SM	POORLY GRADED SAND with SILT		28	n/a	n/a	NP	11.9		
	NE-54-19	7.0	D-3	SM	SILTY SAND		26	n/a	n/a	NP	42.4		
	NE-54-19	17.0	D-7	SM	SILTY SAND with GRAVEL		15	n/a	n/a	NP	16.4		
	NE-54-19	27.0	D-11	SM	SILTY SAND with GRAVEL		15	n/a	n/a	NP	28.0		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

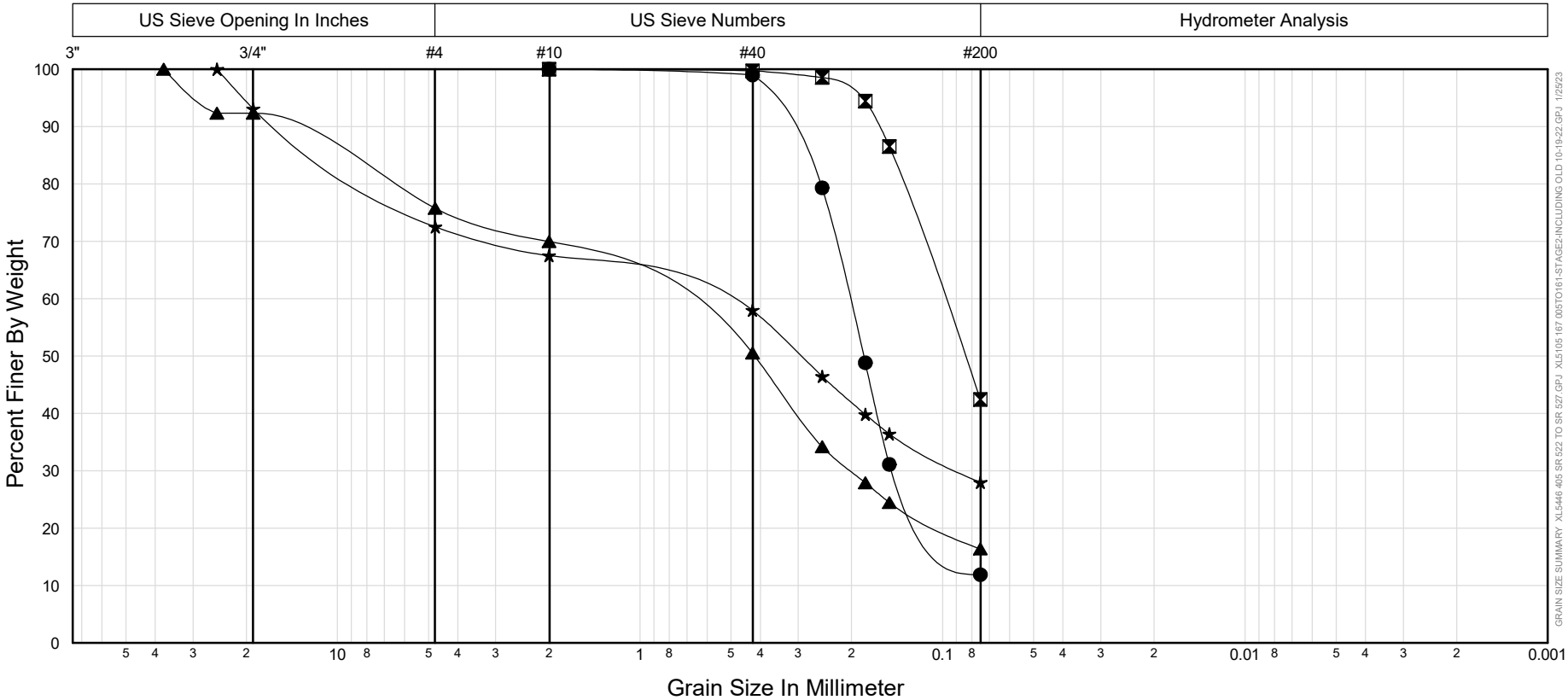
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-54-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

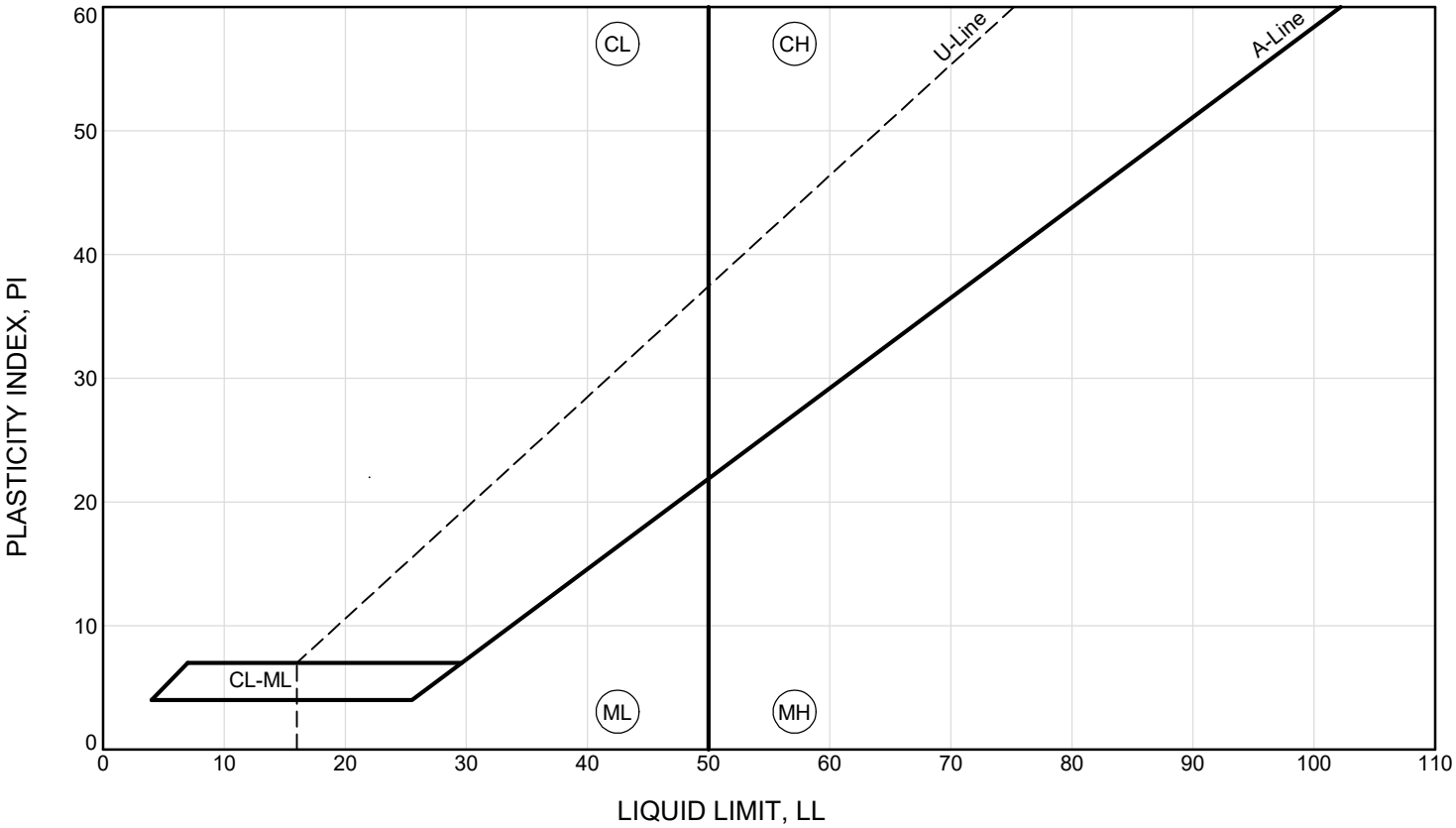
Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SP-SM	POORLY GRADED SAND with SILT	6-21-19	28	n/a	n/a	NP			0.0	88.1	11.9	1.5	3	0.333	0.203	0.182	0.144	0.100	
⊠	7.0	D-3	SM	SILTY SAND	6-21-19	26	n/a	n/a	NP			0.0	57.6	42.4			0.162	0.099	0.084			
▲	17.0	D-7	SM	SILTY SAND with GRAVEL	6-21-19	15	n/a	n/a	NP			24.2	59.4	16.4			15.628	0.904	0.418	0.201	0.102	
★	27.0	D-11	SM	SILTY SAND with GRAVEL	6-21-19	15	n/a	n/a	NP			27.5	44.5	28.0			15.434	0.590	0.294	0.089		

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-55p-19	7.0	D-3	ML	SANDY SILT		26	n/a	n/a	NP	63.7	63.1	0.7
	NE-55p-19	9.0	D-4	ML	SILT		33	n/a	n/a	NP	91.4	89.8	1.6
	NE-55p-19	14.0	D-6	SM	SILTY SAND		28	n/a	n/a	NP	12.2		
	NE-55p-19	17.0	D-7	SM	SILTY SAND		28	n/a	n/a	NP	47.7		
	NE-55p-19	19.0	D-8	ML	SILT		34	22	n/a	NP	88.0		
	NE-55p-19	22.0	D-9	SP-SM	POORLY GRADED SAND with SILT		29	n/a	n/a	NP	8.7		
	NE-55p-19	24.0	D-10	SM	SILTY SAND		27	n/a	n/a	NP	44.6		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

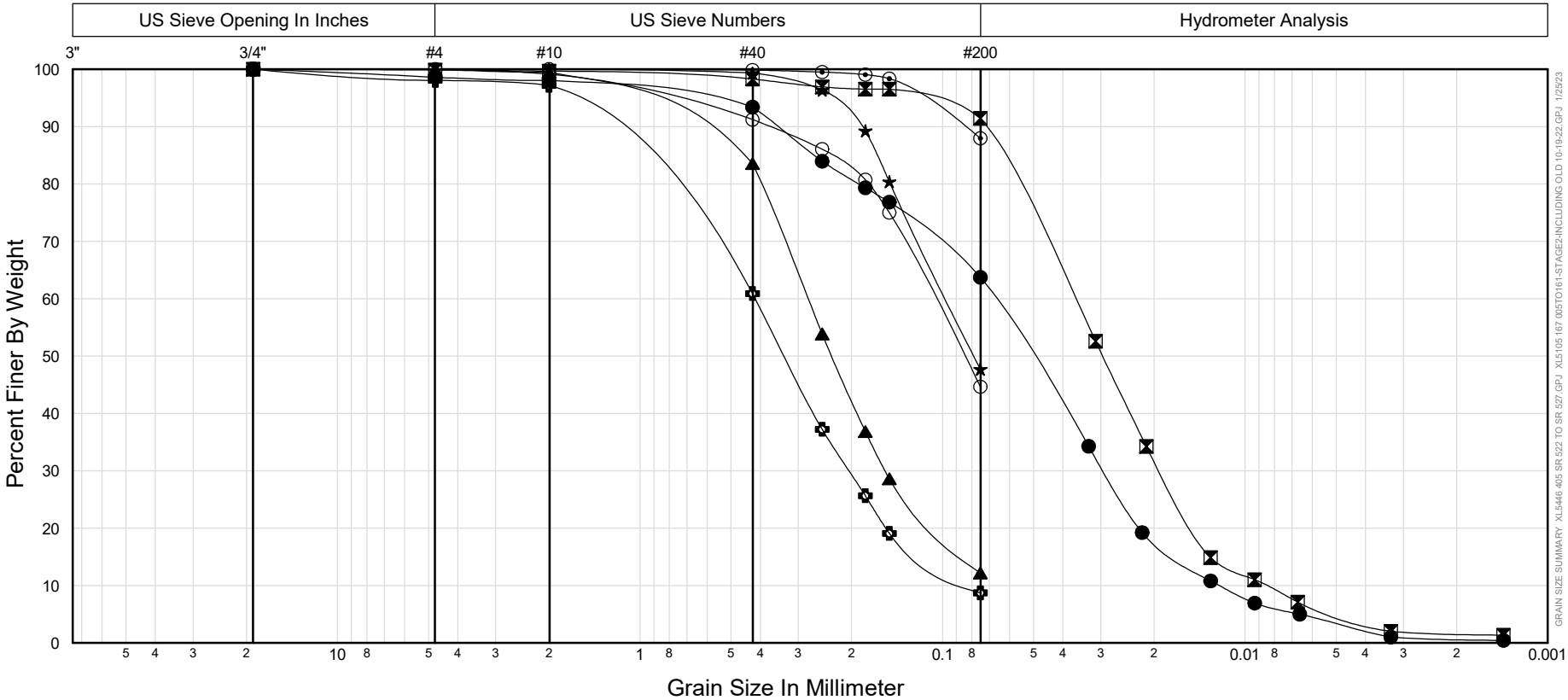
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-55p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	ML	SANDY SILT	6-26-19	26	n/a	n/a	NP		2.76	1.4	34.9	63.7	1.0	6	0.351	0.068	0.051	0.029	0.022	0.012
⊠	9.0	D-4	ML	SILT	6-26-19	33	n/a	n/a	NP		2.72	0.1	8.5	91.4	1.2	4	0.073	0.037	0.030	0.019	0.015	0.009
▲	14.0	D-6	SM	SILTY SAND	6-21-19	28	n/a	n/a	NP			0.0	87.8	12.2	1.3	4	0.796	0.279	0.232	0.155	0.104	
★	17.0	D-7	SM	SILTY SAND	6-21-19	28	n/a	n/a	NP			0.0	52.3	47.7			0.186	0.097	0.079			
⊙	19.0	D-8	ML	SILT	6-21-19	34	22	n/a	NP			0.0	12.0	88.0			0.086					
✿	22.0	D-9	SP-SM	POORLY GRADED SAND with SILT	6-21-19	29	n/a	n/a	NP			1.9	89.4	8.7	1.2	5	1.472	0.417	0.333	0.204	0.154	0.082
○	24.0	D-10	SM	SILTY SAND	6-21-19	27	n/a	n/a	NP			0.0	55.4	44.6			0.375	0.106	0.085			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

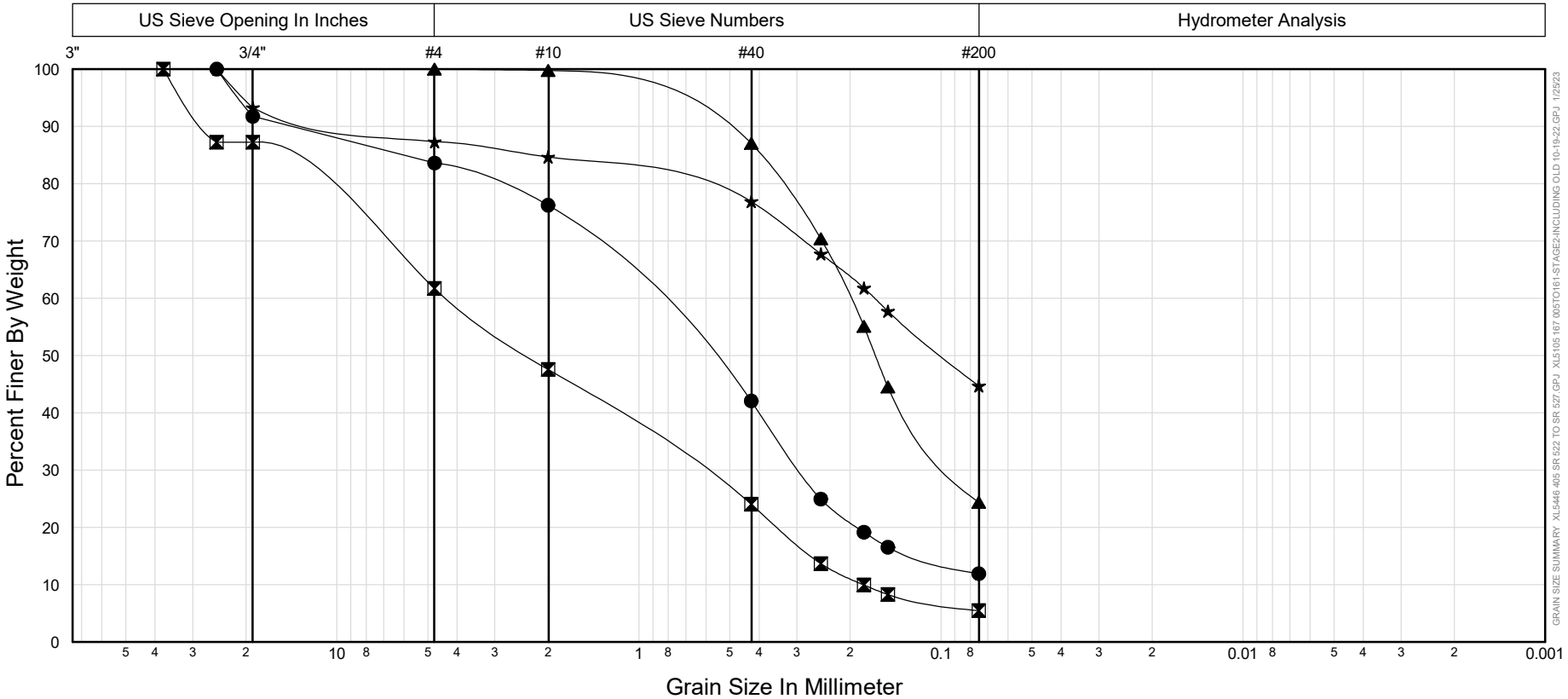
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-56p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-4	SW-SM	WELL-GRADED SAND with SILT and GRAVEL	6-21-19	15	n/a	n/a	NP			16.4	71.7	11.9	1.6	17	14.106	0.958	0.609	0.292	0.189	
⊠	27.0	D-11	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	6-21-19	12	n/a	n/a	NP			38.3	56.2	5.5	0.5	24	27.291	4.283	2.324	0.629	0.346	0.181
▲	34.0	D-13	SM	SILTY SAND	6-21-19	21	n/a	n/a	NP			0.0	75.6	24.4			0.609	0.200	0.165	0.091		
★	44.0	D-16	SM	SILTY SAND	6-21-19	16	n/a	n/a	NP			12.7	42.6	44.7			8.880	0.166	0.099			

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

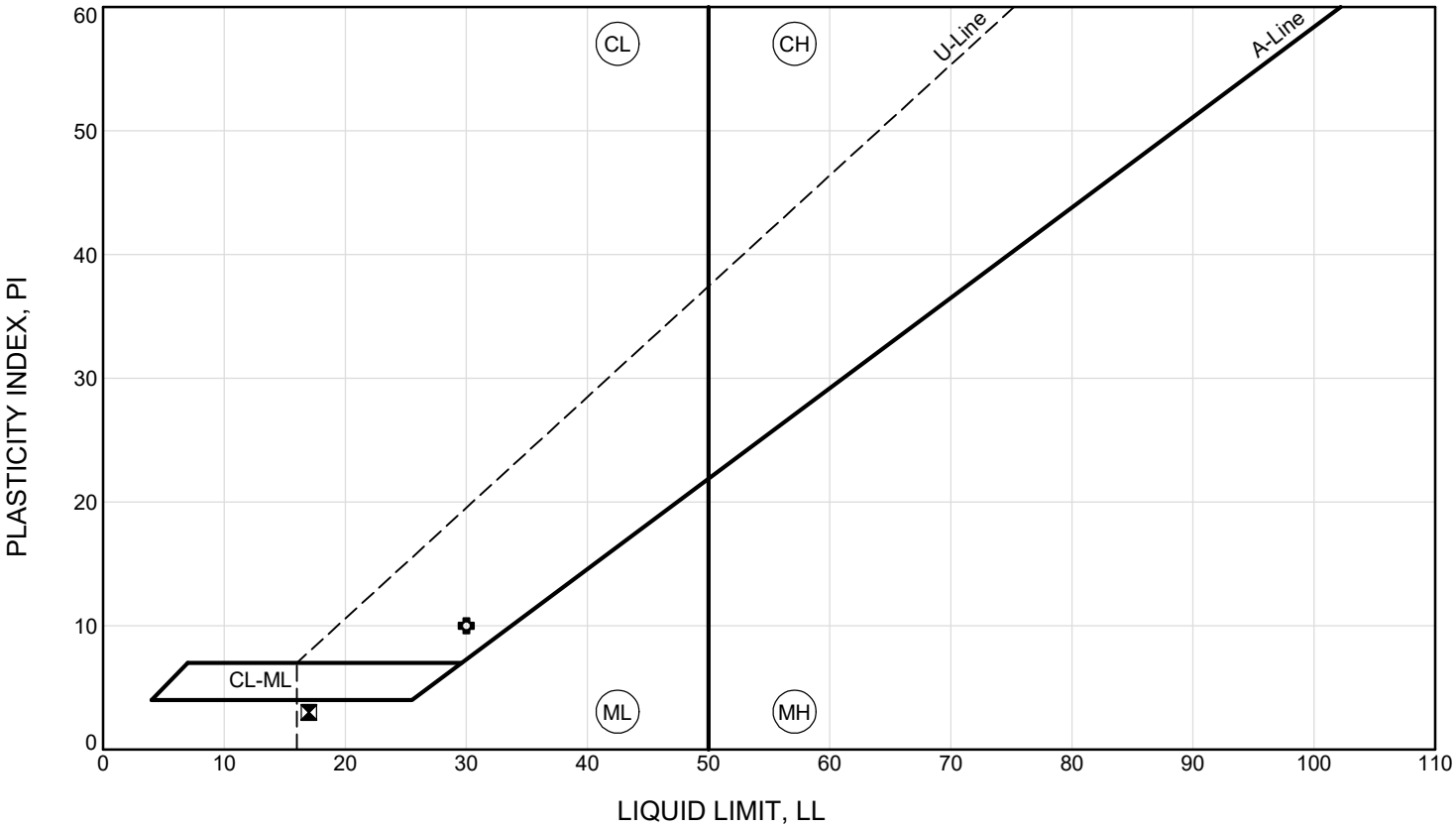


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-57-19	4.0	D-2	SM	SILTY SAND		16	n/a	n/a	NP	18.7		
⊠	NE-57-19	7.0	D-3	SM	SILTY SAND with GRAVEL		14	17	14	3	27.8		
	NE-57-19	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		11	n/a	n/a	NP	6.1		
	NE-57-19	22.0	D-9	SM	SILTY SAND with GRAVEL		20	n/a	n/a	NP	16.1		
	NE-57-19	27.0	D-11	SM	SILTY SAND with GRAVEL		10	n/a	n/a	NP	30.4		
✿	NE-57-19	49.0	D-16	CL	LEAN CLAY with SAND		23	30	20	10	80.0		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

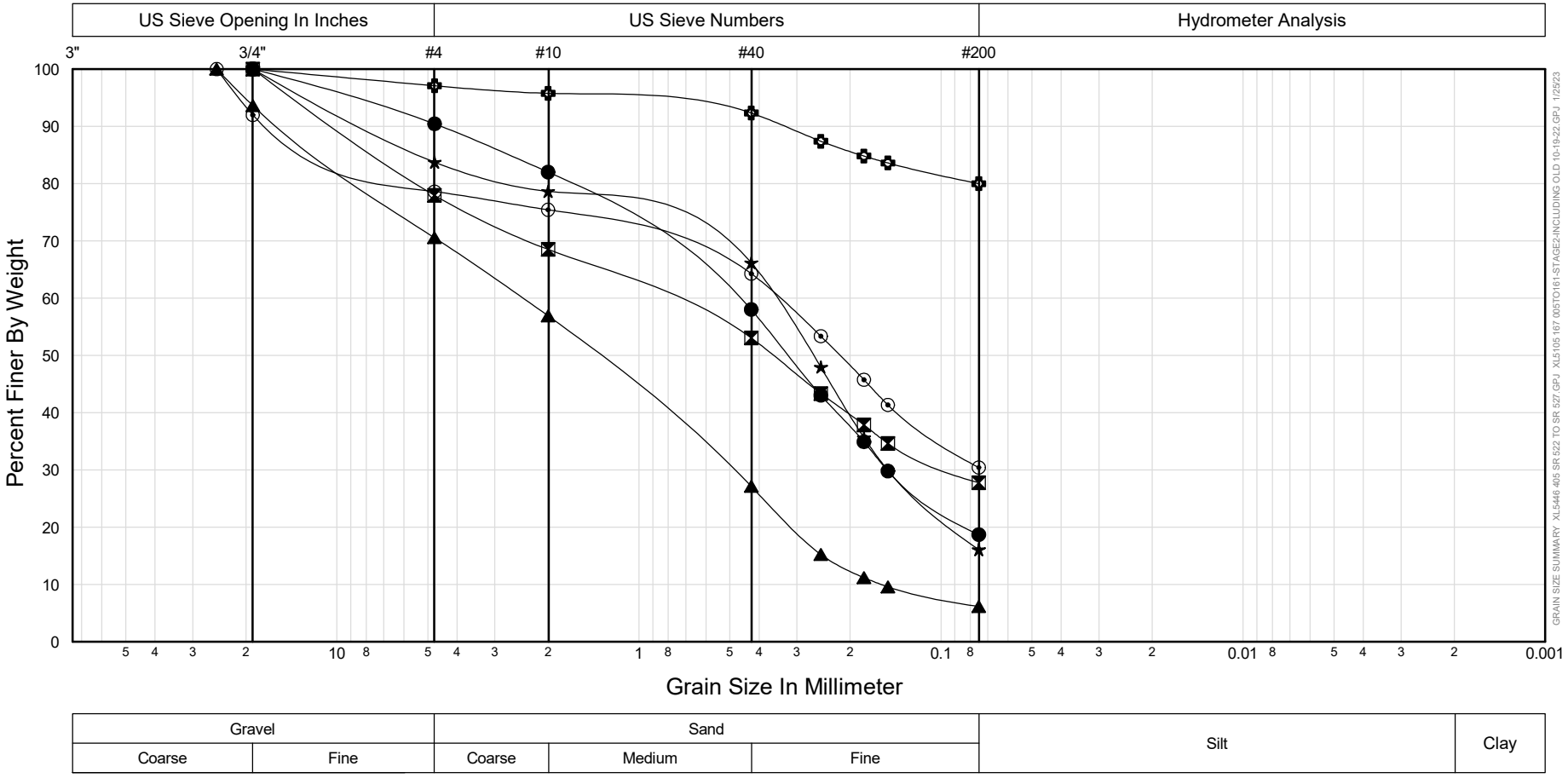
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-57-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND	10-10-19	16	n/a	n/a	NP			9.6	71.7	18.7			4.540	0.483	0.320	0.151	0.081	
⊠	7.0	D-3	SM	SILTY SAND with GRAVEL	10-10-19	14	17	14	3			22.0	50.2	27.8			10.132	0.852	0.360	0.094		
▲	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10-10-19	11	n/a	n/a	NP			29.5	64.4	6.1	0.6	15	15.283	2.434	1.396	0.493	0.309	0.157
★	22.0	D-9	SM	SILTY SAND with GRAVEL	10-10-19	20	n/a	n/a	NP			16.2	67.7	16.1			8.096	0.355	0.265	0.150	0.091	
⊙	27.0	D-11	SM	SILTY SAND with GRAVEL	10-10-19	10	n/a	n/a	NP			21.4	48.2	30.4			15.472	0.345	0.216			
✿	49.0	D-16	CL	LEAN CLAY with SAND	10-10-19	23	30	20	10			2.9	17.1	80.0			0.331					

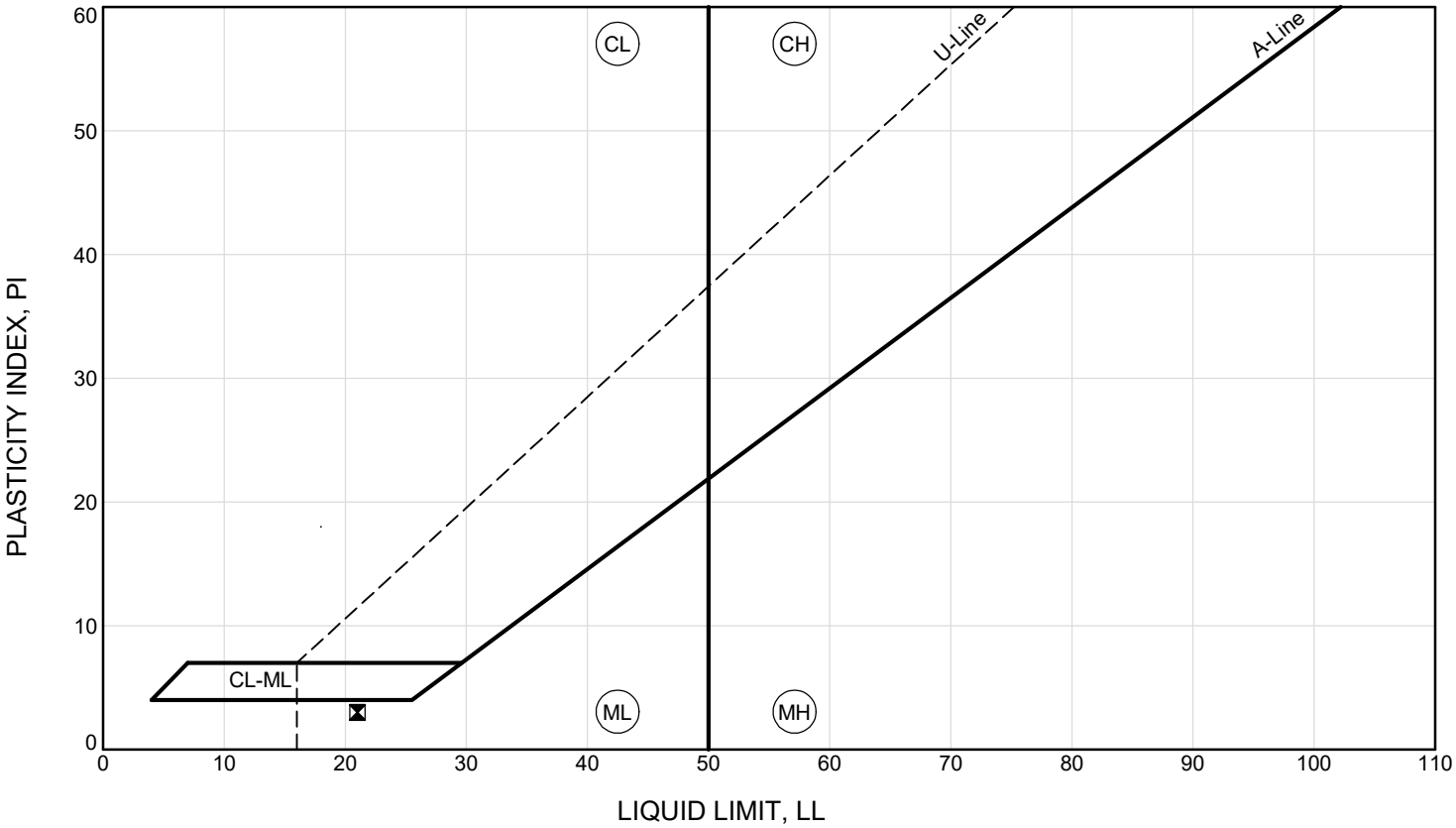
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-60-19	7.0	D-3	SM	SILTY SAND		16	n/a	n/a	NP	29.6		
⊠	NE-60-19	12.0	D-5	ML	SANDY SILT		25	21	18	3	58.4		
	NE-60-19	14.0	D-6	SM	SILTY SAND		21	18	n/a	NP	41.3		
	NE-60-19	29.0	D-12	ML	SANDY SILT		34	n/a	n/a	NP	60.3		
	NE-60-19	39.0	D-14	SP-SM	POORLY GRADED SAND with SILT		28	n/a	n/a	NP	9.0		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

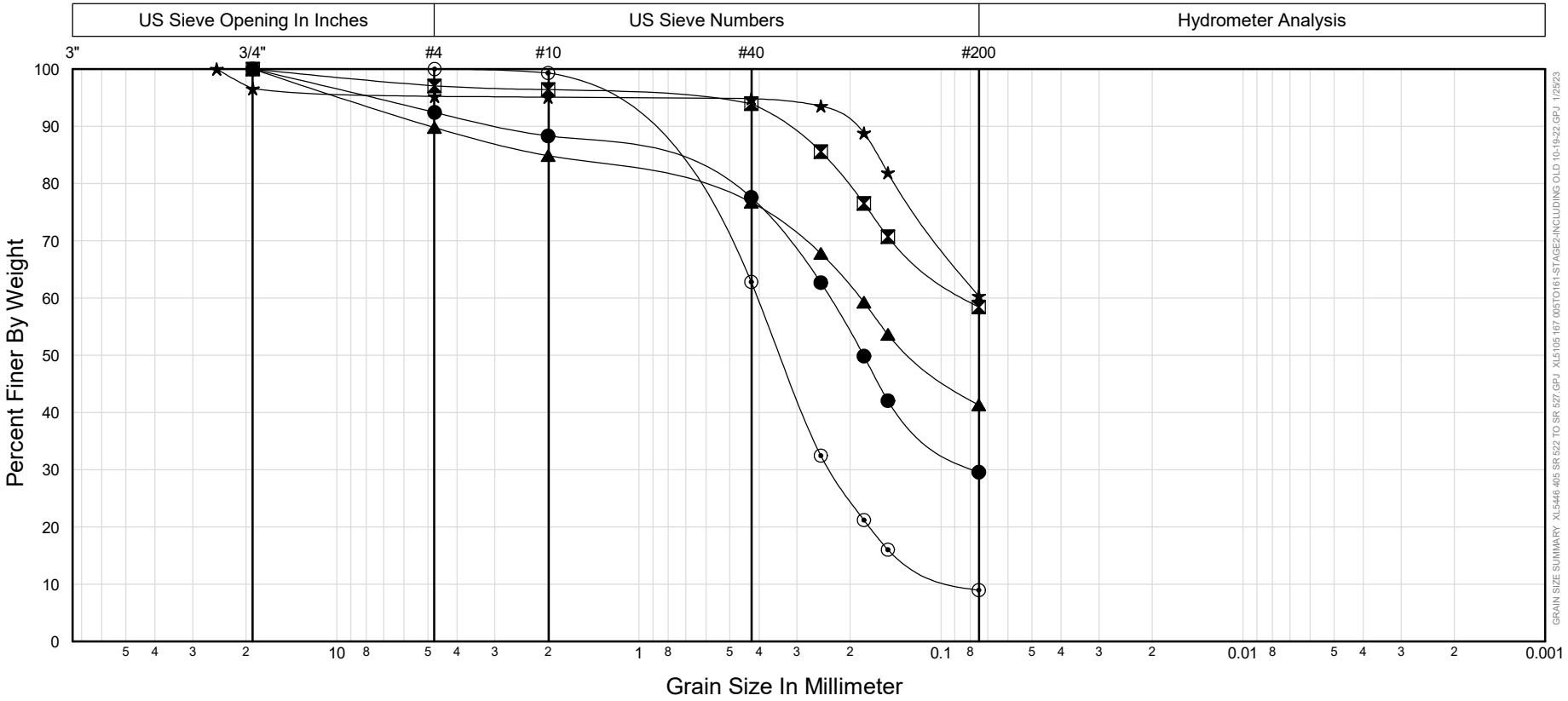
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-60-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SM	SILTY SAND	10-28-19	16	n/a	n/a	NP			7.6	62.9	29.6			2.847	0.233	0.181	0.077		
⊠	12.0	D-5	ML	SANDY SILT	10-28-19	25	21	18	3			2.9	38.7	58.4			0.331	0.082				
▲	14.0	D-6	SM	SILTY SAND	10-28-19	21	18	n/a	NP			10.2	48.5	41.3			4.895	0.185	0.122			
★	29.0	D-12	ML	SANDY SILT	10-28-19	34	n/a	n/a	NP			4.8	34.9	60.3			0.195					
⊙	39.0	D-14	SP-SM	POORLY GRADED SAND with SILT	10-28-19	28	n/a	n/a	NP			0.0	91.0	9.0	1.6	5	1.347	0.405	0.340	0.233	0.172	0.083

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

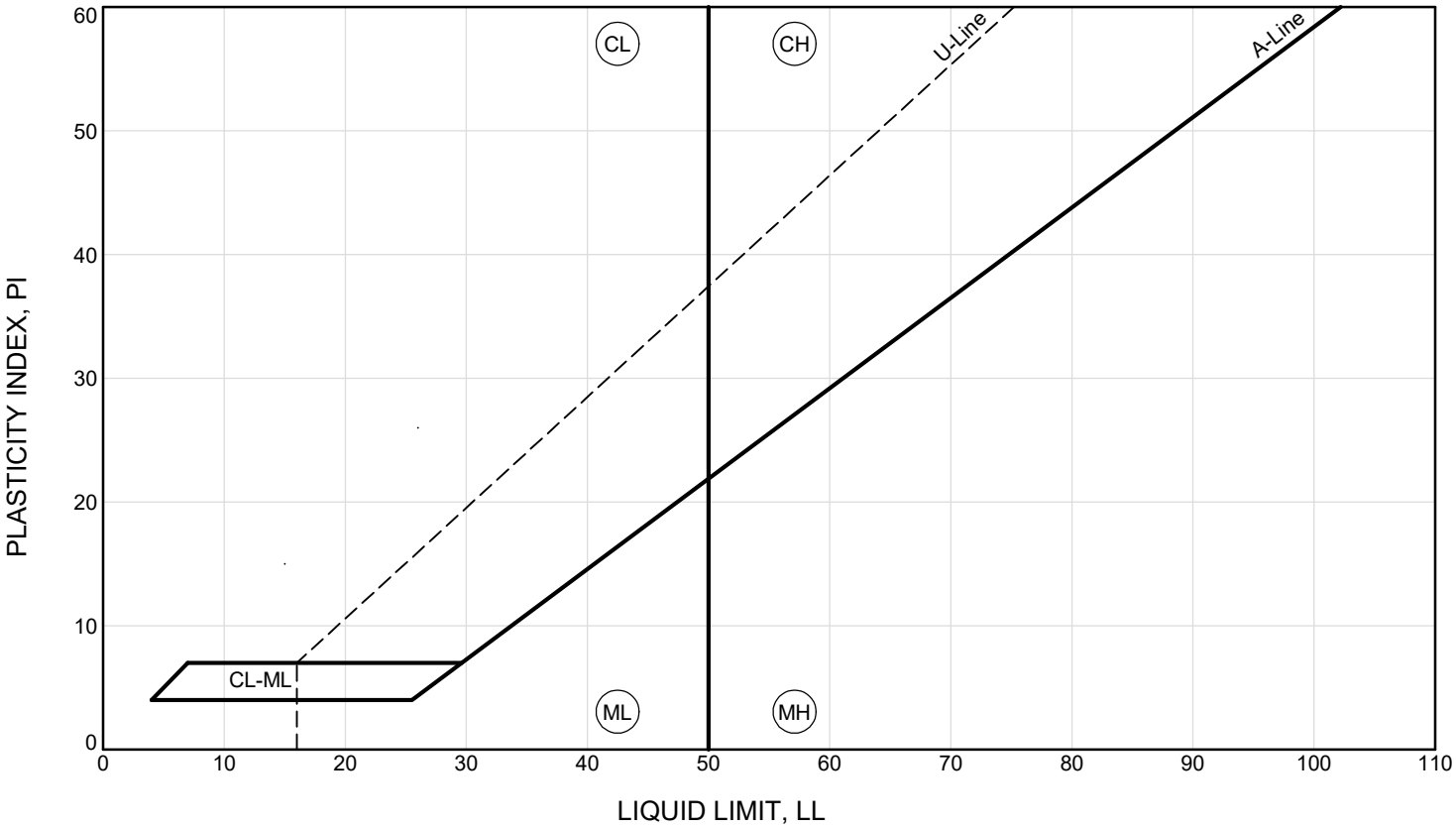


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-61vw-19	7.0	D-3	SM	SILTY SAND		19	15	n/a	NP	44.0		
	NE-61vw-19	14.0	D-6	ML	SANDY SILT		25	n/a	n/a	NP	53.7		
	NE-61vw-19	22.0	D-9	SM	SILTY SAND		24	n/a	n/a	NP	24.2		
	NE-61vw-19	39.0	D-13	ML	SILT		33	26	n/a	NP	86.6		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

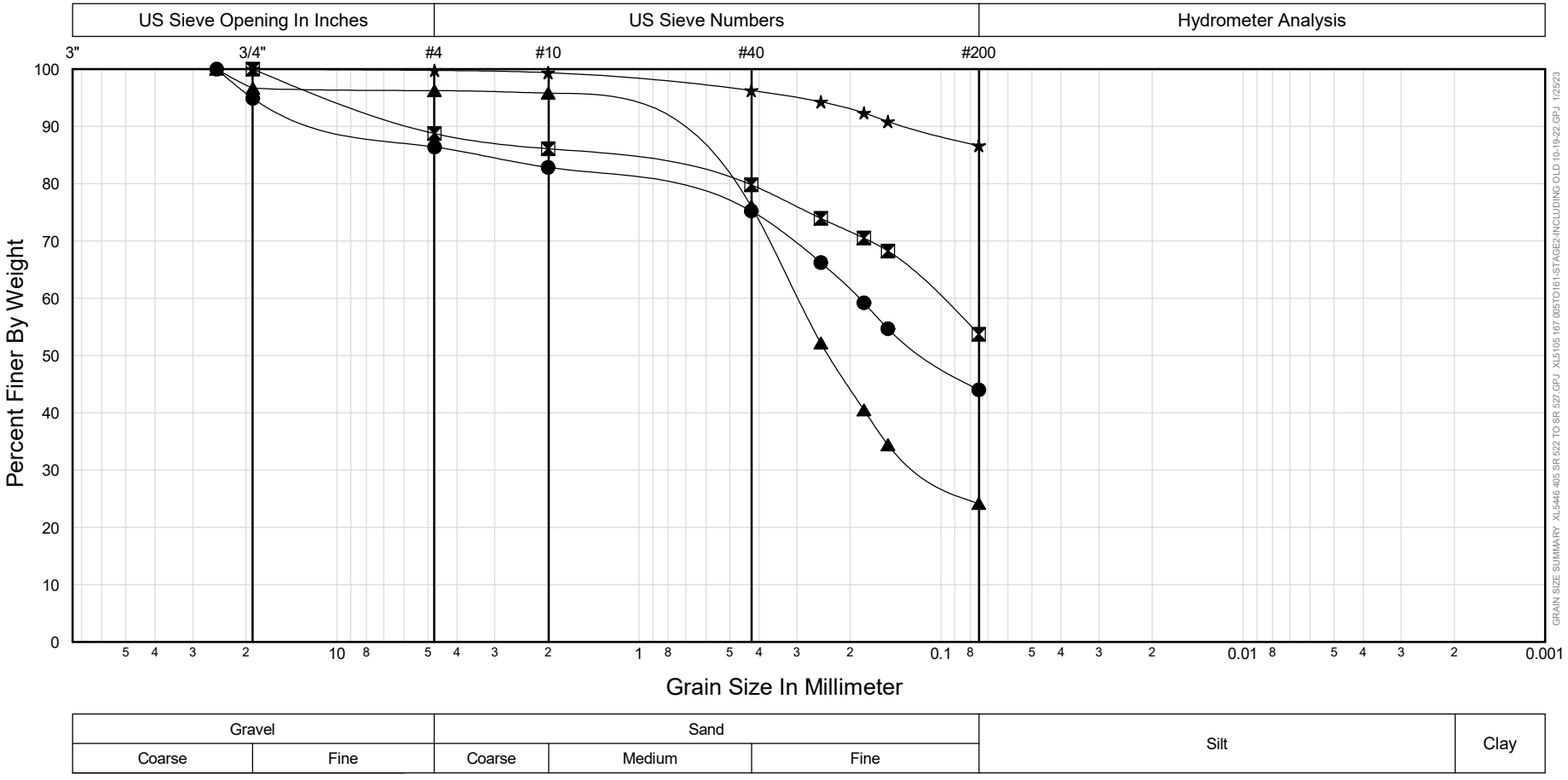
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-61vw-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SM	SILTY SAND	10-10-19	19	15	n/a	NP			13.6	42.4	44.0			8.553	0.187	0.111			
⊠	14.0	D-6	ML	SANDY SILT	10-10-19	25	n/a	n/a	NP			11.3	35.0	53.7			5.547	0.101				
▲	22.0	D-9	SM	SILTY SAND	10-10-19	24	n/a	n/a	NP			3.8	72.1	24.2			1.267	0.297	0.235	0.111		
★	39.0	D-13	ML	SILT	10-10-19	33	26	n/a	NP			0.2	13.1	86.6			0.130					

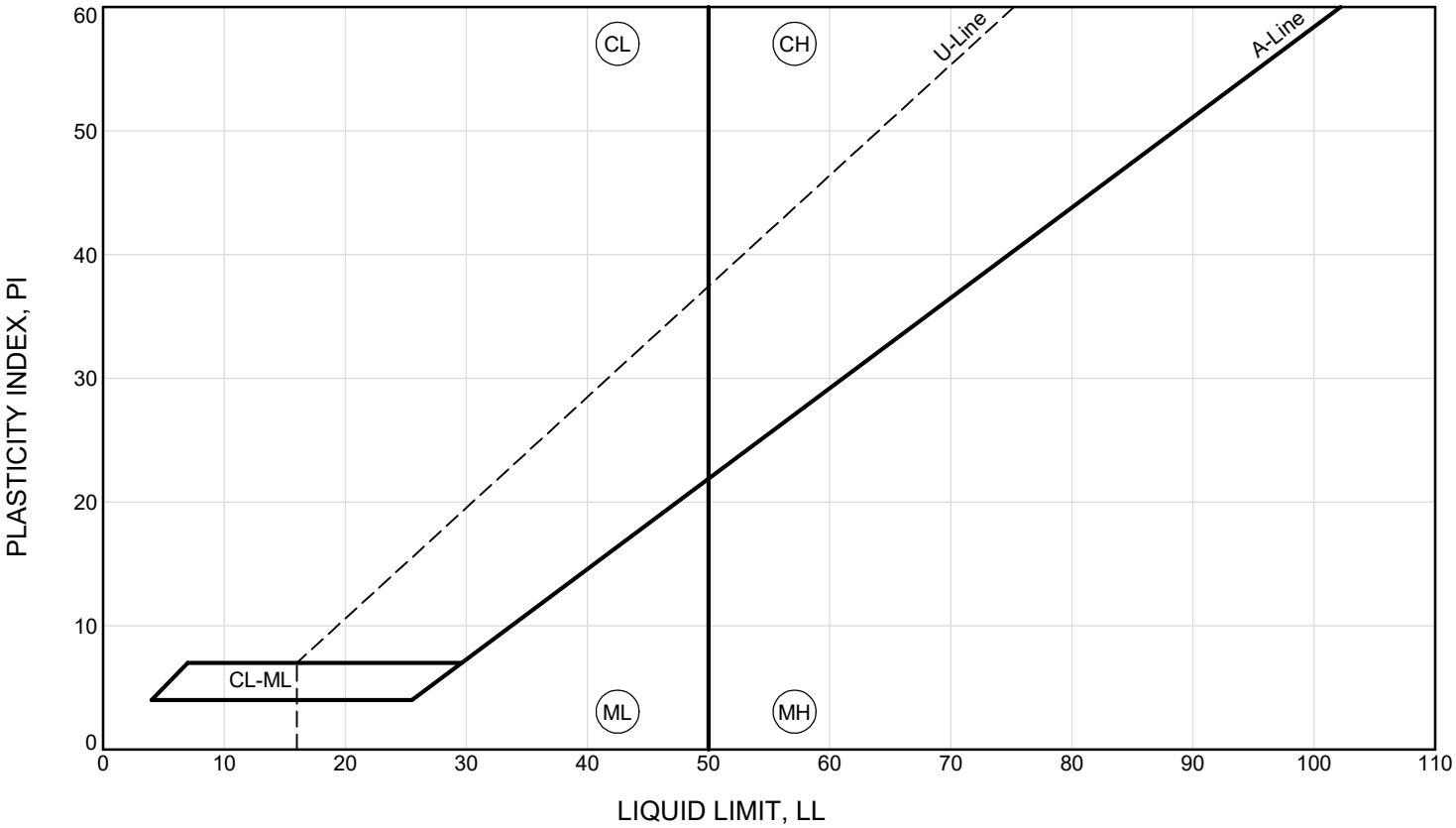
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-62p-19	4.0	D-2	SM	SILTY SAND with GRAVEL		16	n/a	n/a	NP	20.3		
	NE-62p-19	19.0	D-8	SM	SILTY SAND with GRAVEL		19	n/a	n/a	NP	27.5		
	NE-62p-19	22.0	D-9	SM	SILTY SAND		22	n/a	n/a	NP	29.9		
	NE-62p-19	24.0	D-10	SM	SILTY SAND		25	n/a	n/a	NP	17.9		
	NE-62p-19	39.0	D-13	SM	SILTY SAND		24	n/a	n/a	NP	22.2		
	NE-62p-19	44.0	D-14	SM	SILTY SAND with GRAVEL		14	n/a	n/a	NP	18.0		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

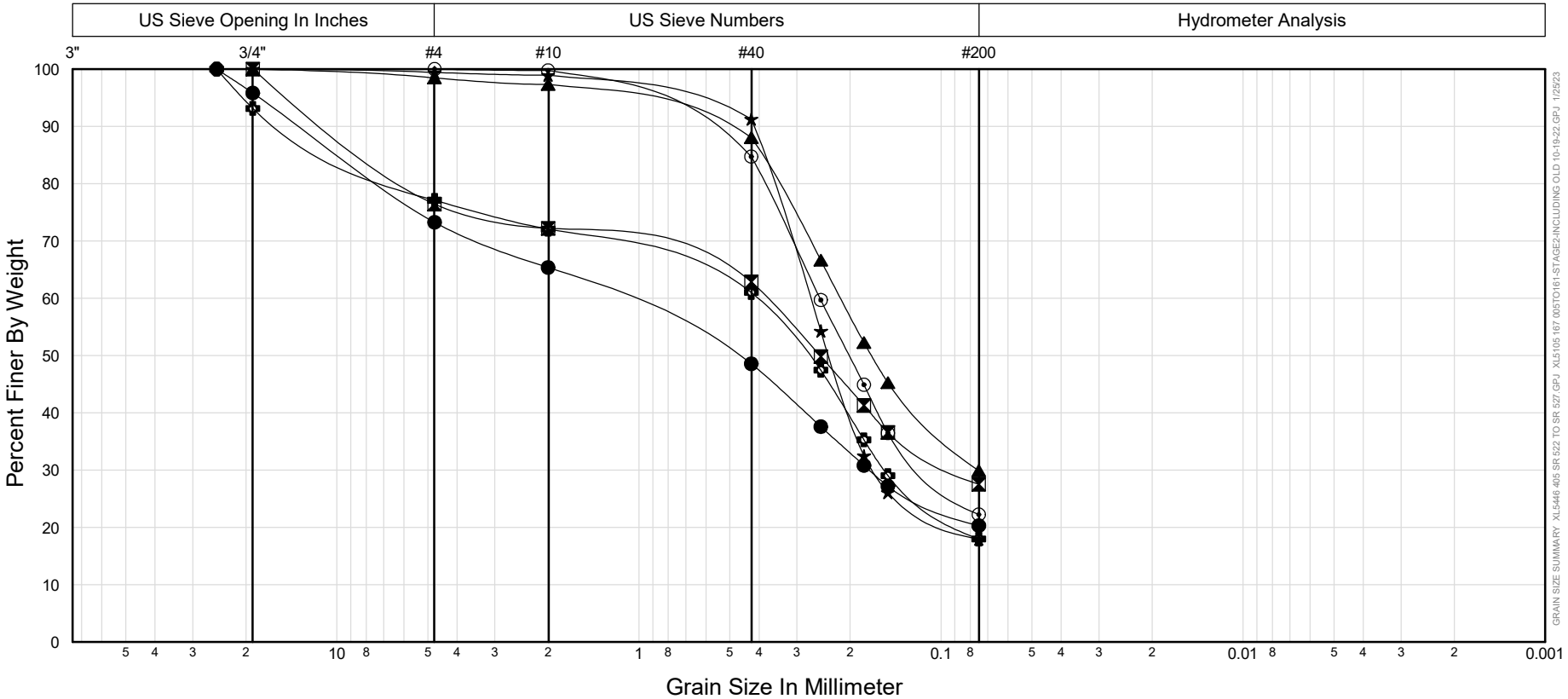
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-62p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SM	SILTY SAND with GRAVEL	10-10-19	16	n/a	n/a	NP			26.7	53.0	20.3			13.286	1.219	0.485	0.173		
⊠	19.0	D-8	SM	SILTY SAND with GRAVEL	10-10-19	19	n/a	n/a	NP			23.6	48.9	27.5			10.548	0.378	0.252	0.091		
▲	22.0	D-9	SM	SILTY SAND	10-10-19	22	n/a	n/a	NP			1.6	68.5	29.9			0.590	0.215	0.170	0.075		
★	24.0	D-10	SM	SILTY SAND	10-10-19	25	n/a	n/a	NP			0.6	81.5	17.9			0.417	0.271	0.234	0.168	0.089	
⊙	39.0	D-13	SM	SILTY SAND	10-10-19	24	n/a	n/a	NP			0.0	77.8	22.2			0.732	0.252	0.202	0.109		
✿	44.0	D-14	SM	SILTY SAND with GRAVEL	10-10-19	14	n/a	n/a	NP			22.9	59.1	18.0			14.498	0.408	0.276	0.154	0.085	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

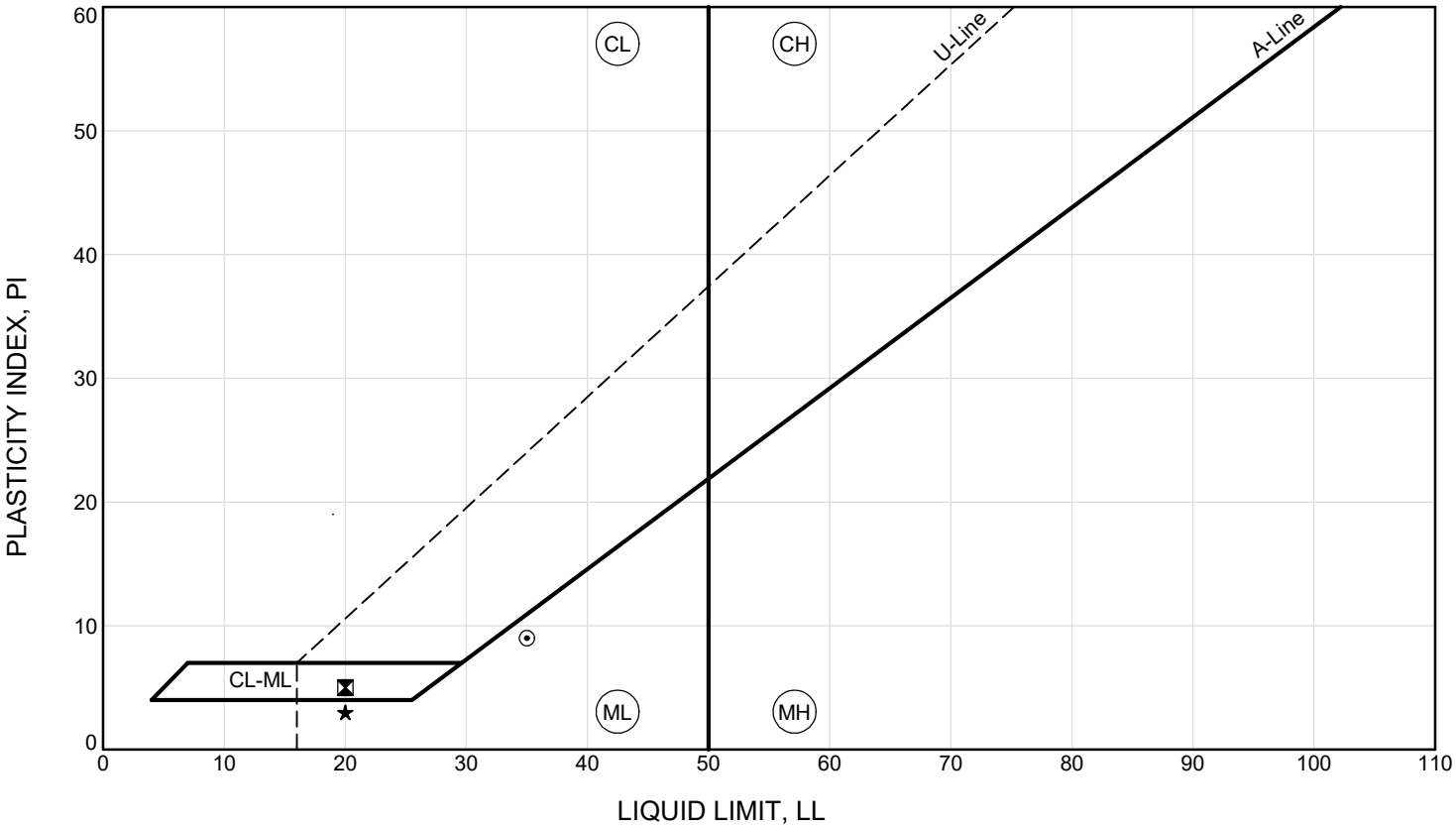


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-64p-19	4.0	D-2	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		8	n/a	n/a	NP	8.9		
⊠	NE-64p-19	24.0	D-10	SC-SM	SILTY, CLAYEY SAND with GRAVEL		17	20	15	5	44.9		
	NE-64p-19	29.0	D-12	ML	SANDY SILT		19	19	n/a	NP	55.7		
★	NE-64p-19	34.0	D-13	SM	SILTY SAND		14	20	17	3	20.9		
⊙	NE-64p-19	44.5	D-15B		MC & AL Only, with Organics		32	35	26	9			

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

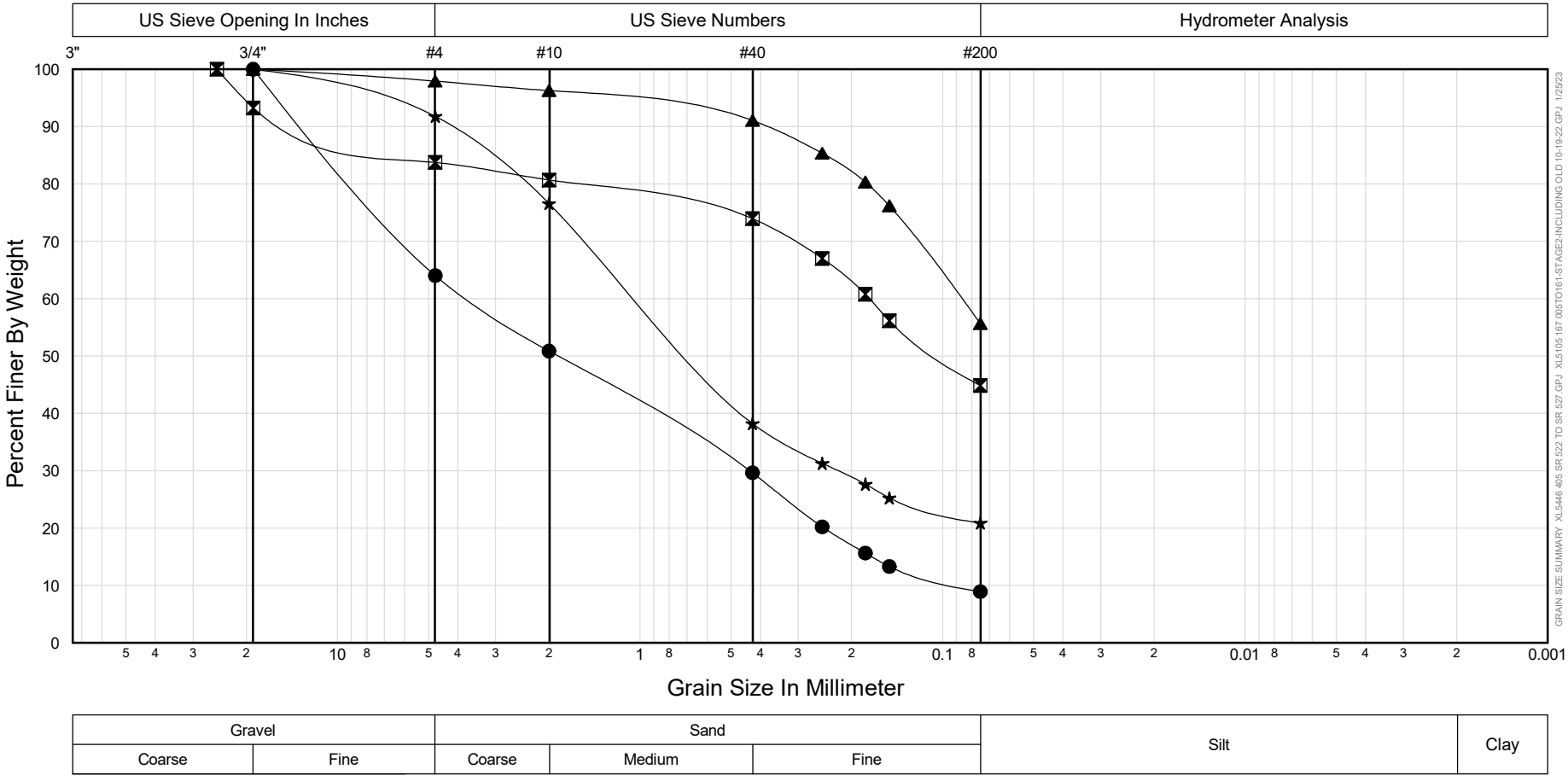
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-64p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	6-10-19	8	n/a	n/a	NP			36.0	55.1	8.9	0.6	41	12.926	3.648	1.879	0.436	0.246	0.089
⊠	24.0	D-10	SC-SM	SILTY, CLAYEY SAND with GRAVEL	6-10-19	17	20	15	5			16.3	38.9	44.9			11.826	0.175	0.103			
▲	29.0	D-12	ML	SANDY SILT	6-10-19	19	19	n/a	NP			2.1	42.3	55.7			0.385	0.087				
★	34.0	D-13	SM	SILTY SAND	6-10-19	14	20	17	3			8.2	70.9	20.9			4.291	1.024	0.684	0.222		

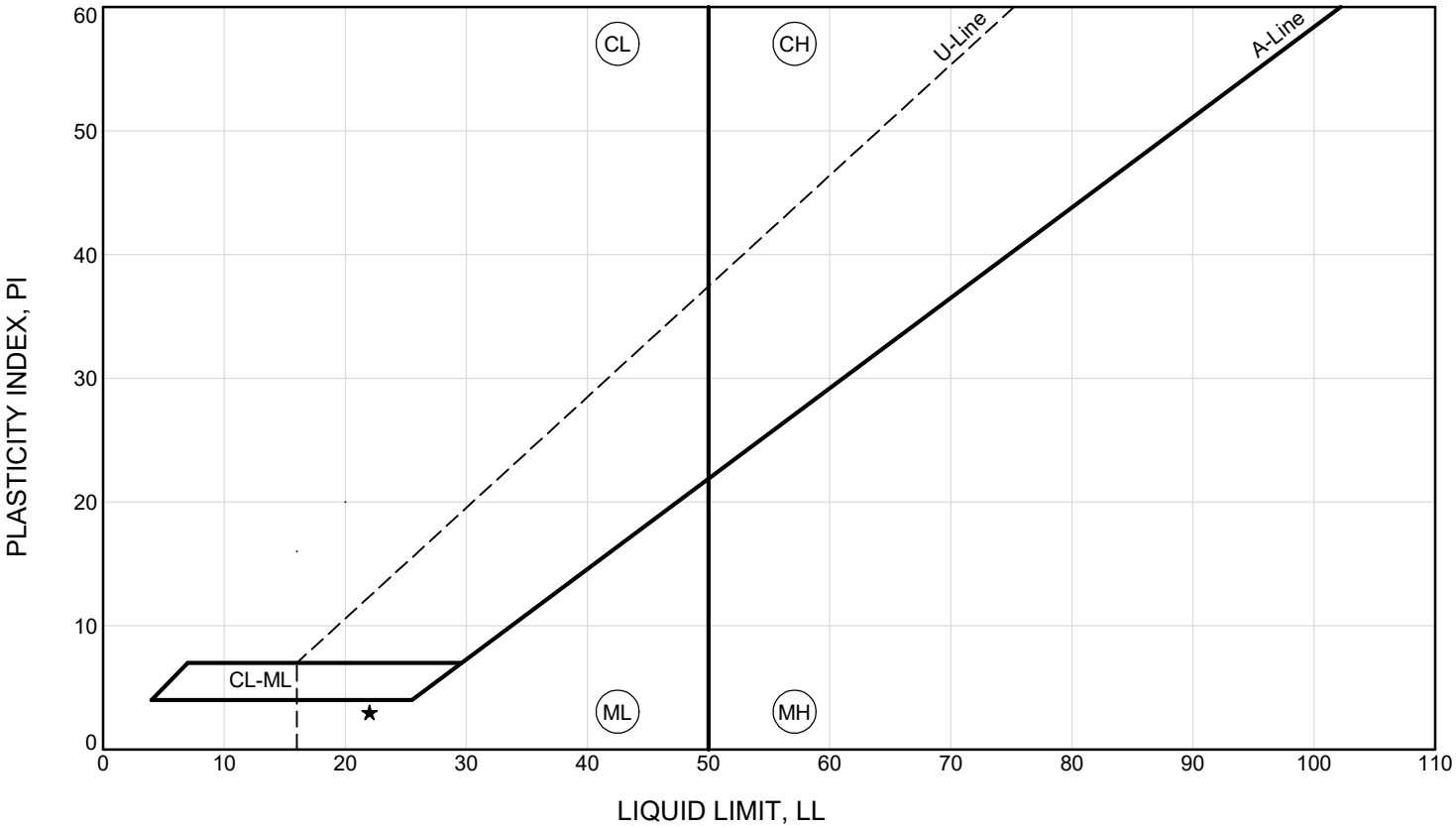
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-65p-19	17.0	D-7	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		14	n/a	n/a	NP	9.6		
	NE-65p-19	22.0	D-9	SM	SILTY SAND with GRAVEL		12	16	n/a	NP	23.6		
	NE-65p-19	34.0	D-13	SM	SILTY SAND with GRAVEL		12	20	n/a	NP	16.5		
★	NE-65p-19	44.0	D-15		MC & AL Only		26	22	19	3			

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

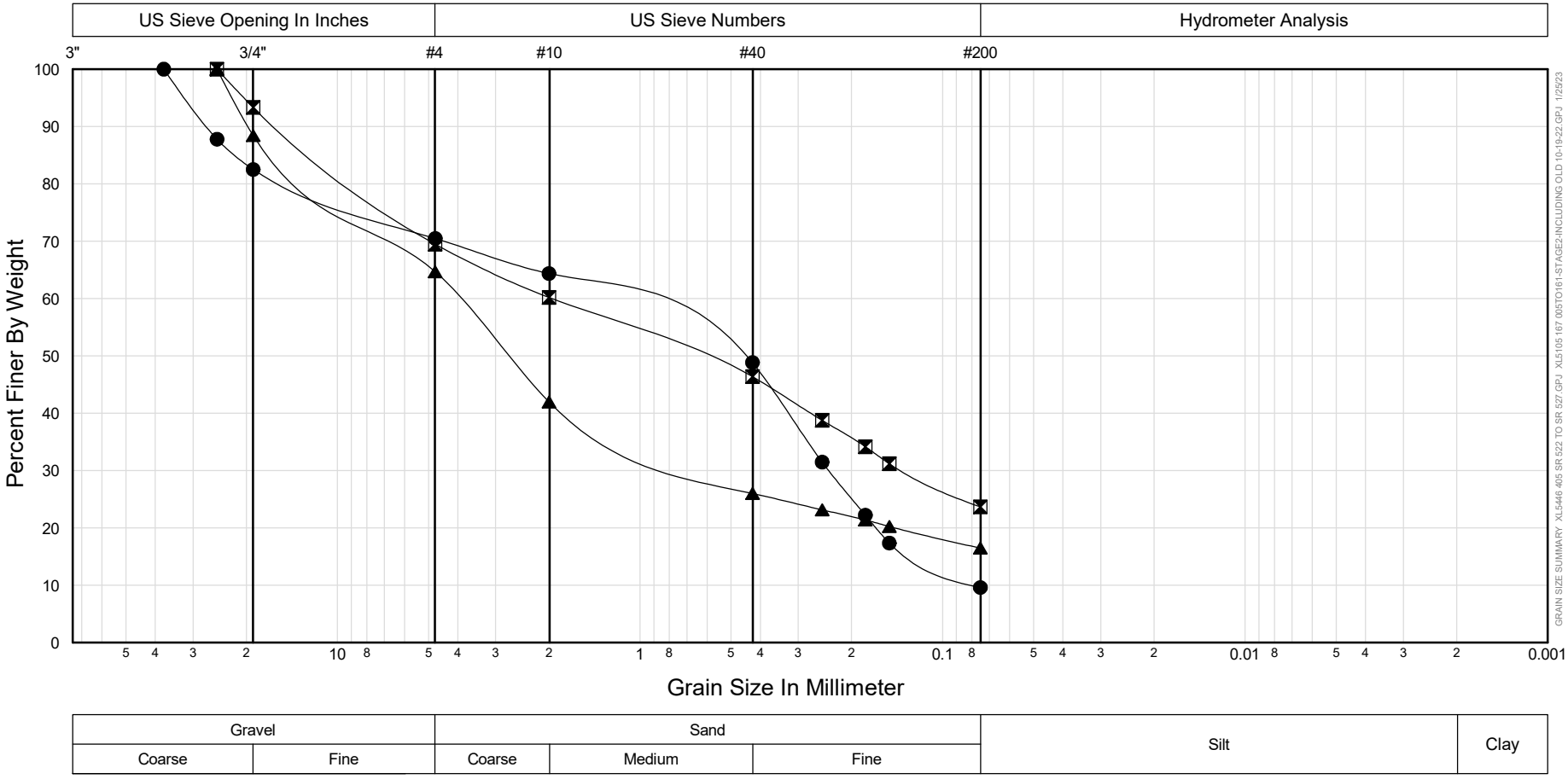
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-65p-19

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	17.0	D-7	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	6-10-19	14	n/a	n/a	NP			29.5	60.9	9.6	0.6	17	26.910	1.294	0.477	0.237	0.166	0.078
⊠	22.0	D-9	SM	SILTY SAND with GRAVEL	6-10-19	12	16	n/a	NP			30.5	45.8	23.6			15.671	1.959	0.637	0.135		
▲	34.0	D-13	SM	SILTY SAND with GRAVEL	6-10-19	12	20	n/a	NP			35.3	48.2	16.5			19.730	3.975	2.716	0.627	0.143	

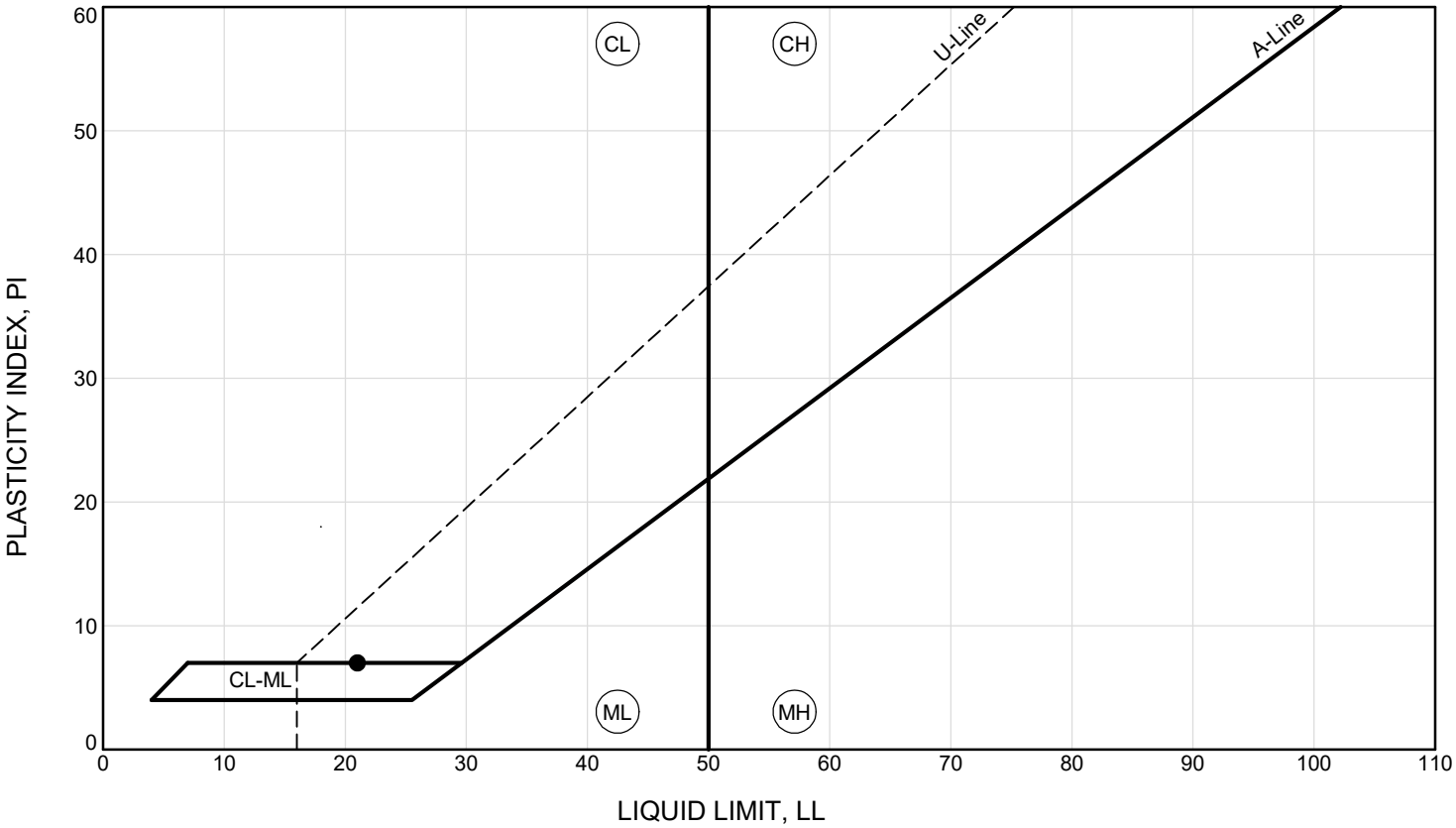
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-67p-20	4.0	D-2	SC-SM	SILTY, CLAYEY SAND with GRAVEL		11	21	14	7	33.0		
	NE-67p-20	7.0	D-3	SM	SILTY SAND with GRAVEL		17	18	n/a	NP	14.0		
	NE-67p-20	14.0	D-5	SW-SM	WELL-GRADED SAND with SILT and GRAVEL		9	n/a	n/a	NP	10.9		
	NE-67p-20	24.0	D-7	SW-SM	WELL-GRADED SAND with SILT and GRAVEL		9	n/a	n/a	NP	9.6		
	NE-67p-20	34.0	D-9	SM	SILTY SAND		16	n/a	n/a	NP	13.1		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

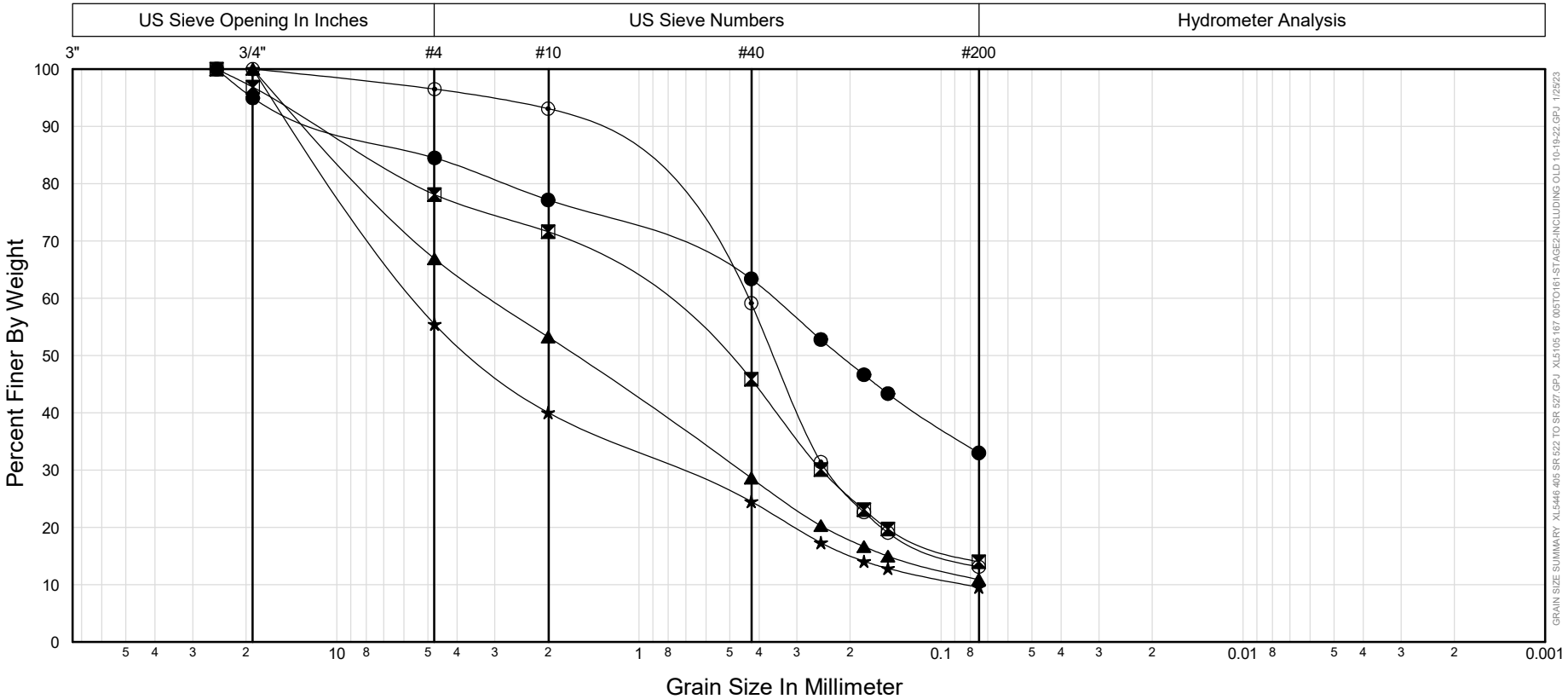
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-67p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-2	SC-SM	SILTY, CLAYEY SAND with GRAVEL	10-2-20	11	21	14	7			15.5	51.5	33.0			9.851	0.359	0.215			
⊠	7.0	D-3	SM	SILTY SAND with GRAVEL	10-2-20	17	18	n/a	NP			21.9	64.1	14.0			11.445	0.995	0.545	0.249	0.152	
▲	14.0	D-5	SW-SM	WELL-GRADED SAND with SILT and GRAVEL	10-2-20	9	n/a	n/a	NP			33.1	56.0	10.9	1.1	48	12.500	3.069	1.631	0.464	0.243	
★	24.0	D-7	SW-SM	WELL-GRADED SAND with SILT and GRAVEL	10-2-20	9	n/a	n/a	NP			44.5	45.9	9.6	1.2	67	13.918	5.471	3.497	0.734	0.304	0.082
⊙	34.0	D-9	SM	SILTY SAND	10-2-20	16	n/a	n/a	NP			3.5	83.4	13.1			1.736	0.442	0.357	0.237	0.157	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

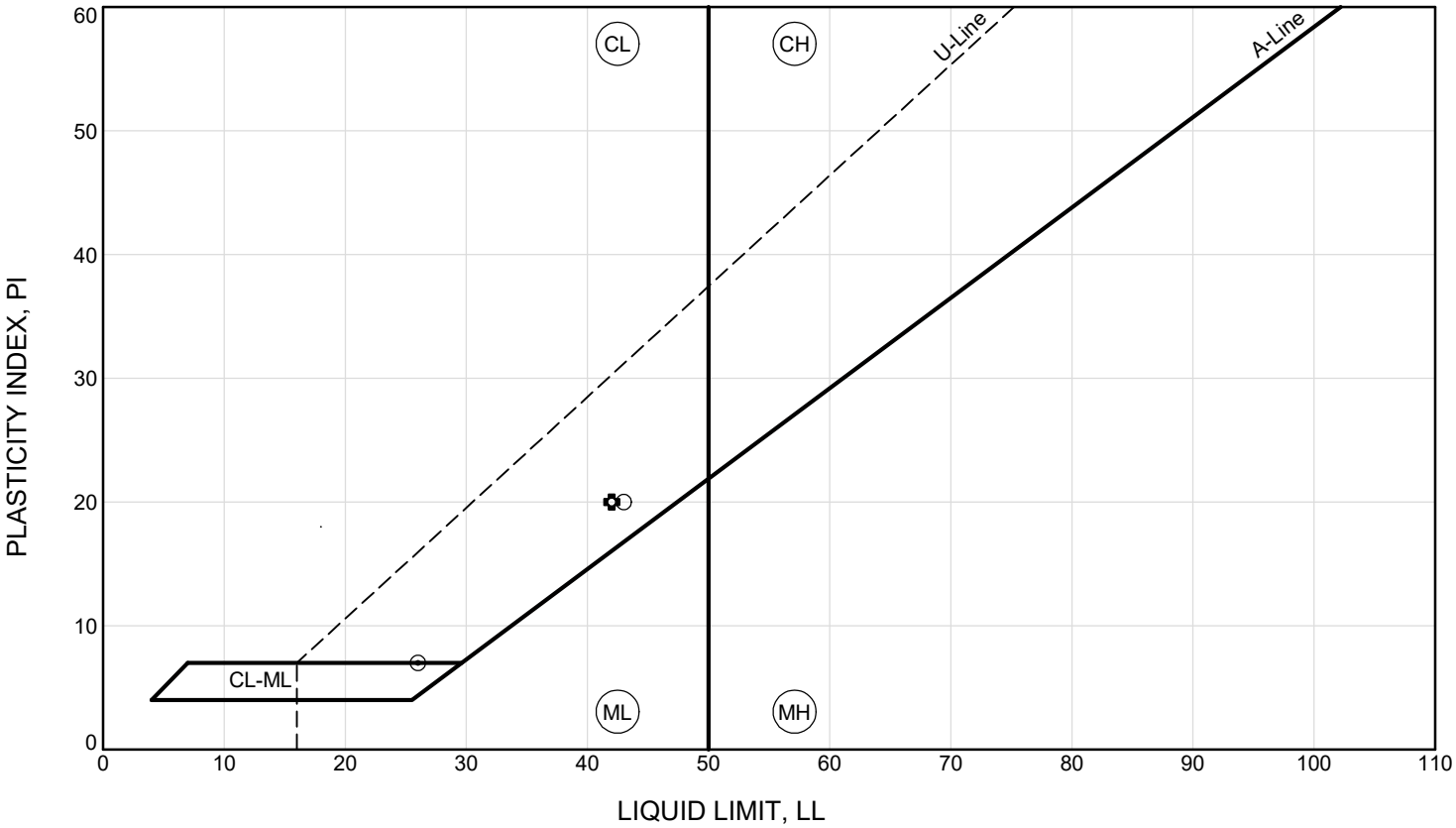


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-68-20	9.0	D-2	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	29.9		
	NE-68-20	14.0	D-3	SM	SILTY SAND		16	n/a	n/a	NP	42.8		
	NE-68-20	22.0	D-6	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	31.9		
	NE-68-20	27.0	D-8	SM	SILTY SAND with GRAVEL		13	18	n/a	NP	36.2		
⊙	NE-68-20	35.0	PS-11	CL-ML	SANDY SILTY CLAY		30	26	19	7	58.0	42.9	15.2
✿	NE-68-20	41.0	D-14	CL	LEAN CLAY		40	42	22	20	98.0		
○	NE-68-20	49.0	D-17	CL	LEAN CLAY		41	43	23	20	86.0		
	NE-68-20	54.0	D-18	SM	SILTY SAND		23	n/a	n/a	NP	13.1		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

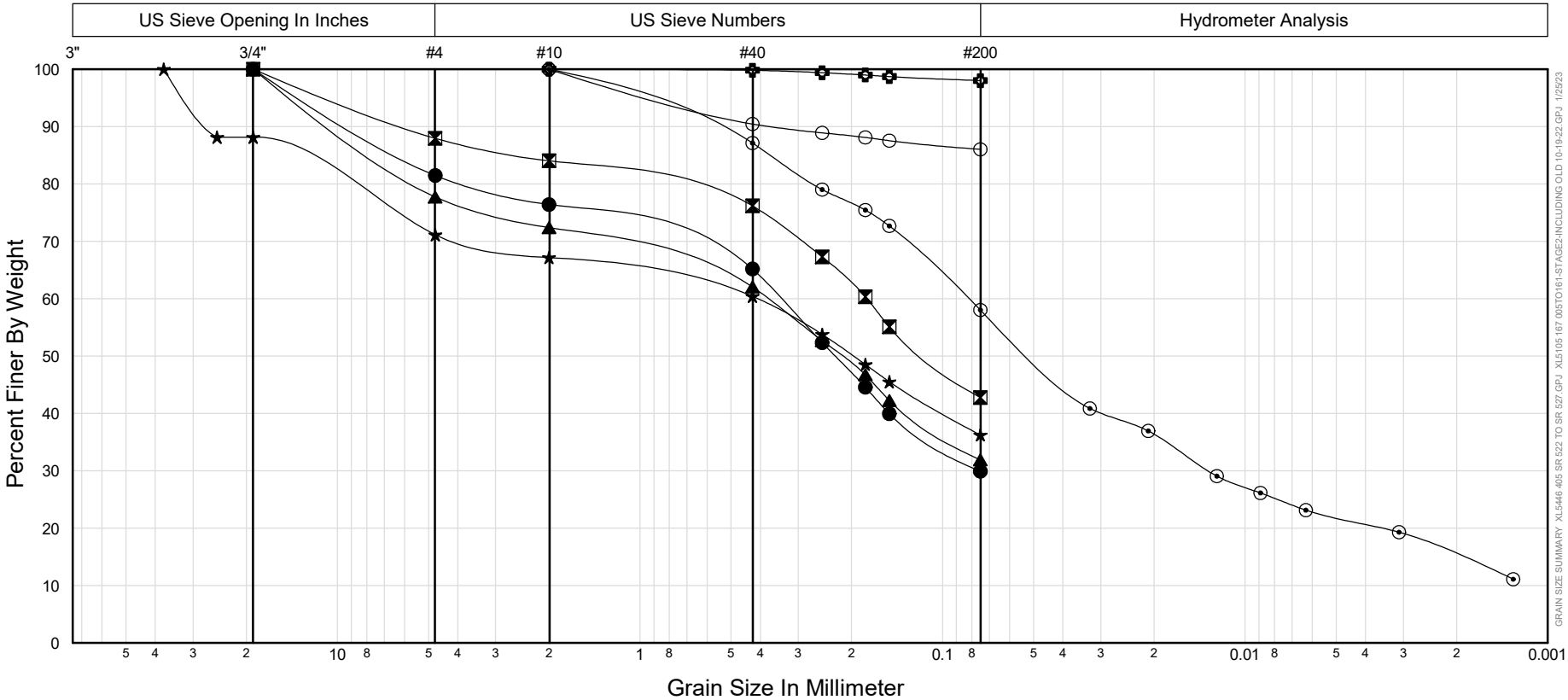
ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

GRAIN SIZE ANALYSIS SUMMARY FOR NE-68-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	9.0	D-2	SM	SILTY SAND with GRAVEL	11-9-20	11	n/a	n/a	NP			18.5	51.6	29.9			8.991	0.343	0.227	0.075		
⊠	14.0	D-3	SM	SILTY SAND	11-9-20	16	n/a	n/a	NP			12.0	45.2	42.8			6.013	0.178	0.113			
▲	22.0	D-6	SM	SILTY SAND with GRAVEL	11-9-20	13	n/a	n/a	NP			22.3	45.8	31.9			10.196	0.378	0.216			
★	27.0	D-8	SM	SILTY SAND with GRAVEL	11-9-20	13	18	n/a	NP			28.9	34.9	36.2			26.633	0.411	0.197			
⊙	35.0	PS-11	CL-ML	SANDY SILTY CLAY	11-9-20	30	26	19	7	117	2.67	0.0	42.0	58.0			0.600	0.082	0.051	0.013	0.004	
✿	41.0	D-14	CL	LEAN CLAY	11-9-20	40	42	22	20			0.0	2.0	98.0								
○	49.0	D-17	CL	LEAN CLAY	11-9-20	41	43	23	20			0.0	14.0	86.0			0.364					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

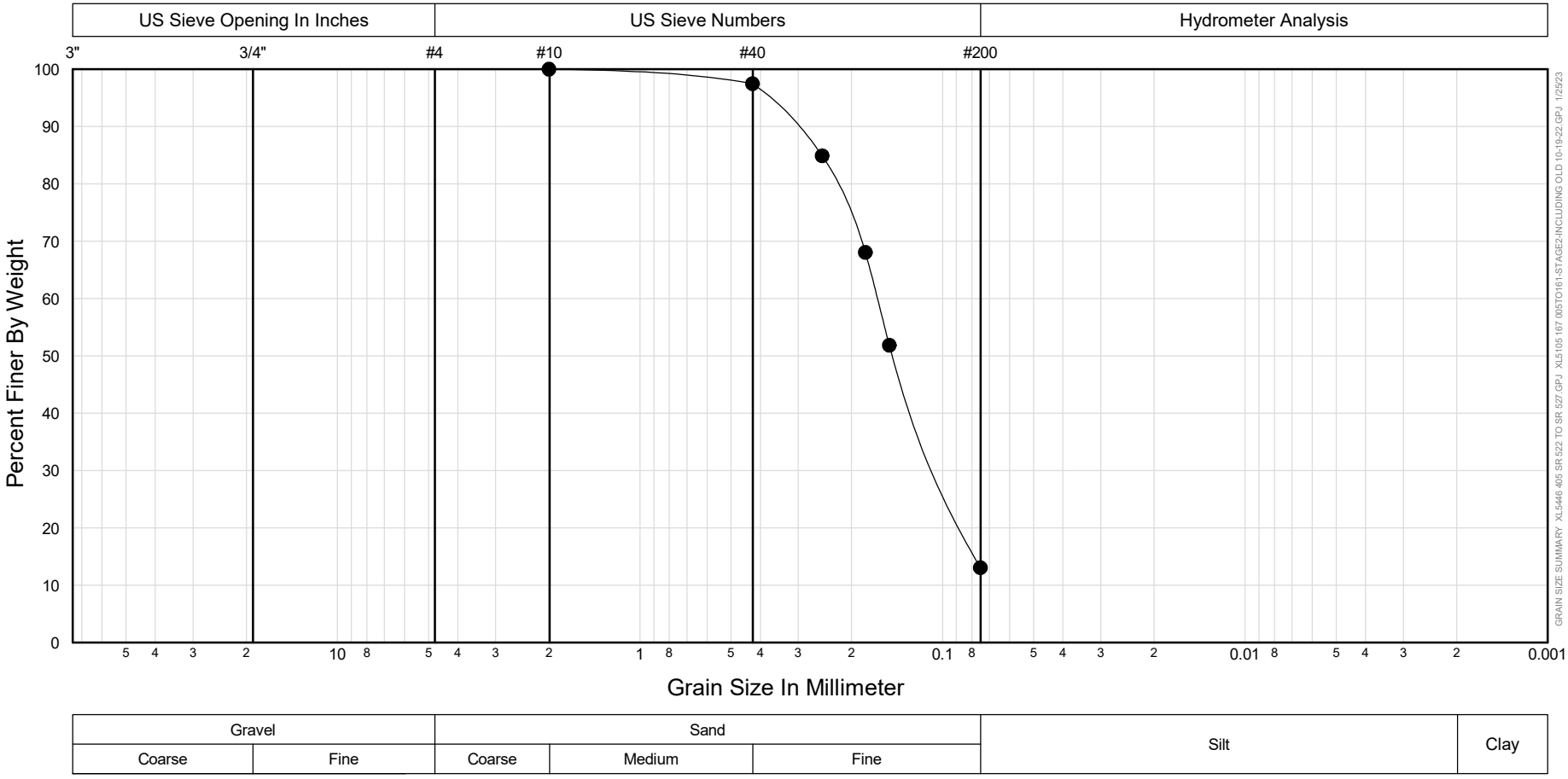


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	54.0	D-18	SM	SILTY SAND	11-9-20	23	n/a	n/a	NP			0.0	86.9	13.1			0.310	0.164	0.145	0.102	0.085	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

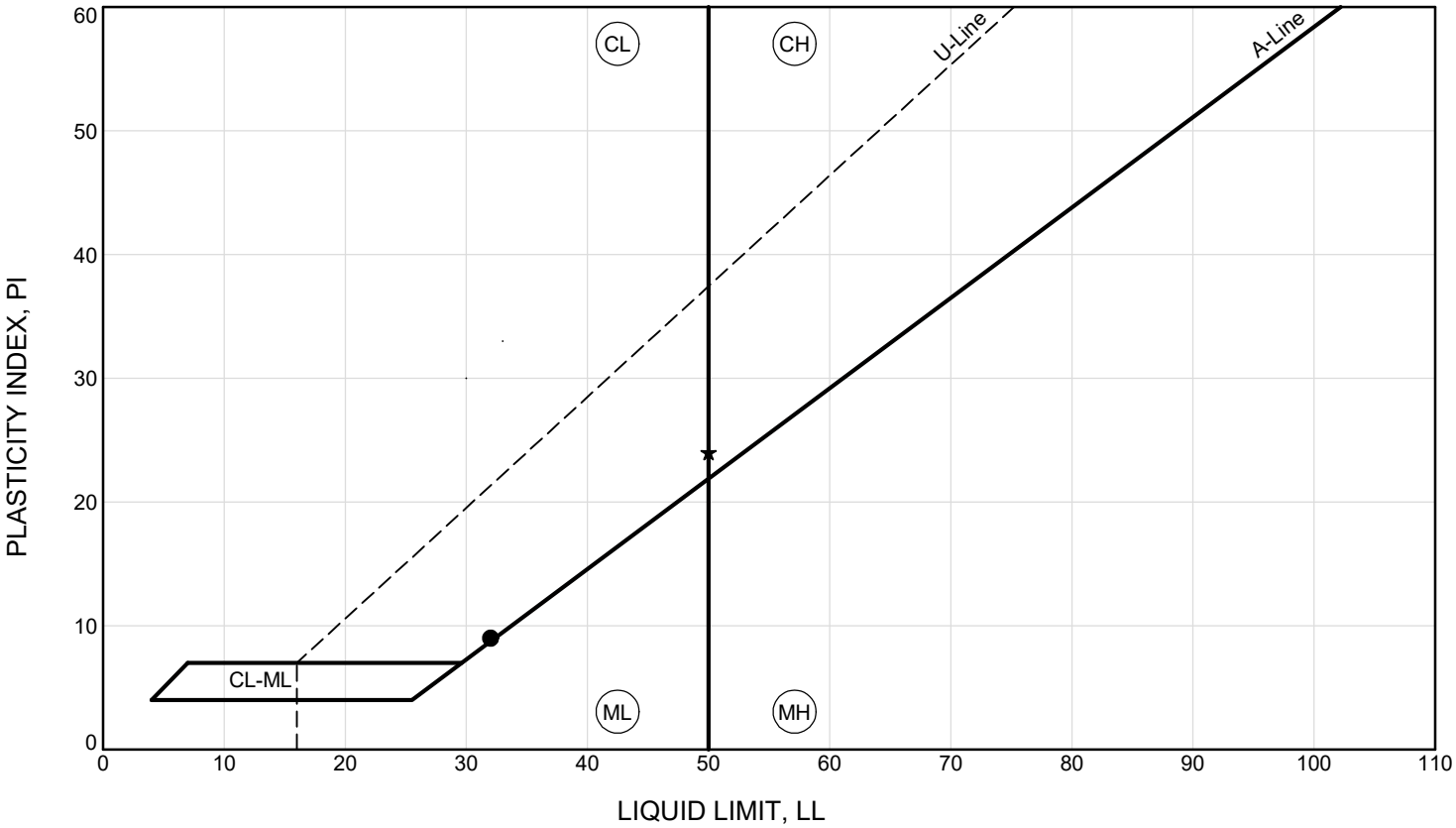


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-69p-20	7.0	D-2	CL	LEAN CLAY		26	32	23	9	85.5		
	NE-69p-20	9.0	D-3A	SM	SILTY SAND with GRAVEL		26	33	n/a	NP	39.5		
	NE-69p-20	12.0	D-4	SM	SILTY SAND with GRAVEL		21	n/a	n/a	NP	17.2		
★	NE-69p-20	17.0	D-6	CH	FAT CLAY with SAND		34	50	26	24	75.0		
	NE-69p-20	22.0	D-8	SM	SILTY SAND		25	n/a	n/a	NP	33.0		
	NE-69p-20	24.0	D-9	ML	SILT with SAND		30	30	n/a	NP	82.7		
	NE-69p-20	34.0	D-12	SM	SILTY SAND		20	n/a	n/a	NP	13.2		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

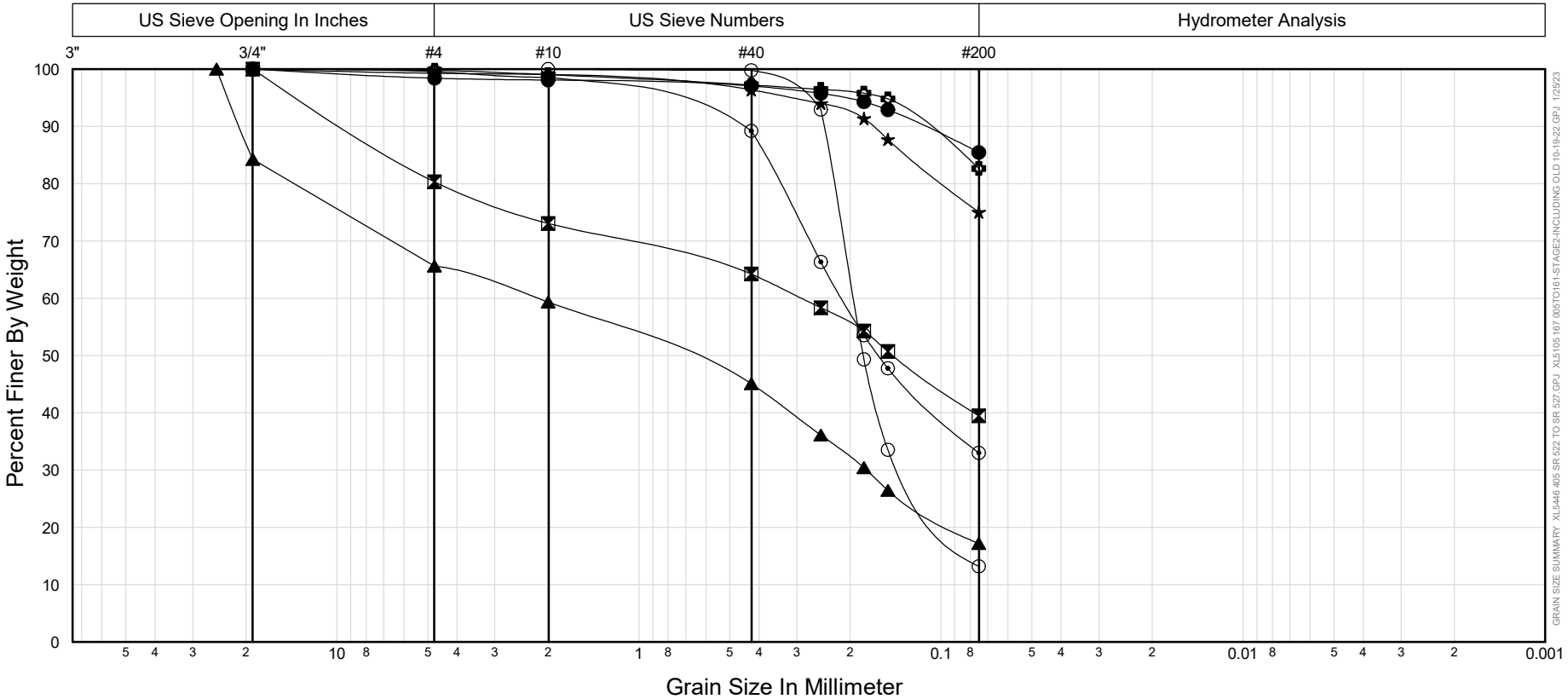
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-69p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-2	CL	LEAN CLAY	10-2-20	26	32	23	9			1.6	13.0	85.5			0.114					
⊠	9.0	D-3A	SM	SILTY SAND with GRAVEL	10-2-20	26	33	n/a	NP			19.7	40.9	39.5			9.394	0.290	0.144			
▲	12.0	D-4	SM	SILTY SAND with GRAVEL	10-2-20	21	n/a	n/a	NP			34.4	48.4	17.2			21.004	2.189	0.725	0.177	0.093	
★	17.0	D-6	CH	FAT CLAY with SAND	10-2-20	34	50	26	24			0.7	24.2	75.0			0.168					
⊙	22.0	D-8	SM	SILTY SAND	10-2-20	25	n/a	n/a	NP			0.4	66.6	33.0			0.484	0.212	0.161			
✿	24.0	D-9	ML	SILT with SAND	10-2-20	30	30	n/a	NP			0.2	17.1	82.7			0.114					
○	34.0	D-12	SM	SILTY SAND	10-2-20	20	n/a	n/a	NP			0.0	86.8	13.2			0.245	0.195	0.181	0.133	0.095	

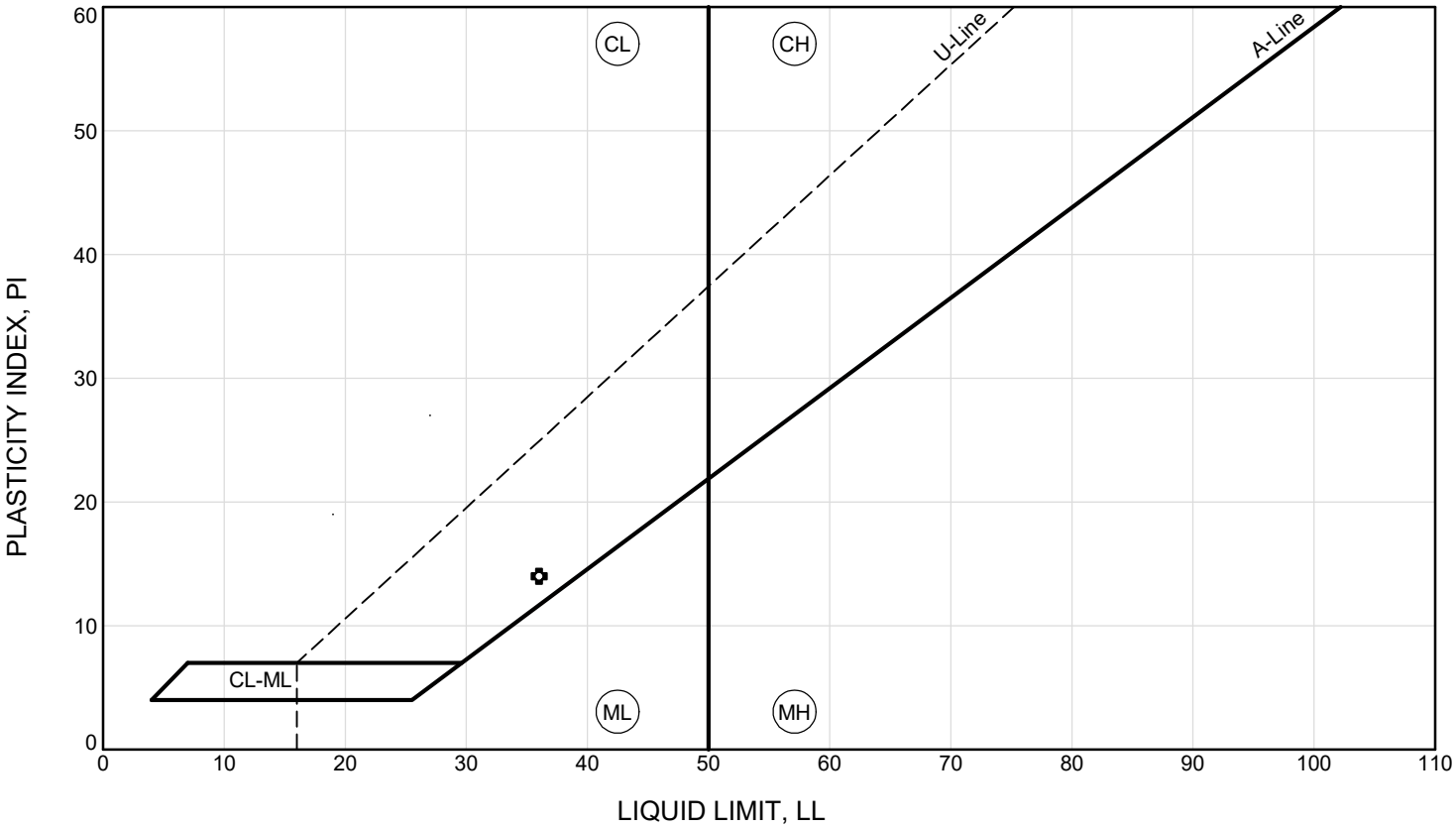
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-70p-20	7.0	D-2	SW-SM	WELL-GRADED SAND with SILT		19	n/a	n/a	NP	9.5		
	NE-70p-20	9.0	D-3	SM	SILTY SAND with GRAVEL		17	19	n/a	NP	24.1		
	NE-70p-20	17.0	D-6	SM	SILTY SAND with GRAVEL		14	n/a	n/a	NP	16.9		
	NE-70p-20	24.0	D-9A	ML	SANDY SILT		28	27	n/a	NP	67.9		
	NE-70p-20	27.0	D-10	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		20	n/a	n/a	NP	10.0		
✿	NE-70p-20	37.0	D-14A	CL	SANDY LEAN CLAY		30	36	22	14	54.3		
	NE-70p-20	39.0	D-15	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		12	n/a	n/a	NP	8.2		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

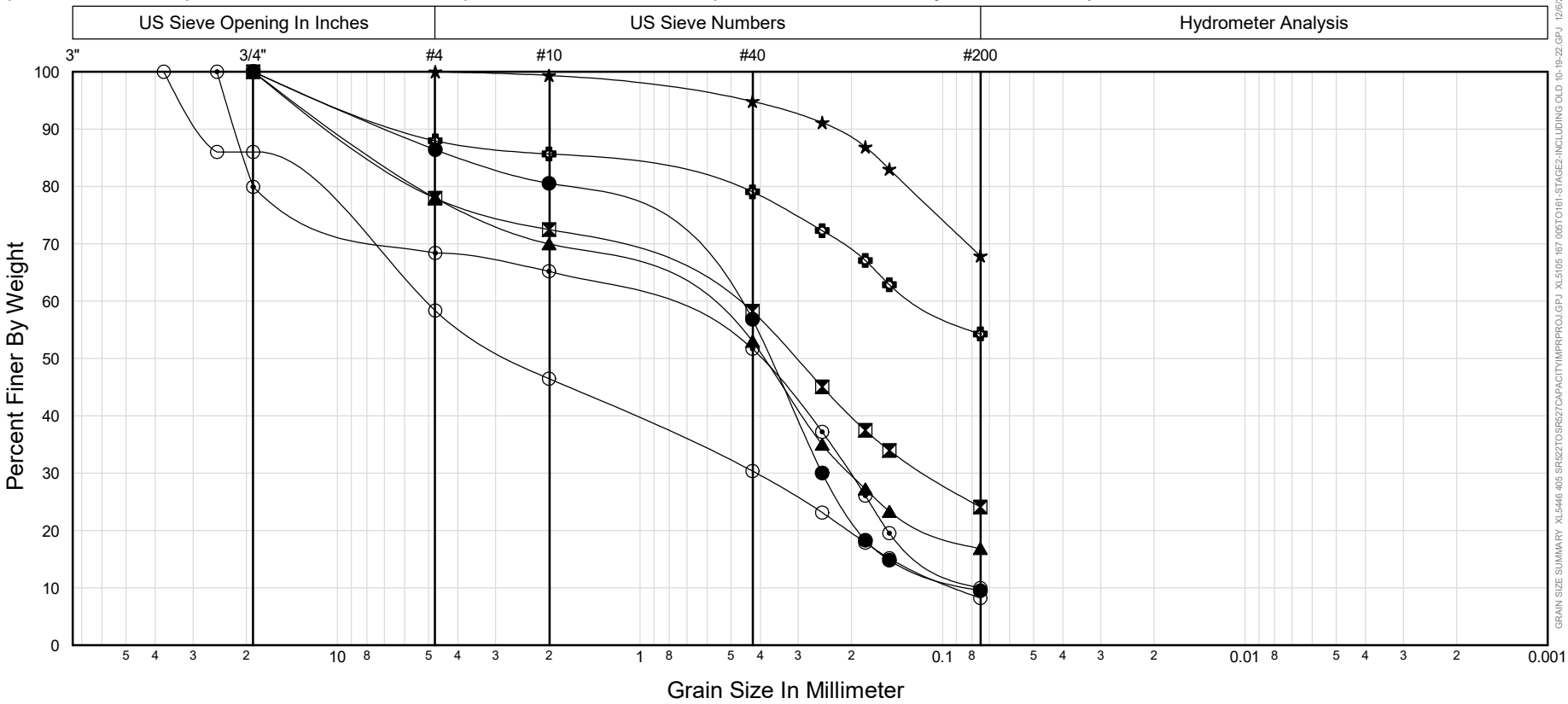
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-70p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-2	SW-SM	WELL-GRADED SAND with SILT	10-2-20	19	n/a	n/a	NP			13.6	76.9	9.5	1.5	7	6.851	0.523	0.371	0.250	0.189	0.080
⊠	9.0	D-3	SM	SILTY SAND with GRAVEL	10-2-20	17	19	n/a	NP			22.1	53.8	24.1			10.138	0.515	0.305	0.114		
▲	17.0	D-6	SM	SILTY SAND with GRAVEL	10-2-20	14	n/a	n/a	NP			22.0	61.1	16.9			10.124	0.805	0.389	0.202	0.105	
★	24.0	D-9A	ML	SANDY SILT	10-2-20	28	27	n/a	NP			0.0	32.1	67.9			0.229					
⊙	27.0	D-10	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10-2-20	20	n/a	n/a	NP			31.6	58.4	10.0	0.5	15	21.805	1.102	0.400	0.202	0.152	0.075
✿	37.0	D-14A	CL	SANDY LEAN CLAY	10-2-20	30	36	22	14			12.0	33.7	54.3			6.007	0.119				
○	39.0	D-15	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10-2-20	12	n/a	n/a	NP			41.6	50.1	8.2	0.4	58	28.067	5.158	2.586	0.414	0.206	0.090

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

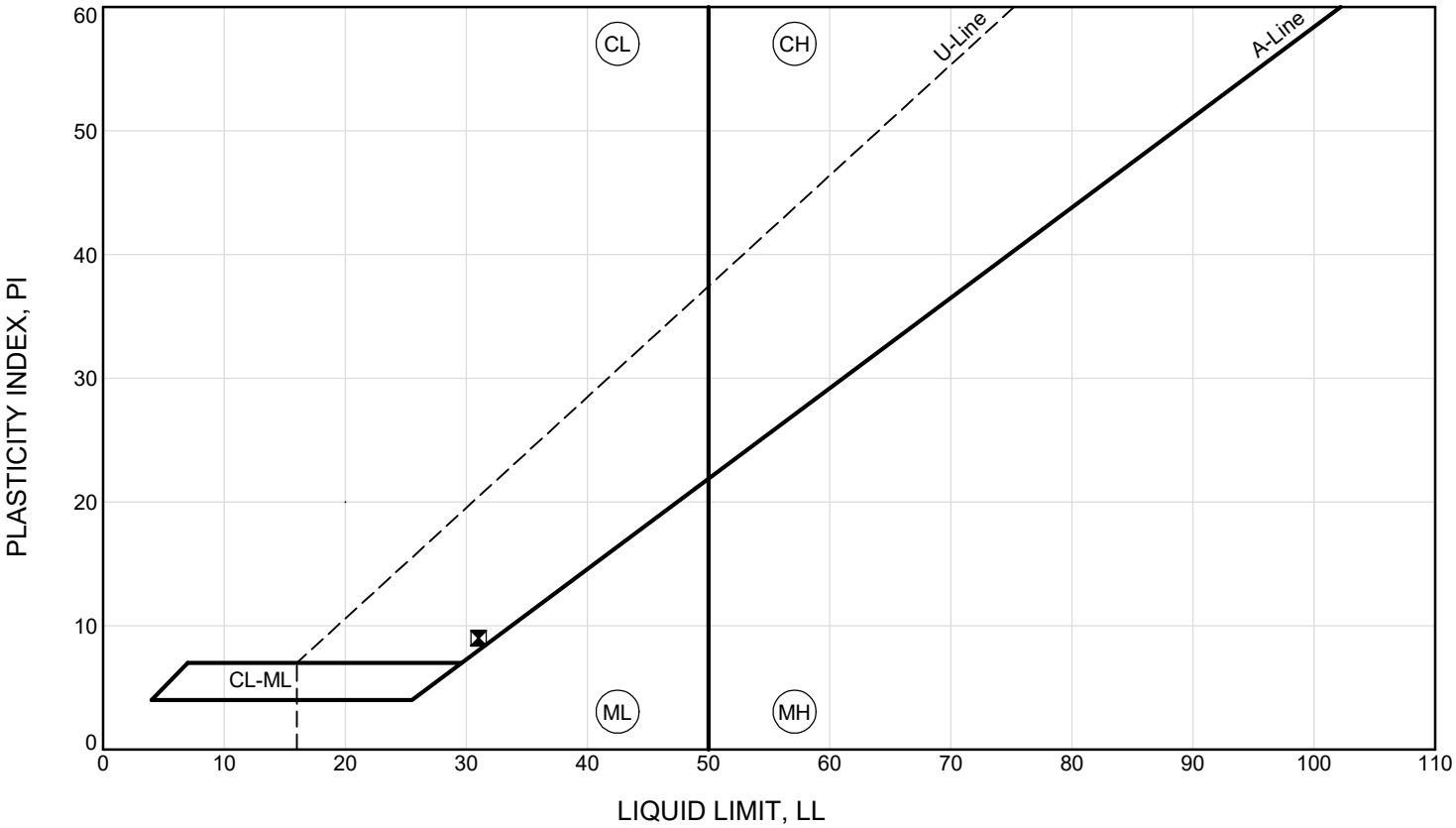


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-72p-20	5.0	D-1	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		12	n/a	n/a	NP	9.8		
⊠	NE-72p-20	10.0	D-3	CL	SANDY LEAN CLAY		15	31	22	9	50.1		
	NE-72p-20	13.0	D-4	SM	SILTY SAND		7	20	n/a	NP	46.3		
	NE-72p-20	30.0	D-9	SM	SILTY SAND		16	n/a	n/a	NP	23.0		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

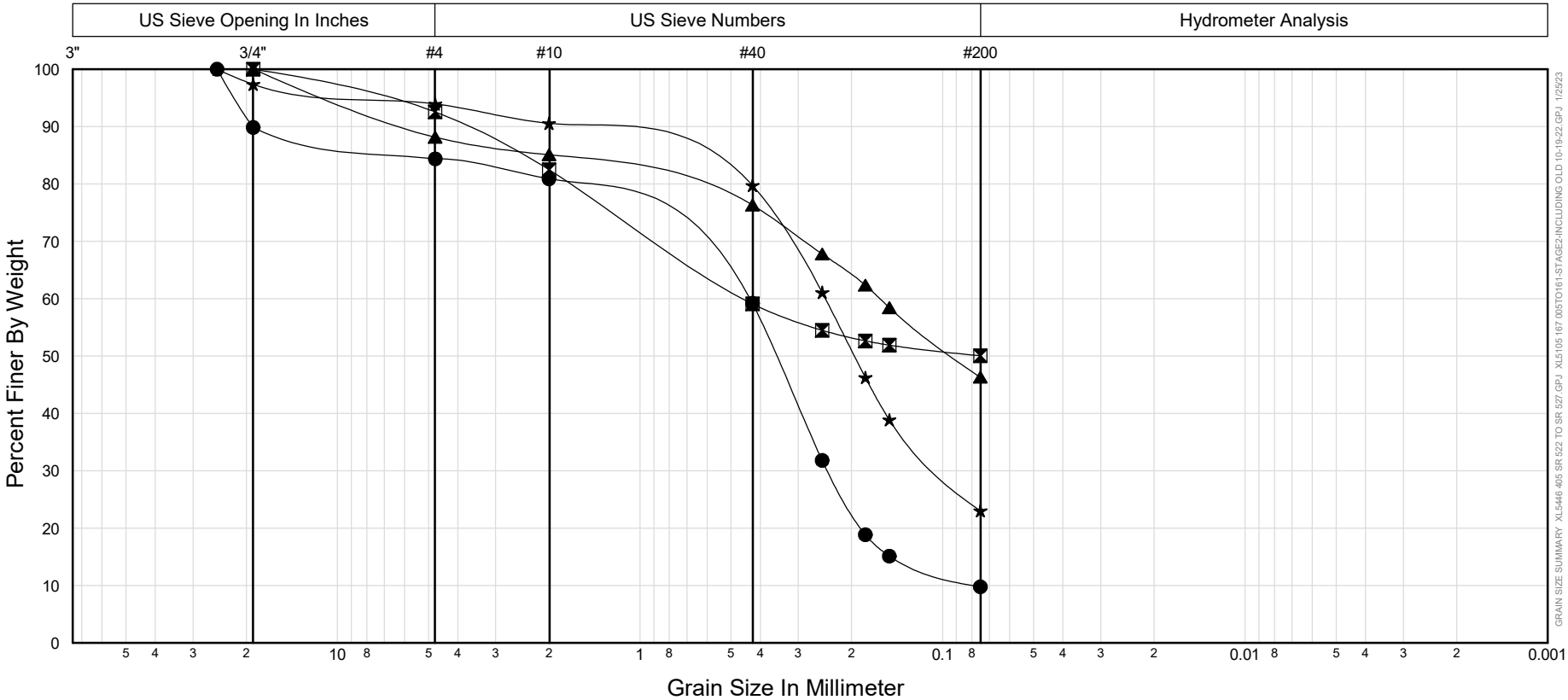
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-72p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	5.0	D-1	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	11-3-20	12	n/a	n/a	NP			15.6	74.6	9.8	1.6	6	19.077	0.450	0.356	0.239	0.185	0.077
⊠	10.0	D-3	CL	SANDY LEAN CLAY	11-3-20	15	31	22	9			7.4	42.5	50.1			3.816	0.451				
▲	13.0	D-4	SM	SILTY SAND	11-3-20	7	20	n/a	NP			11.9	41.8	46.3			5.904	0.161	0.093			
★	30.0	D-9	SM	SILTY SAND	11-3-20	16	n/a	n/a	NP			6.1	70.9	23.0			1.845	0.244	0.196	0.102		

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

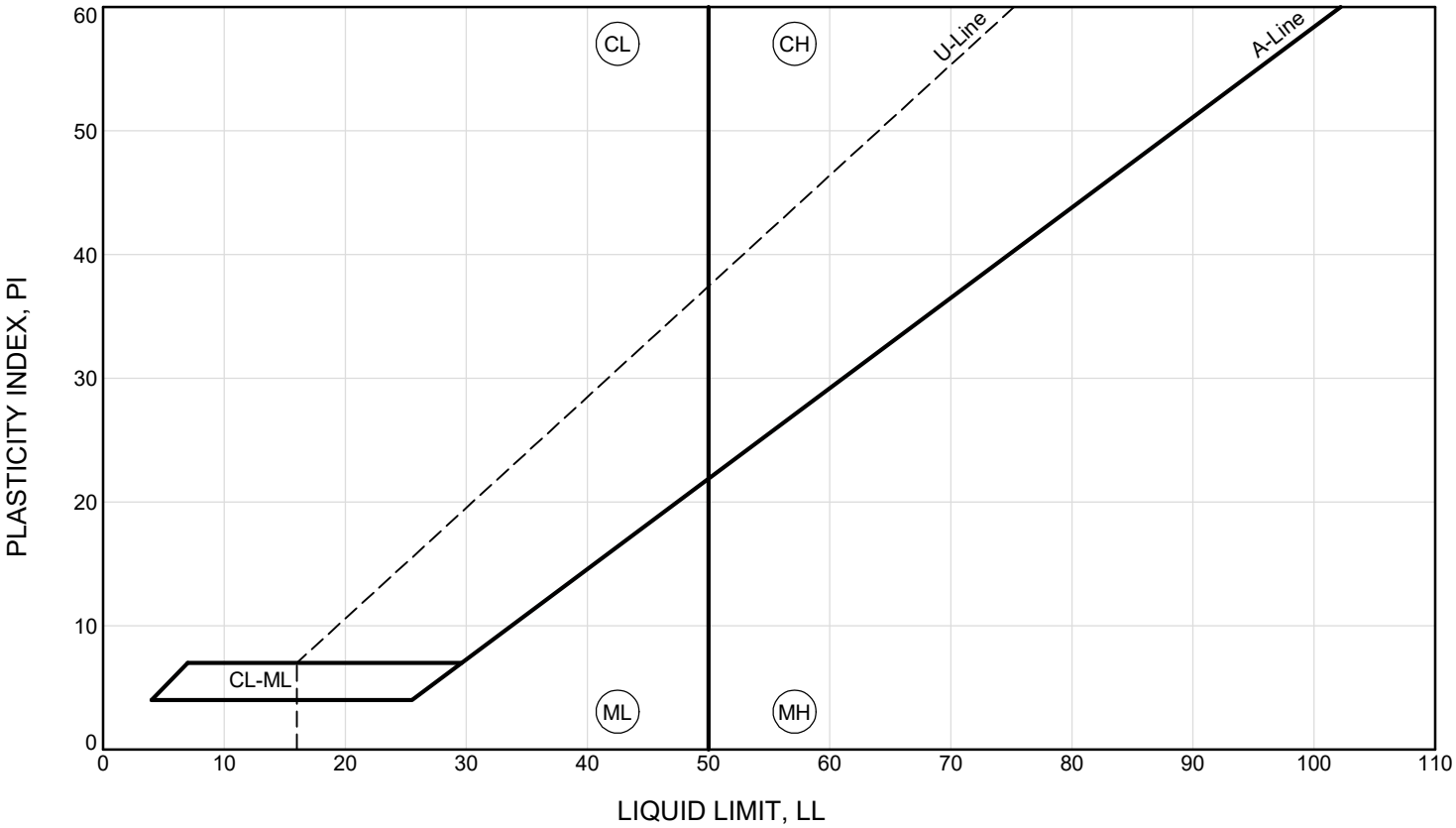


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-73p-20	1.0	D-1	SM	SILTY SAND with GRAVEL		14	n/a	n/a	NP	13.8		
	NE-73p-20	9.0	D-4	SM	SILTY SAND		23	n/a	n/a	NP	33.3	32.5	0.8
	NE-73p-20	14.0	D-6	GP	POORLY GRADED GRAVEL with SAND		7	n/a	n/a	NP	2.7		
	NE-73p-20	24.0	D-8	SM	SILTY SAND with GRAVEL		9	n/a	n/a	NP	18.2		
	NE-73p-20	34.0	D-10	ML	SILT with SAND		25	n/a	n/a	NP	77.5		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

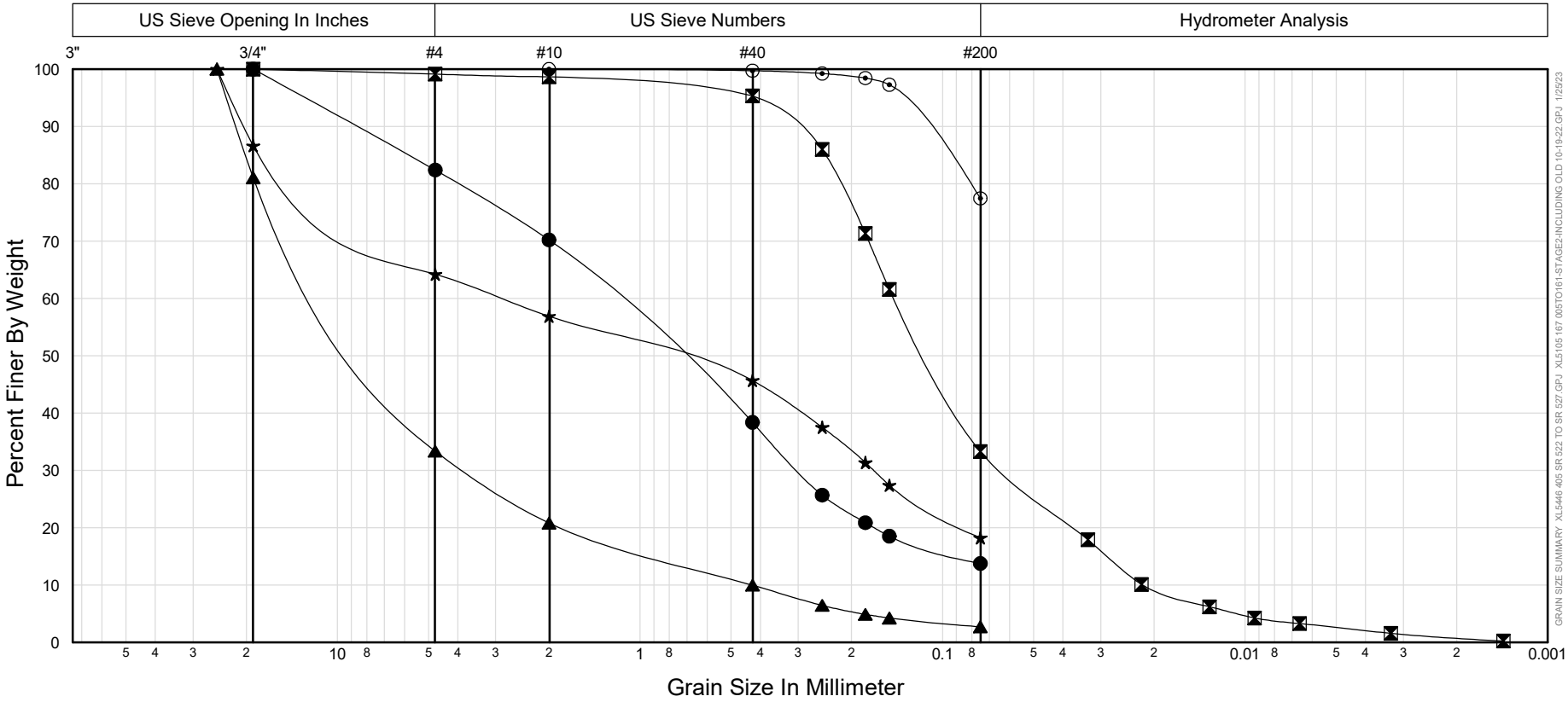
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-73p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	1.0	D-1	SM	SILTY SAND with GRAVEL	12-10-20	14	n/a	n/a	NP			17.6	68.6	13.8			8.642	1.217	0.748	0.299	0.168	
⊠	9.0	D-4	SM	SILTY SAND	12-10-20	23	n/a	n/a	NP		2.72	0.9	65.8	33.3	1.3	7	0.314	0.144	0.113	0.063	0.037	0.022
▲	14.0	D-6	GP	POORLY GRADED GRAVEL with SAND	12-10-20	7	n/a	n/a	NP			66.6	30.6	2.7	3.2	24	21.630	10.305	7.706	3.769	1.779	0.427
★	24.0	D-8	SM	SILTY SAND with GRAVEL	12-10-20	9	n/a	n/a	NP			35.8	46.0	18.2			20.360	2.888	0.771	0.169	0.086	
⊙	34.0	D-10	ML	SILT with SAND	12-10-20	25	n/a	n/a	NP			0.0	22.5	77.5			0.116					

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

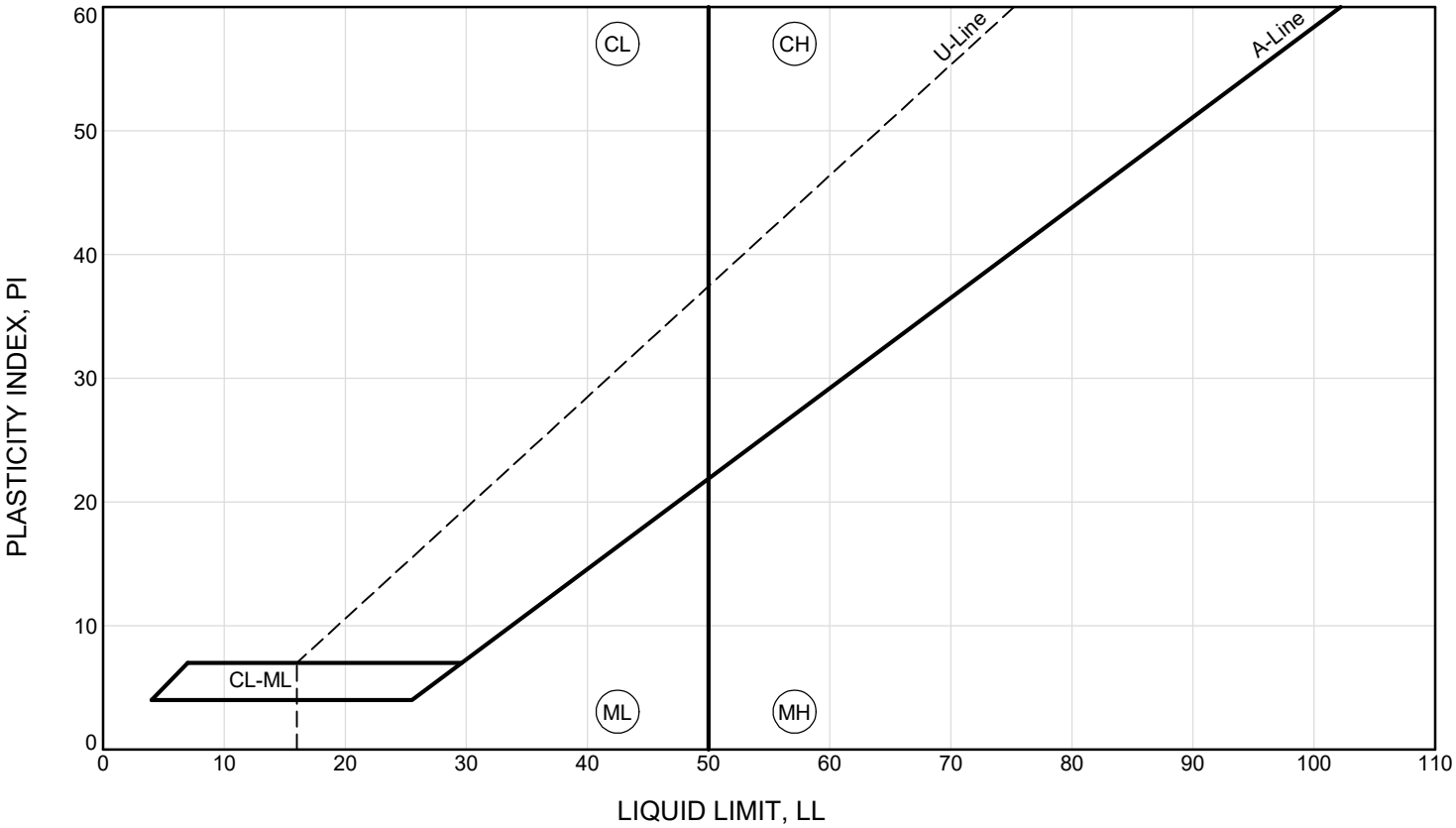


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-74p-20	8.5	D-4	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	13.7		
	NE-74p-20	11.5	D-5	SM	SILTY SAND		25	n/a	n/a	NP	17.8		
	NE-74p-20	18.5	D-8	SW-SM	WELL-GRADED SAND with SILT and GRAVEL		16	n/a	n/a	NP	11.5		
	NE-74p-20	33.5	D-11	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	23.4		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

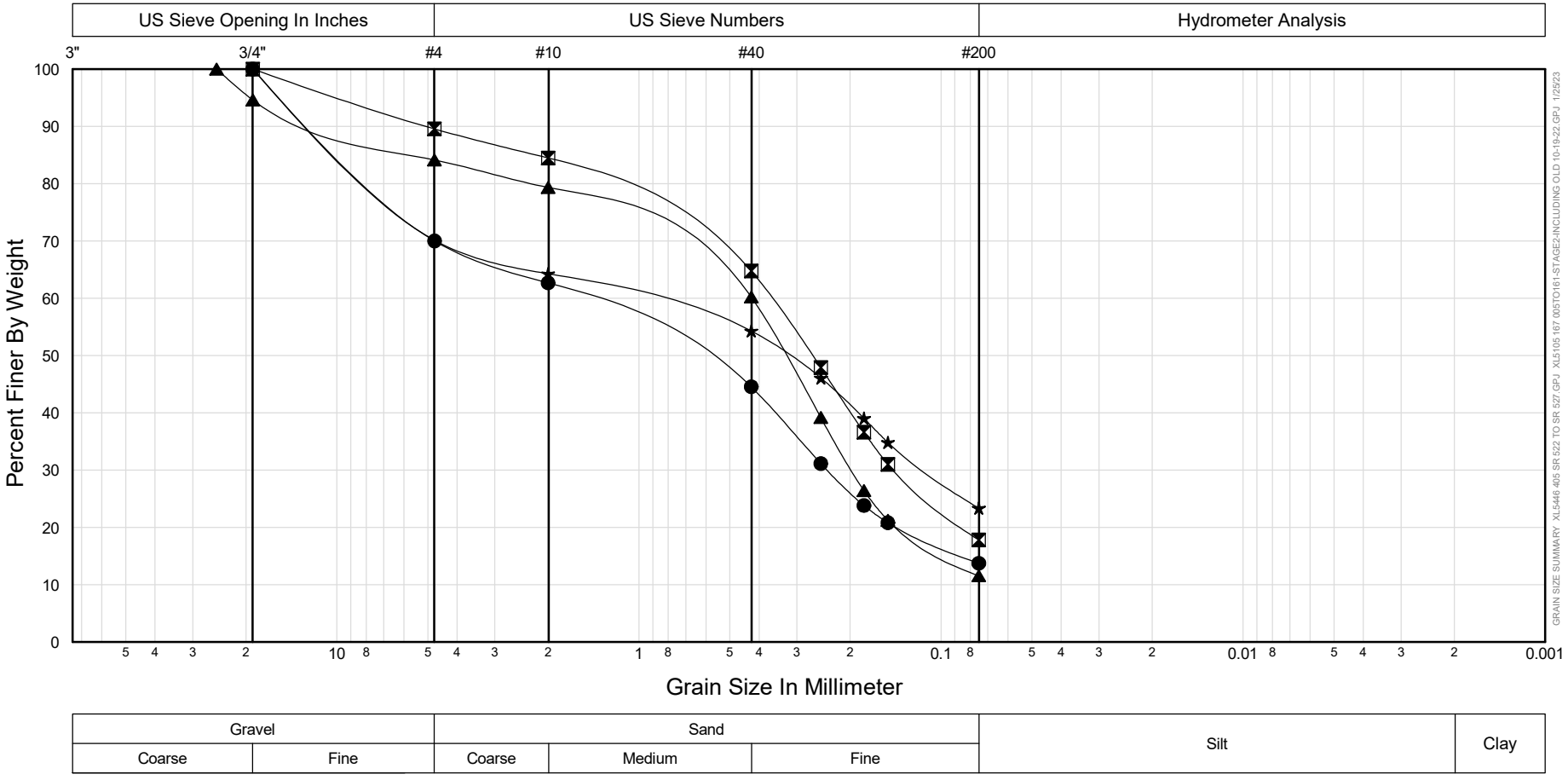
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-74p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	8.5	D-4	SM	SILTY SAND with GRAVEL	10-22-20	13	n/a	n/a	NP			30.0	56.3	13.7			11.969	1.590	0.677	0.238	0.139	
⊠	11.5	D-5	SM	SILTY SAND	10-22-20	25	n/a	n/a	NP			10.5	71.7	17.8			5.043	0.366	0.267	0.142	0.084	
▲	18.5	D-8	SW-SM	WELL-GRADED SAND with SILT and GRAVEL	10-22-20	16	n/a	n/a	NP			15.9	72.6	11.5	1.4	6	10.327	0.423	0.328	0.197	0.137	
★	33.5	D-11	SM	SILTY SAND with GRAVEL	10-22-20	13	n/a	n/a	NP			29.9	46.7	23.4			11.946	1.030	0.322	0.112		

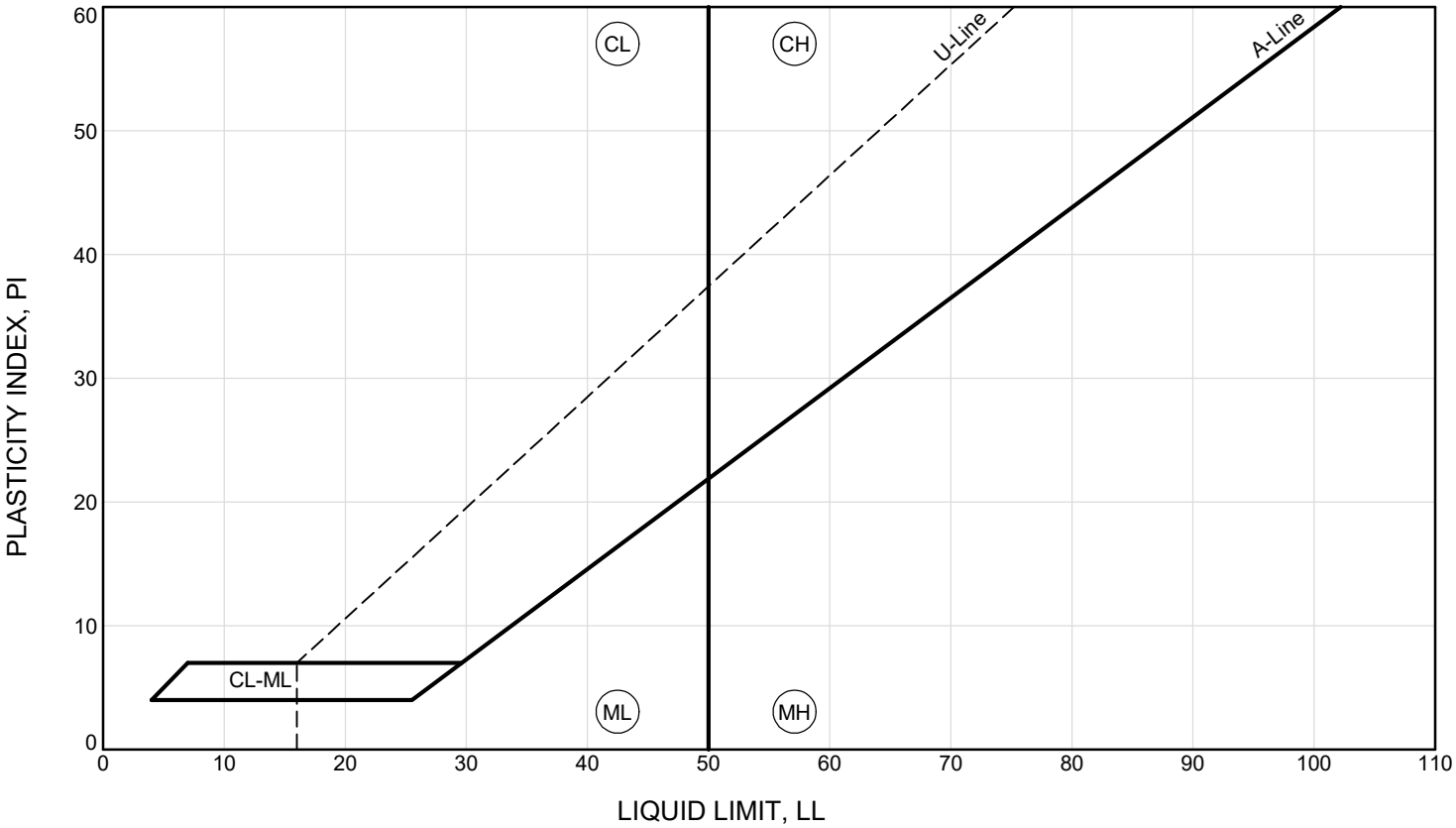
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-75-20	7.0	D-3	SP	POORLY GRADED SAND with GRAVEL		8	n/a	n/a	NP	3.5		
	NE-75-20	12.0	D-5	SP-SM	POORLY GRADED SAND with SILT		23	n/a	n/a	NP	5.0		
	NE-75-20	17.0	D-7	SM	SILTY SAND		31	n/a	n/a	NP	26.1		
	NE-75-20	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT		25	n/a	n/a	NP	11.0		
	NE-75-20	29.0	D-11	SM	SILTY SAND with GRAVEL		10	n/a	n/a	NP	33.1		
	NE-75-20	34.0	D-12	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	24.6		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

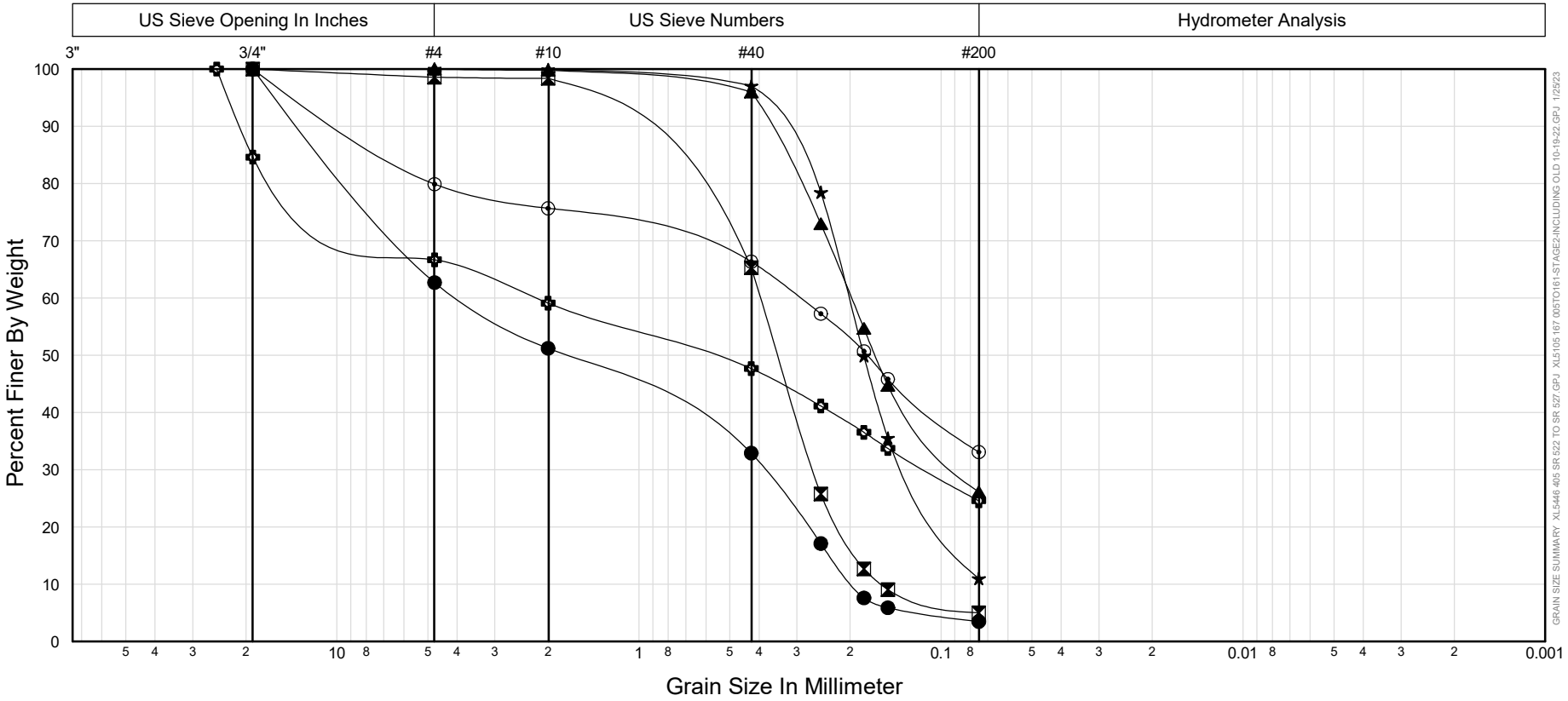
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-75-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-3	SP	POORLY GRADED SAND with GRAVEL	10-2-20	8	n/a	n/a	NP			37.3	59.2	3.5	0.2	20	13.103	3.877	1.806	0.386	0.276	0.196
⊠	12.0	D-5	SP-SM	POORLY GRADED SAND with SILT	10-2-20	23	n/a	n/a	NP			1.4	93.6	5.0	1.1	3	1.352	0.396	0.346	0.265	0.216	0.157
▲	17.0	D-7	SM	SILTY SAND	10-2-20	31	n/a	n/a	NP			0.0	73.9	26.1			0.370	0.198	0.165	0.087		
★	19.0	D-8	SP-SM	POORLY GRADED SAND with SILT	10-2-20	25	n/a	n/a	NP			0.0	89.0	11.0	1.1	3	0.347	0.202	0.180	0.128	0.097	
⊙	29.0	D-11	SM	SILTY SAND with GRAVEL	10-2-20	10	n/a	n/a	NP			20.1	46.8	33.1			9.537	0.293	0.175			
✿	34.0	D-12	SM	SILTY SAND with GRAVEL	10-2-20	11	n/a	n/a	NP			33.3	42.1	24.6			20.916	2.216	0.582	0.113		

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

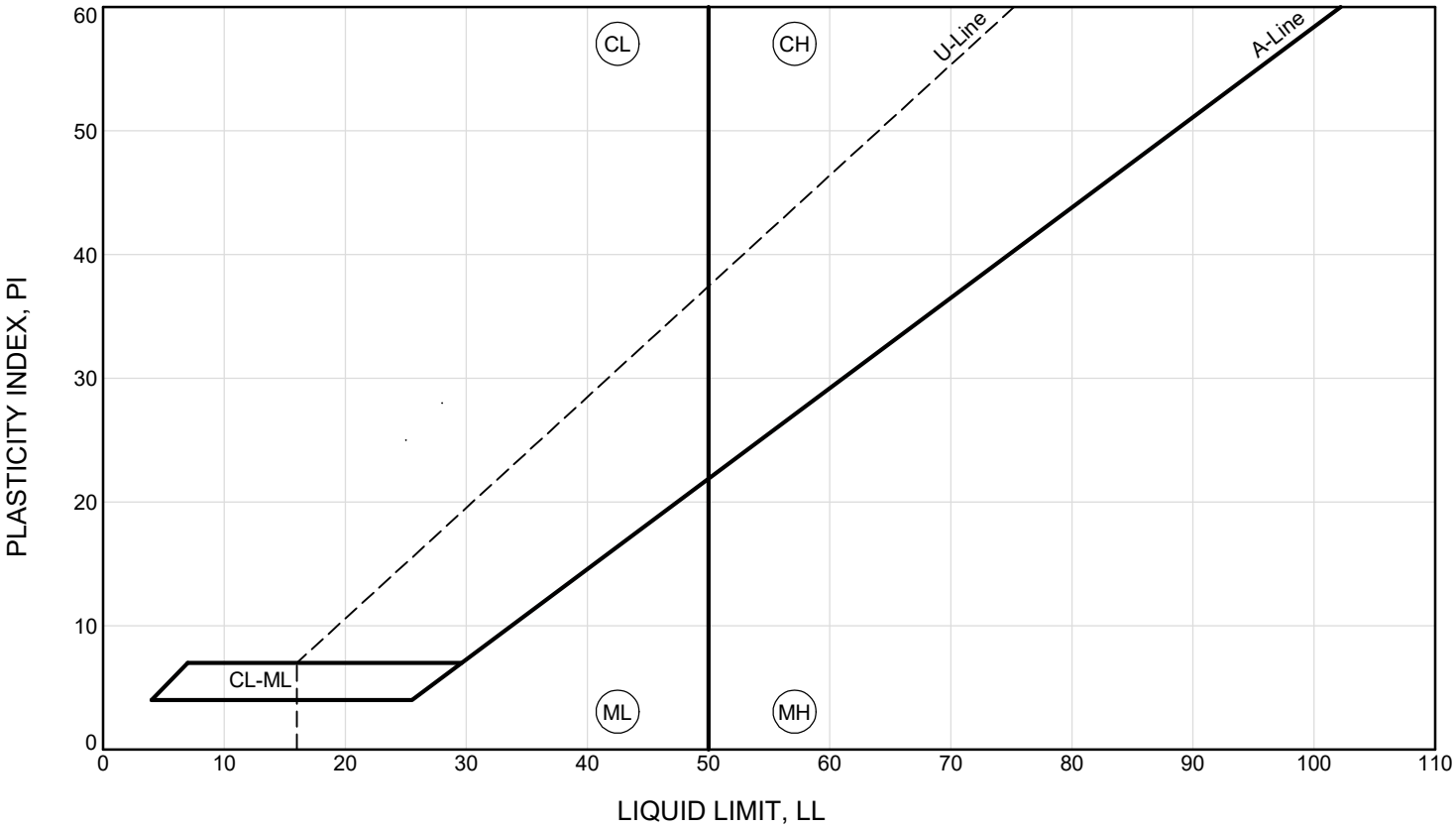


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-76p-20	4.0	D-1	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	21.2		
	NE-76p-20	9.0	D-3	ML	SANDY SILT		24	28	n/a	NP	50.5	44.0	6.5
	NE-76p-20	12.0	D-4	ML	SANDY SILT		32	n/a	n/a	NP	67.4		
	NE-76p-20	19.0	D-7	ML	SANDY SILT		30	25	n/a	NP	61.5		
	NE-76p-20	24.0	D-9	SM	SILTY SAND		20	n/a	n/a	NP	18.7		
	NE-76p-20	39.0	D-13	SM	SILTY SAND		22	n/a	n/a	NP	21.2		
	NE-76p-20	49.0	D-15	SM	SILTY SAND		21	n/a	n/a	NP	12.4		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

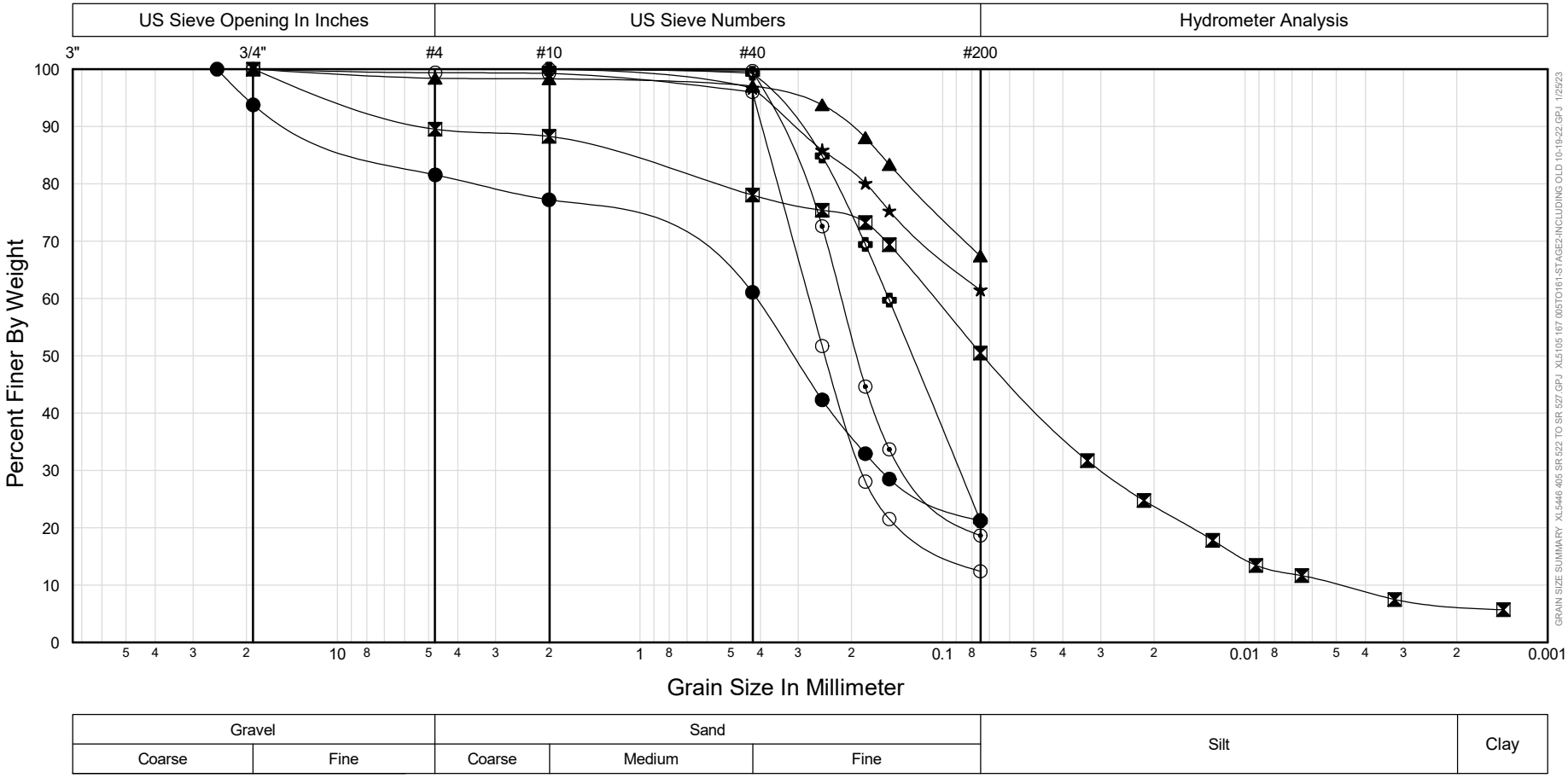
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-76p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	4.0	D-1	SM	SILTY SAND with GRAVEL	9-23-20	13	n/a	n/a	NP			18.4	60.3	21.2			12.386	0.412	0.311	0.160		
⊠	9.0	D-3	ML	SANDY SILT	9-23-20	24	28	n/a	NP		2.73	10.5	39.0	50.5	1.7	22	5.073	0.106	0.073	0.030	0.015	0.005
▲	12.0	D-4	ML	SANDY SILT	9-23-20	32	n/a	n/a	NP			1.6	31.0	67.4			0.201					
★	19.0	D-7	ML	SANDY SILT	9-23-20	30	25	n/a	NP			0.0	38.5	61.5			0.306					
⊙	24.0	D-9	SM	SILTY SAND	9-23-20	20	n/a	n/a	NP			0.0	81.3	18.7			0.352	0.216	0.192	0.127	0.080	
✿	39.0	D-13	SM	SILTY SAND	9-23-20	22	n/a	n/a	NP			0.0	78.8	21.2			0.302	0.151	0.126	0.088		
○	49.0	D-15	SM	SILTY SAND	9-23-20	21	n/a	n/a	NP			0.6	87.0	12.4	2.0	4	0.395	0.276	0.244	0.185	0.134	

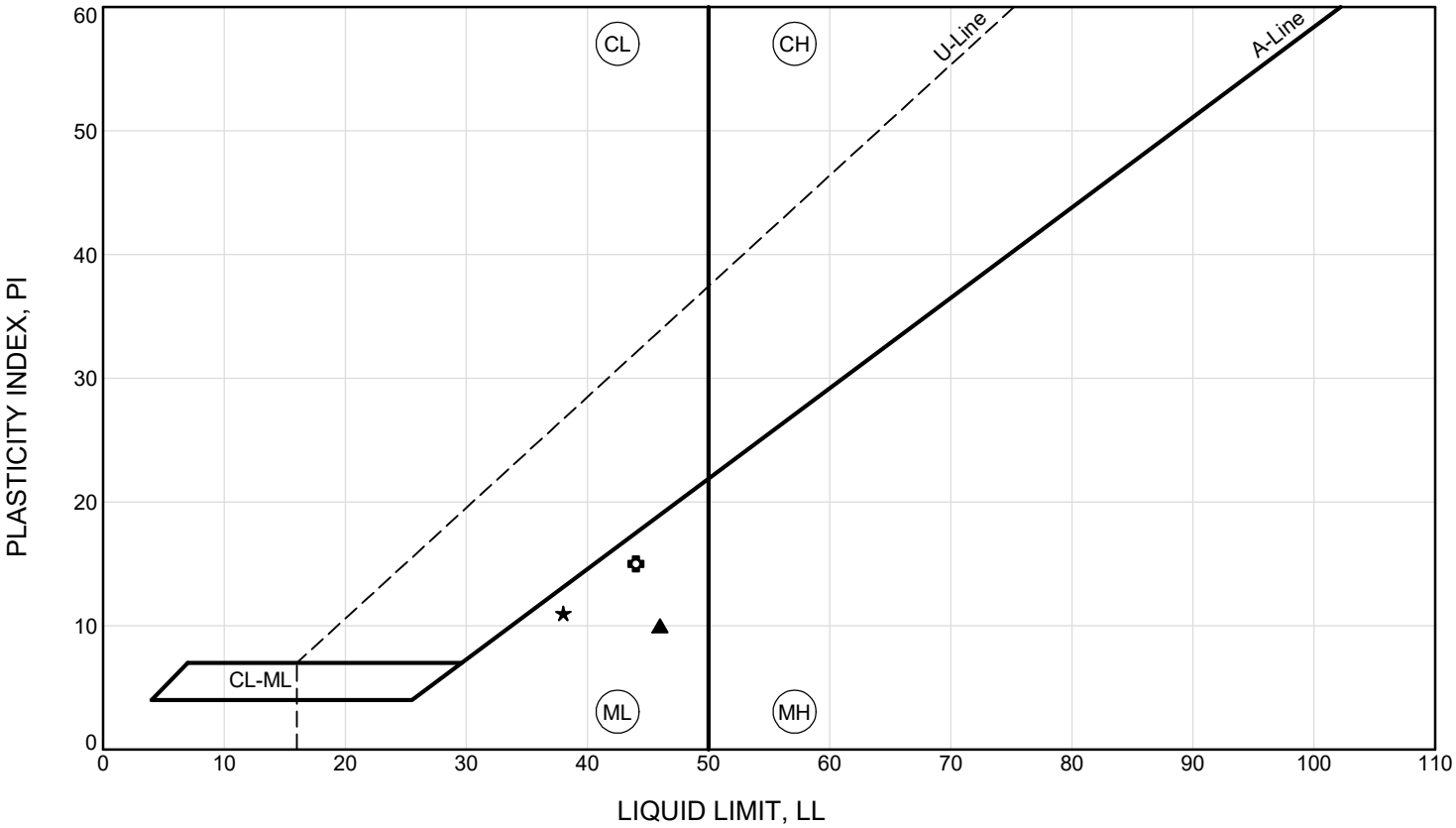
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-77p-20	7.0	D-2	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	14.2	11.6	2.6
	NE-77p-20	14.0	D-5	SM	SILTY SAND with GRAVEL		11	n/a	n/a	NP	27.2	21.6	5.7
▲	NE-77p-20	17.0	D-6	ML	and organics		43	46	36	10	73.1		
★	NE-77p-20	22.0	D-8	ML	SANDY SILT		31	38	27	11	62.1		
	NE-77p-20	24.0	D-9	SM	SILTY SAND		26	n/a	n/a	NP	47.6		
✿	NE-77p-20	29.0	D-11	ML	SANDY SILT		37	44	29	15	60.3		
	NE-77p-20	44.0	D-14	SM	SILTY SAND		23	n/a	n/a	NP	14.8		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

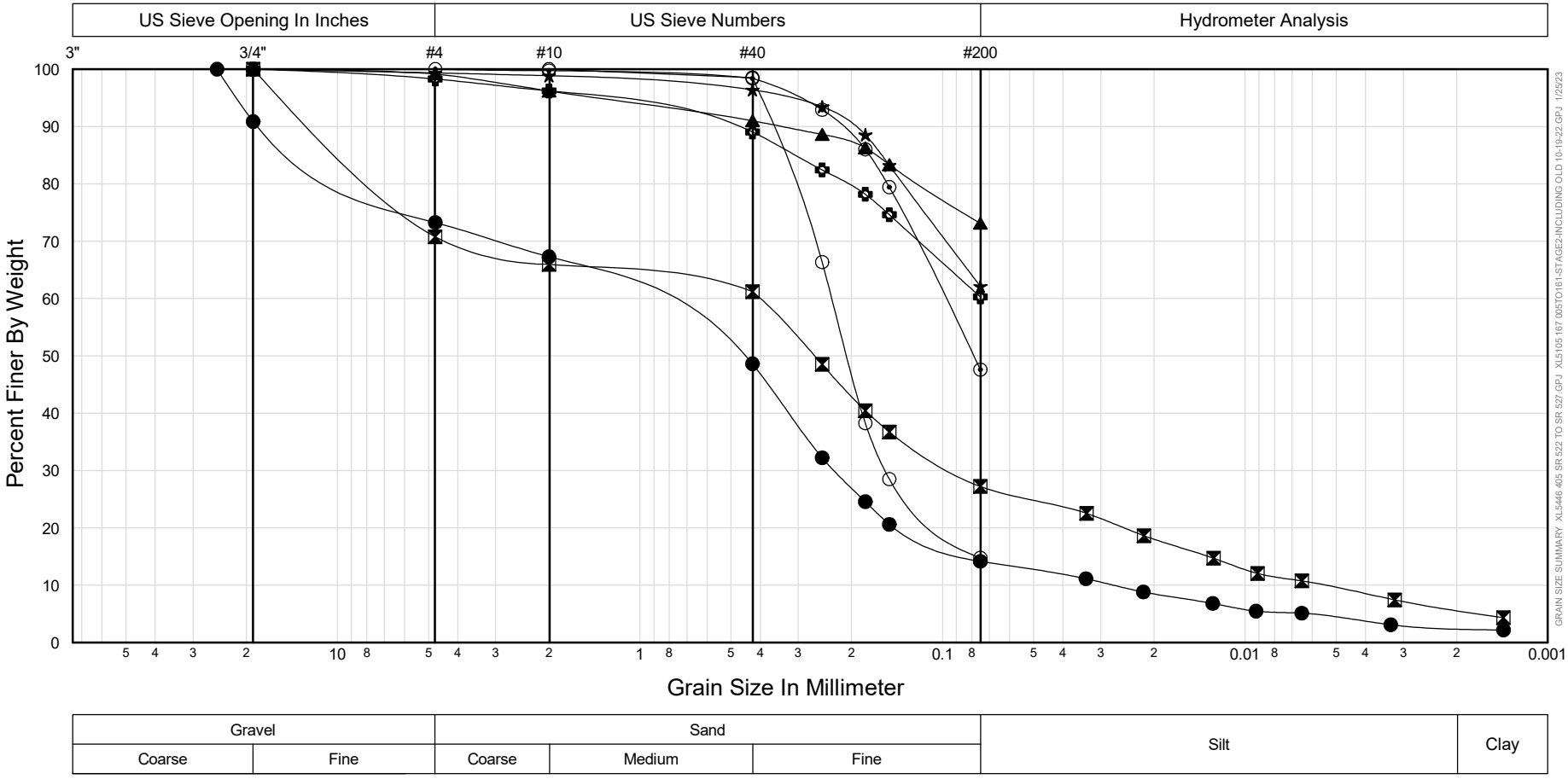
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-77p-20

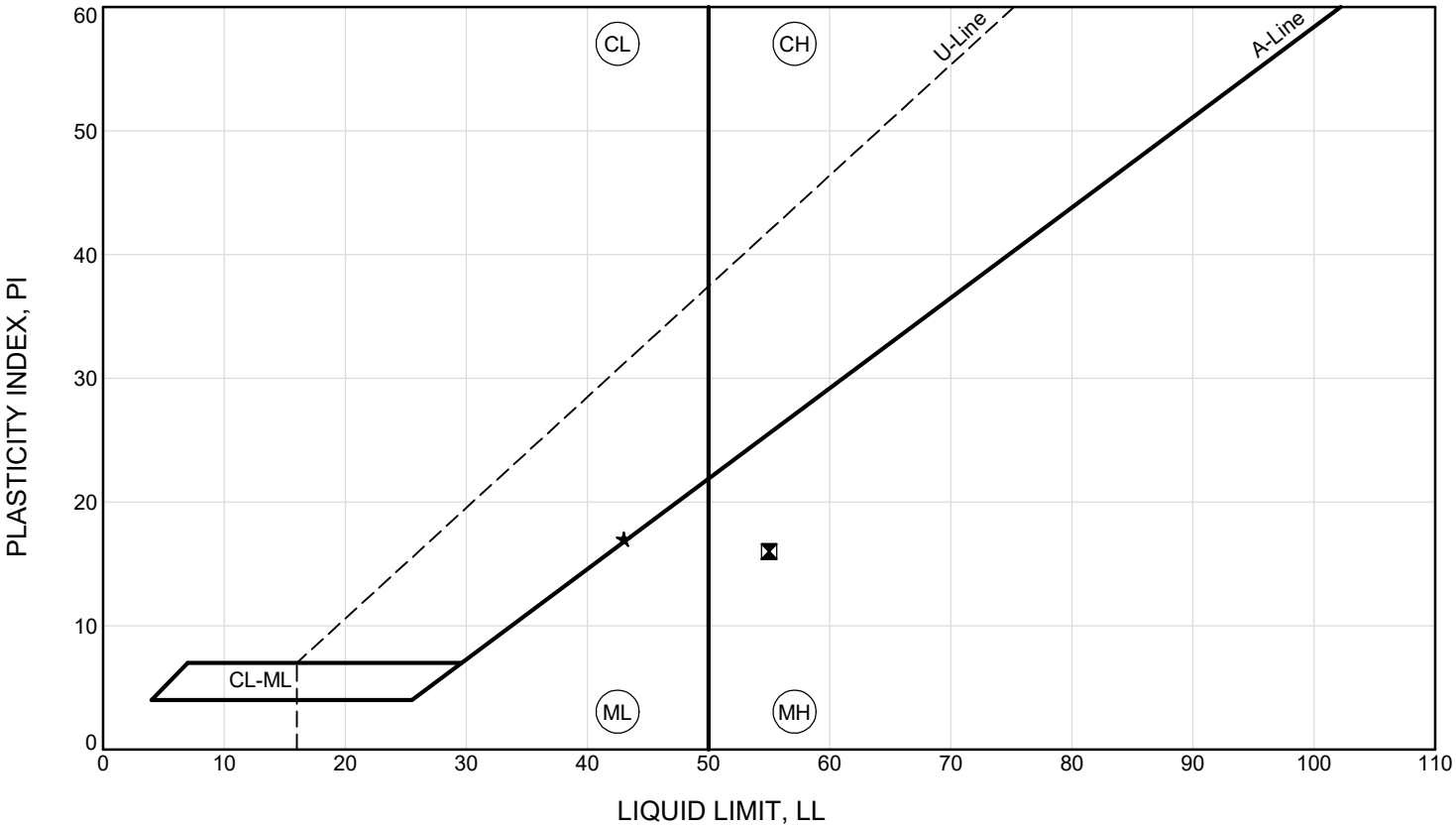
Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-2	SM	SILTY SAND with GRAVEL	9-23-20	11	n/a	n/a	NP		2.72	26.7	59.1	14.2	1.7	40	17.762	1.093	0.477	0.227	0.141	0.027
⊠	14.0	D-5	SM	SILTY SAND with GRAVEL	9-23-20	11	n/a	n/a	NP		2.73	29.3	43.5	27.2	3.8	73	11.829	0.404	0.266	0.092	0.025	0.006
▲	17.0	D-6	ML	SILT with SAND and organics	9-23-20	43	46	36	10			0.8	26.1	73.1			0.340					
★	22.0	D-8	ML	SANDY SILT	9-23-20	31	38	27	11			0.7	37.2	62.1			0.198					
⊙	24.0	D-9	SM	SILTY SAND	9-23-20	26	n/a	n/a	NP			0.0	52.4	47.6			0.218	0.098	0.079			
✿	29.0	D-11	ML	SANDY SILT	9-23-20	37	44	29	15			1.7	38.0	60.3			0.523					
○	44.0	D-14	SM	SILTY SAND	9-23-20	23	n/a	n/a	NP			0.0	85.2	14.8			0.369	0.232	0.206	0.154	0.098	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-78p-20	7.0	D-2	SM	SILTY SAND with GRAVEL		13	n/a	n/a	NP	15.6	12.0	3.5
⊠	NE-78p-20	14.0	D-5	MH	ELASTIC SILT with Organics		39	55	39	16	86.4	55.3	31.1
	NE-78p-20	17.0	D-6	ML	SANDY SILT		27	n/a	n/a	NP	67.1		
★	NE-78p-20	25.2	D-8B		MC & AL Only		45	43	26	17			
	NE-78p-20	34.0	D-10	ML	SILT with SAND		24	n/a	n/a	NP	73.2		
	NE-78p-20	44.0	D-12	SM	SILTY SAND		21	n/a	n/a	NP	19.0		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

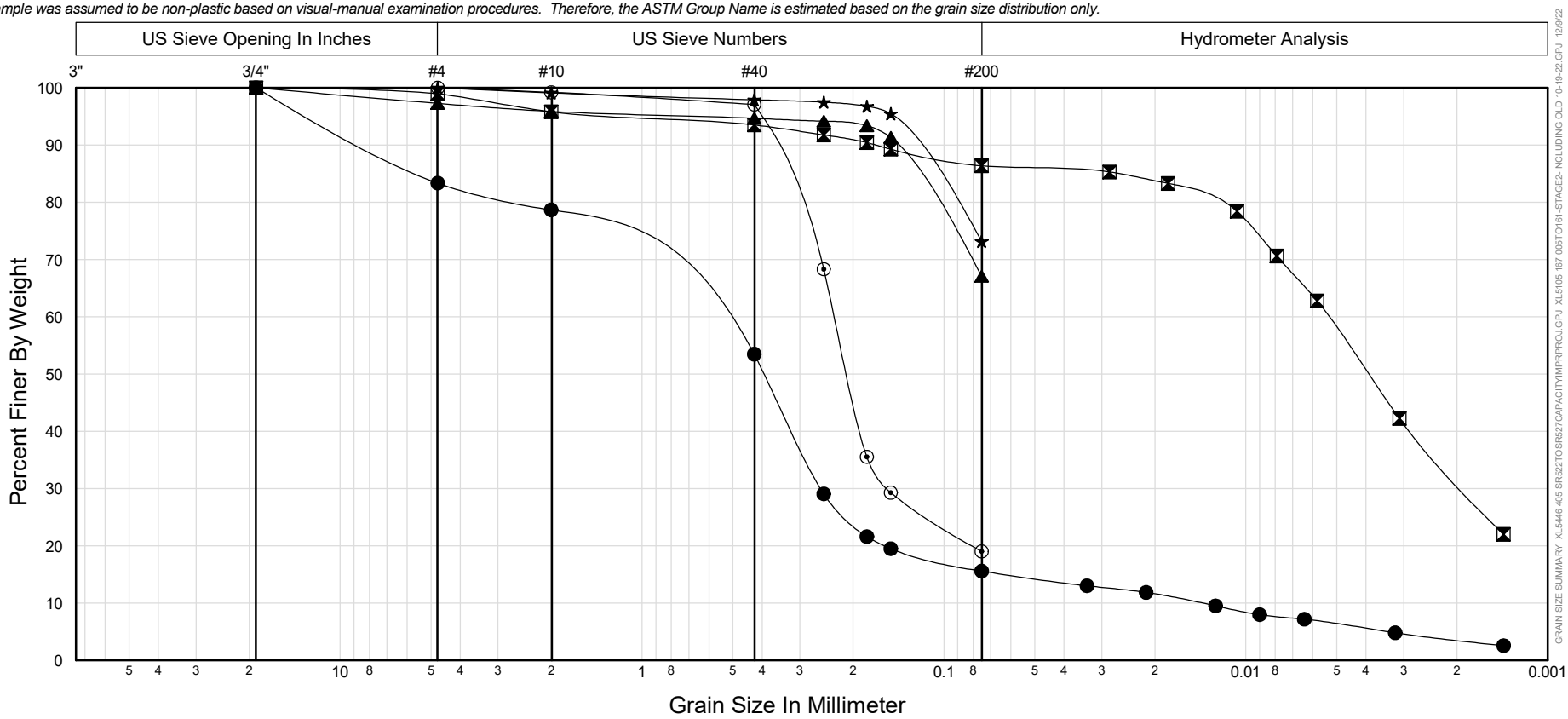
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-78p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	7.0	D-2	SM	SILTY SAND with GRAVEL	9-23-20	13	n/a	n/a	NP		2.73	16.6	67.8	15.6	7.3	45	8.262	0.635	0.394	0.255	0.157	0.014
⊠	14.0	D-5	MH	ELASTIC SILT with Organics	9-23-20	39	55	39	16		2.56	1.0	12.6	86.4			0.168	0.005	0.004	0.002		
▲	17.0	D-6	ML	SANDY SILT	9-23-20	27	n/a	n/a	NP			2.7	30.2	67.1			0.144					
★	34.0	D-10	ML	SILT with SAND	9-23-20	24	n/a	n/a	NP			0.0	26.8	73.2			0.127					
⊙	44.0	D-12	SM	SILTY SAND	9-23-20	21	n/a	n/a	NP			0.0	81.0	19.0			0.373	0.230	0.208	0.153	0.080	

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*

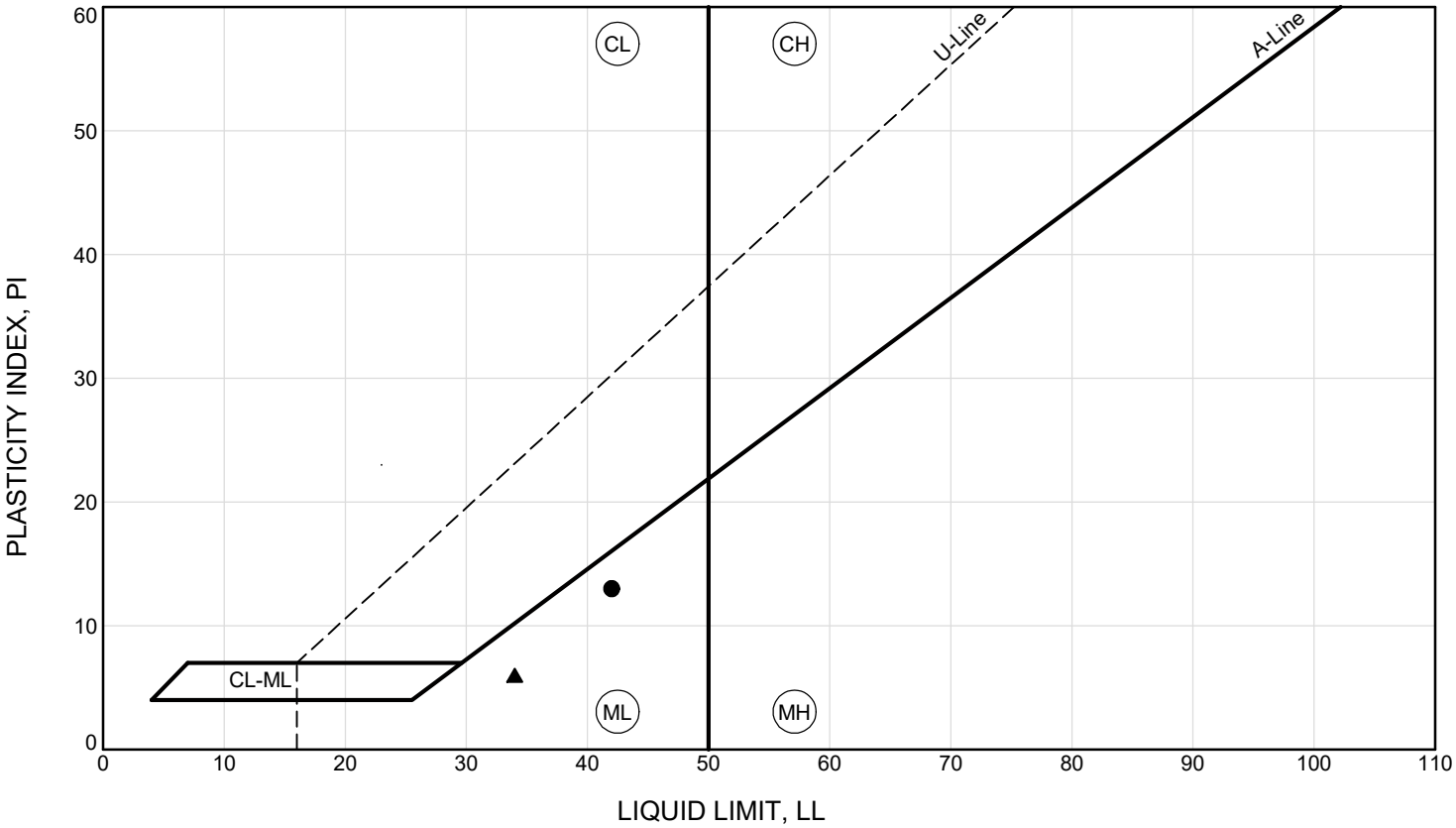


Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
●	NE-79p-20	5.0	D-2	ML	SANDY SILT		30	42	29	13	58.5		
	NE-79p-20	8.0	D-3	ML	SANDY SILT		24	23	n/a	NP	59.5		
▲	NE-79p-20	10.0	D-4	ML	SILT		3	34	28	6	86.9		
	NE-79p-20	13.0	D-5	SM	SILTY SAND		29	n/a	n/a	NP	15.2		
	NE-79p-20	18.0	D-7	SP-SM	POORLY GRADED SAND with SILT and GRAVEL		19	n/a	n/a	NP	8.1		
	NE-79p-20	25.0	D-10	SP-SM	POORLY GRADED SAND with SILT		20	n/a	n/a	NP	5.6		
	NE-79p-20	35.0	D-13	SM	SILTY SAND with GRAVEL		18	n/a	n/a	NP	16.6		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

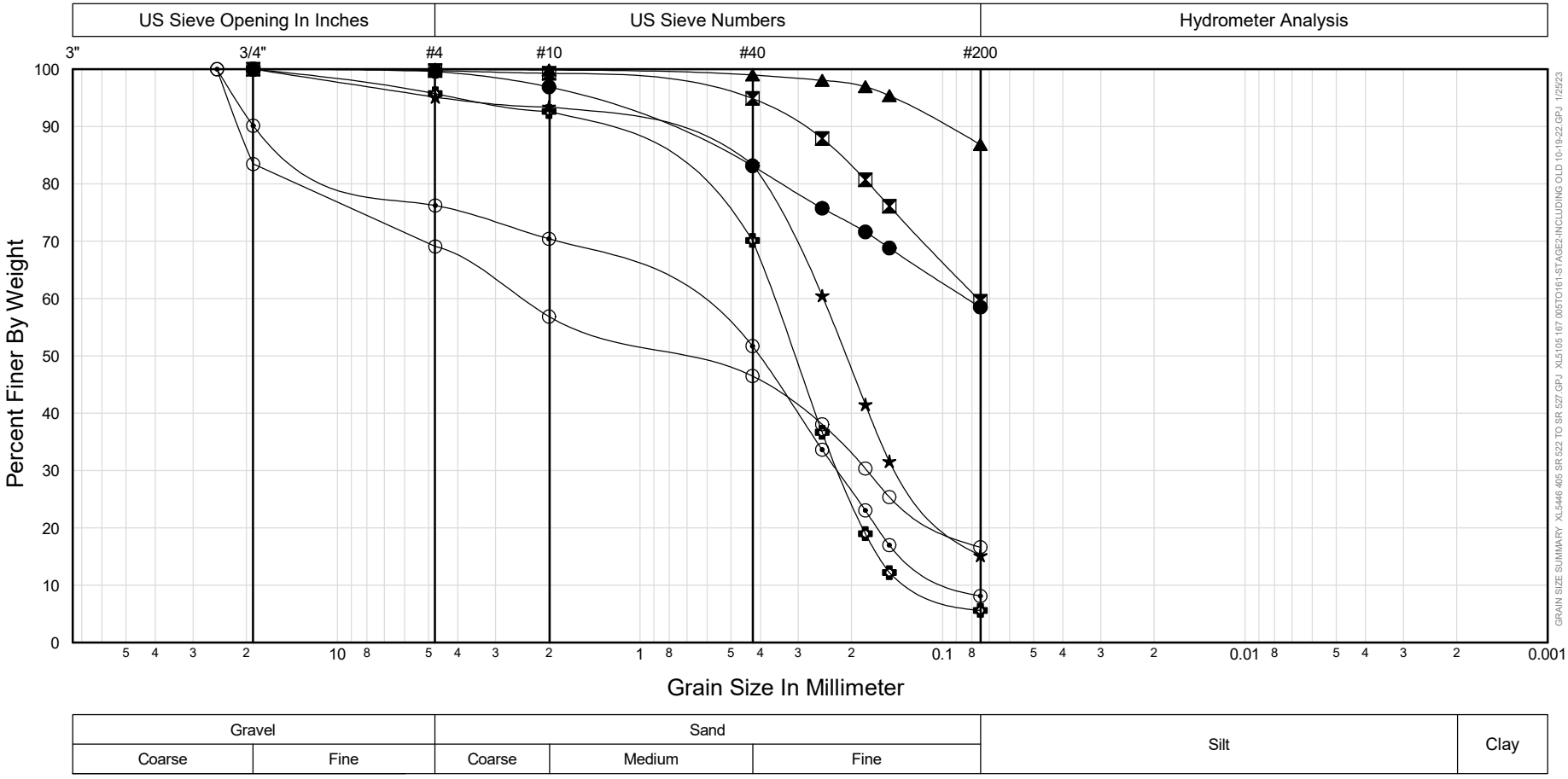
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-79p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	5.0	D-2	ML	SANDY SILT	10-2-20	30	42	29	13			0.4	41.1	58.5			0.920	0.083				
⊠	8.0	D-3	ML	SANDY SILT	10-2-20	24	23	n/a	NP			0.3	40.2	59.5			0.293	0.076				
▲	10.0	D-4	ML	SILT	10-2-20	3	34	28	6			0.0	13.1	86.9			0.097					
★	13.0	D-5	SM	SILTY SAND	10-2-20	29	n/a	n/a	NP			4.9	79.9	15.2			1.176	0.248	0.208	0.140	0.092	
⊙	18.0	D-7	SP-SM	POORLY GRADED SAND with SILT and GRAVEL	10-2-20	19	n/a	n/a	NP			23.8	68.1	8.1	0.7	10	18.743	0.844	0.404	0.223	0.164	0.087
✿	25.0	D-10	SP-SM	POORLY GRADED SAND with SILT	10-2-20	20	n/a	n/a	NP			4.3	90.1	5.6	1.1	3	1.668	0.362	0.309	0.221	0.183	0.119
○	35.0	D-13	SM	SILTY SAND with GRAVEL	10-2-20	18	n/a	n/a	NP			30.9	52.4	16.6			21.177	2.498	0.719	0.178	0.098	

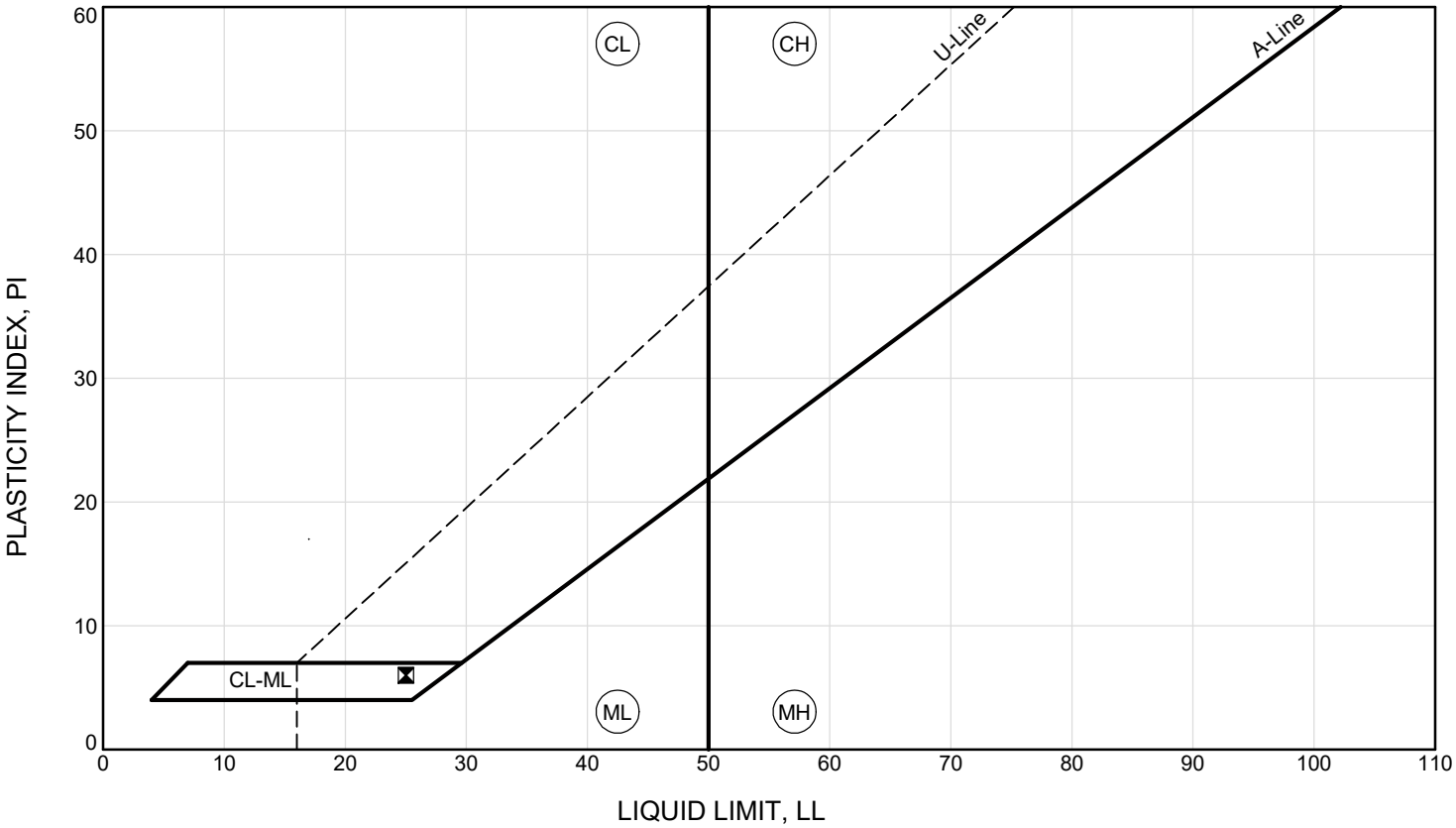
**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



WSDOT

ATTERBERG LIMITS SUMMARY

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**



Symbol	Hole No.	Depth (feet)	Sample No.	USCS	Description	Comment	MC (%)	LL	PL	PI	Fines (%)	Silt (%)	Clay (%)
	NE-80p-20	5.0	D-1	ML	SANDY SILT		19	17	n/a	NP	51.1		
⊠	NE-80p-20	14.0	D-5	SC-SM	SILTY, CLAYEY SAND		22	25	19	6	44.7		
	NE-80p-20	22.0	D-8	SM	SILTY SAND with GRAVEL		21	n/a	n/a	NP	14.4		
	NE-80p-20	29.0	D-11	SM	SILTY SAND		22	n/a	n/a	NP	13.5		
	NE-80p-20	44.0	D-14	SP-SM	POORLY GRADED SAND with SILT		24	n/a	n/a	NP	9.8		

** Sample was assumed to have less than 15% sand/gravel based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the Atterberg Limits only.*

ABBREVIATIONS:
LL = liquid limit; MC = moisture content; n/a = test attempted; NP = nonplastic; PI = plasticity index; PL = plastic limit; USCS = Unified Soil Classification System code
USCS codes listed on graph: CL = lean clay; CH = fat clay; ML = silt; MH = elastic silt; CL-ML = silty clay

ATTERBERG SUMMARY XL5446 405 SR522TOSR527CAPACITYIMPRPROJ.GPJ XL5105 167 005TO161-STAGE2_MASTER.GPJ 12/1/22

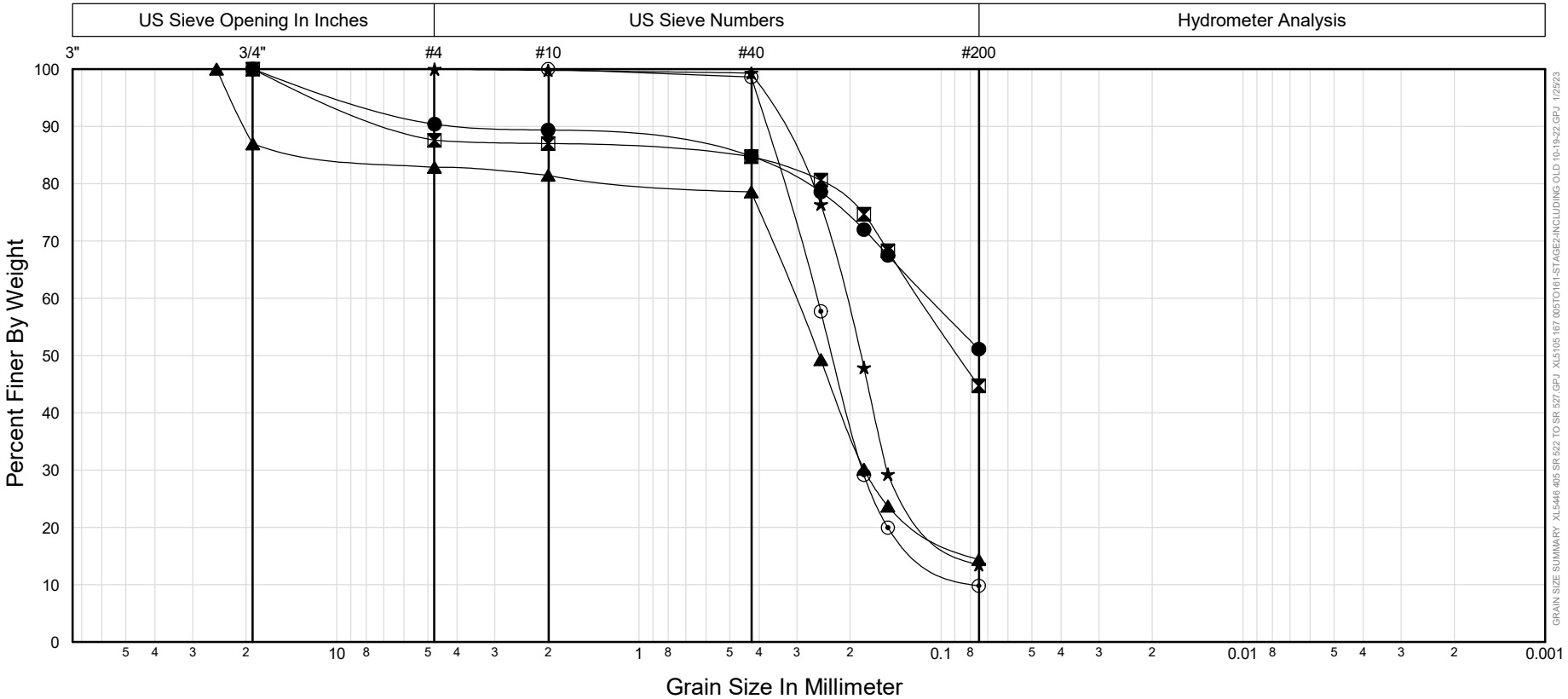
WSDOT

GRAIN SIZE ANALYSIS SUMMARY FOR NE-80p-20

Job No: **XL5446**
Project: **I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project**

Symbol	Depth (feet)	Sample No.	USCS	Description	Test Date	MC (%)	LL	PL	PI	Moist Density (lbs/ft^3)	Specific Gravity	Gravel (%)	Sand (%)	Fines (%)	C_c	C_u	D_{90} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{20} (mm)	D_{10} (mm)
●	5.0	D-1	ML	SANDY SILT	9-23-20	19	17	n/a	NP			9.6	39.3	51.1			3.401	0.109				
⊠	14.0	D-5	SC-SM	SILTY, CLAYEY SAND	9-23-20	22	25	19	6			12.4	42.9	44.7			6.221	0.118	0.088			
▲	22.0	D-8	SM	SILTY SAND with GRAVEL	9-23-20	21	n/a	n/a	NP			17.1	68.5	14.4			20.261	0.304	0.253	0.179	0.114	
★	29.0	D-11	SM	SILTY SAND	9-23-20	22	n/a	n/a	NP			0.0	86.5	13.5			0.343	0.207	0.184	0.151	0.100	
⊙	44.0	D-14	SP-SM	POORLY GRADED SAND with SILT	9-23-20	24	n/a	n/a	NP			0.0	90.2	9.8	1.7	3	0.380	0.258	0.229	0.182	0.150	0.076

**Sample was assumed to be non-plastic based on visual-manual examination procedures. Therefore, the ASTM Group Name is estimated based on the grain size distribution only.*



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

B-2 LOI TESTS

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000125609
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : **Lab Number :** MC0190044
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 5/7/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-04vw-19
Supplier Name : **Date Sampled :** 5/6/2019
Acceptance No : **Date Received :** 5/7/2019
Sampled Location : 44.0' to 45.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-18
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 - Determination of Organic Content in Soils by Loss on Ignition	34.57%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-04vw-19
Sample: D-18
Depth: 44.0' to 45.5'
Lab #: G-2401

Test report revised to reflect the project name change.

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 6/24/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000125609
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : **Lab Number :** MC0190044
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 5/7/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-04vw-19
Supplier Name : **Date Sampled :** 5/6/2019
Acceptance No : **Date Received :** 5/7/2019
Sampled Location : 44.7' to 45.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-18B
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 - Determination of Organic Content in Soils by Loss on Ignition	34.57%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-04vw-19
Sample: D-18B
Depth: 44.7' to 45.5'
Lab #: G-2401

Test report revised to reflect the project name change.

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 6/24/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000126373
Section : I-405/SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190061
Project Engineer : Jason Qui **Bid Item No :**
Org Code : 585409 **Date Received :** 7/22/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-7si-19
Supplier Name : **Date Sampled :**
Acceptance No : **Date Received :** 7/22/2019
Sampled Location : 89.0' to 90.3' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-24
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	34.6%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-7si-19
Sample: D-24
Depth: 89.0' to 90.3'
Lab #: G-2466

Report revised to reflect change in project name

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 7/26/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000126373
Section : I-405/SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190061
Project Engineer : Jason Qui **Bid Item No :**
Org Code : 585409 **Date Received :** 7/22/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-7si-19
Supplier Name : **Date Sampled :**
Acceptance No : **Date Received :** 7/22/2019
Sampled Location : 89.5' to 90.3' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-24B
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	34.6%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-7si-19
Sample: D-24B
Depth:89.5' to 90.3'
Lab #: G-2466

Report revised to reflect change in project name

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 7/26/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 000001263ff
Section : I-405/SR 522 Vicinity to SR 527 Ecpress Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190064
Project Engineer : Jason Qui **Bid Item No :**
Org Code : 585409 **Date Received :** 7/22/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-18p-19
Supplier Name : **Date Sampled :** 7/18/2019
Acceptance No : **Date Received :** 7/22/2019
Sampled Location : 39' to 40.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-16
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	5.6%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-18p-19
Sample: D-16
Depth: 39.0' to 40.5'
Lab #: G-2455

Report revised to reflect change in project name

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 7/26/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000125e33
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190058
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 6/19/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-19p-19
Supplier Name : **Date Sampled :** 6/18/2019
Acceptance No : **Date Received :** 6/19/2019
Sampled Location : 12.5' to 14.0' **Sampled By :**
Make : **IAS Sample No :** D-4
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	7.7 %	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-19p-19
Sample: D-4
Depth: 12.5' to 14.0'
Lab #: G-2438

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 6/24/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000125e30
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190056
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 6/19/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-22p-19
Supplier Name : **Date Sampled :** 6/18/2019
Acceptance No : **Date Received :** 6/19/2019
Sampled Location : 9.0' to 10.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-4
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	5.7 %	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-22p-19
Sample: D-4
Depth: 9.0' to 10.5'
Lab #: G-2437

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 6/24/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000125e32
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190057
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 6/19/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-22p-19
Supplier Name : **Date Sampled :** 6/18/2019
Acceptance No : **Date Received :** 6/19/2019
Sampled Location : 12.0' to 13.5' **Sampled By :** Drill Crew
Make : **IAS Sample No :** D-5
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	13.0 %	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-22p-19
Sample: D-5
Depth: 12.0' to 13.5'
Lab #: G-2437

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 6/24/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 0000012525b
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190040
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 4/8/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-25p-19
Supplier Name : **Date Sampled :** 4/4/2019
Acceptance No : **Date Received :** 4/8/2019
Sampled Location : 7.0' to 9.0' **Sampled By :** Drtill crew
Make : **IAS Sample No :** D-3
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 - Determination of Organic Content in Soils by Loss on Ignition	7.73%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-25p-19
Sample: D-3
Depth: 7.0' to 9.0'
Lab #: G-2353

Test report revised to reflect the project name change.

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 6/24/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000125b8a
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : **Lab Number :** MC0190055
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 6/5/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-29-19
Supplier Name : **Date Sampled :** 6/3/2019
Acceptance No : **Date Received :** 6/5/2019
Sampled Location : 38' to 39.5' **Sampled By :** Drill Crew
Make : **IAS Sample No :** D-15
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	11.5%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-29-19
Sample: D-15
Depth: 38.01' to 39.5'
Lab #: G-24107

Test report revised to reflect the project name change.

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 6/24/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000125b8a
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : **Lab Number :** MC0190055
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 6/5/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-29-19
Supplier Name : **Date Sampled :** 6/3/2019
Acceptance No : **Date Received :** 6/5/2019
Sampled Location : 38' to 39.5' **Sampled By :** Drill Crew
Make : **IAS Sample No :** D-15A
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	11.5%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-29-19
Sample: D-15A
Depth: 38.01' to 39.5'
Lab #: G-24107

Test report revised to reflect the project name change.

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 6/24/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : xl5446 **Sample ID :** 000001270fd
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190090
Project Engineer : Jason Q **Bid Item No :**
Org Code : 585409 **Date Received :** 10/9/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-31p-19
Supplier Name : **Date Sampled :** 10/7/2019
Acceptance No : **Date Received :** 10/9/2019
Sampled Location : 17.0' to 18.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-7
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	10.2 %	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-31p-19
Sample: D-7
Depth: 17.0' to 18.5'
Lab #: G-2614

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 10/11/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : xl5446 **Sample ID :** 000001270fe
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190091
Project Engineer : Jason Q **Bid Item No :**
Org Code : 585409 **Date Received :** 10/9/2019
Local Agency No :

Material : Soils
Contractor : **Pit Number :** NE-31p-19
Supplier Name : **Date Sampled :** 10/7/2019
Acceptance No : **Date Received :** 10/9/2019
Sampled Location : 24.0' to 25.5' **Sampled By :** Drtill crew
Make : **IAS Sample No :** D-10
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	5.9 %	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-31p-19
Sample: D-10
Depth: 24.0' to 25.5'
Lab #: G-2614

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 10/11/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000126403
Section : I-405/SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190063
Project Engineer : Jason Qui **Bid Item No :**
Org Code : 585409 **Date Received :** 7/22/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-33-19
Supplier Name : **Date Sampled :** 7/18/2019
Acceptance No : **Date Received :** 7/22/2019
Sampled Location : 10.0' to 12.0' **Sampled By :** Drill crew
Make : **IAS Sample No :** S-4
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	29.8%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-33-19
Sample: S-4
Depth: 10.0' to 12.0'
Lab #: G-2454

Report revised to reflect change in project name

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 7/26/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000125f4d
Section : I-405/Sr 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190059
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 6/25/2019
Local Agency No :

Material : soils
Contractor : **Pit Number :** NE-36p-19
Supplier Name : **Date Sampled :** 6/18/2019
Acceptance No : **Date Received :** 6/25/2019
Sampled Location : 54.6' to 55.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-19B
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 Determination of Organic Content in Soils by Loss on Ignition	9.0 %	AASHTO T267

Result Code: Informational

Remarks : Report revised to show correct Project Title.

Boring: NE-36p-19
Sample: D-19B
Depth:54.6' to 55.5'
Lab #: G-2434

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 7/9/2019
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000128c67
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : **Lab Number :** MC0200117
Project Engineer : **Bid Item No :**
Org Code : 585409 **Date Received :** 9/21/2020
Local Agency No :

Material : Soils
Contractor : **Pit Number :** NE-77p-20
Supplier Name : **Date Sampled :** 9/21/2020
Acceptance No : **Date Received :** 9/21/2020
Sampled Location : 17.0' to 18.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-6
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 - Determination of Organic Content in Soils by Loss on Ignition	8.7%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-77p-20
Sample: D-6
Depth: 17.0' to 18.5'
Lab #: G-2923

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 9/23/2020
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000128c68
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : **Lab Number :** MC0200118
Project Engineer : **Bid Item No :**
Org Code : 585409 **Date Received :** 9/21/2020
Local Agency No :

Material : Soils
Contractor : **Pit Number :** NE-78p-20
Supplier Name : **Date Sampled :** 9/21/2020
Acceptance No : **Date Received :** 9/21/2020
Sampled Location : 14.0' to 15.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-5
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
AASHTO T267 - Determination of Organic Content in Soils by Loss on Ignition	8.8%	AASHTO T267

Result Code: Informational

Remarks : Boring: NE-78p-20
Sample: D-5
Depth: 14.0' to 15.5'
Lab #: G-2957

Kurt R. Williams, P.E.
State Materials Engineer
Katharine Dafoe By:_____
Chemical Materials Supervisor
Date : 9/23/2020
Phone : (360) 709-5537

Billing Code
T2D1 - 1
T2M6 - 1

B-3 PH AND RESISTIVITY

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 0000012528c
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190038
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 4/8/2019
Local Agency No :

Material : Soils
Contractor : **Pit Number :** NE-23-19
Supplier Name : **Date Sampled :** 4/8/2019
Acceptance No : **Date Received :** 4/8/2019
Sampled Location : 19.0 to 21.0 **Sampled By :** Drill Crew
Make : **IAS Sample No :** D-8
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
T417 pH Reading	5.3	
T417 Resistivity Reading (ohms-cm)	3300	

Result Code: Informational

Remarks : Report revised to reflect current job title and Resistivity units.

Kurt R. Williams, P.E.
State Materials Engineer
Steve Landers By:_____
Structural Material Testing Engineer
Date : 8/15/2019
Phone : (360) 709-5446

Billing Code
T44P - 1
T44V - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 0000012528d
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190039
Project Engineer : Jason Qiu **Bid Item No :**
Org Code : 585409 **Date Received :** 4/8/2019
Local Agency No :

Material : Soils
Contractor : **Pit Number :** NE-25p-19
Supplier Name : **Date Sampled :** 4/8/2019
Acceptance No : **Date Received :** 4/8/2019
Sampled Location : 14.0 to 16.0 **Sampled By :** Drill Crew
Make : **IAS Sample No :** D-6
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
T417 pH Reading	5.09	
T417 Resisitivity Reading (ohms-cm)	3900	

Result Code: Informational

Remarks : Report revised to reflect current job title and Resistivity units.

Kurt R. Williams, P.E.
State Materials Engineer
Steve Landers By:_____
Structural Material Testing Engineer
Date : 8/15/2019
Phone : (360) 709-5446

Billing Code
T44P - 1
T44V - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : xl5446 **Sample ID :** 0000012712e
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190094
Project Engineer : Jason Q **Bid Item No :**
Org Code : 585409 **Date Received :** 10/10/2019
Local Agency No :

Material : Soils
Contractor : **Pit Number :** NE-57-19
Supplier Name : **Date Sampled :** 10/5/2019
Acceptance No : **Date Received :** 10/10/2019
Sampled Location : 12.0' tro 13.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-5
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
pH Reading	6.4	
Resistivity	8000	

Result Code: Informational

Remarks :

Kurt R. Williams, P.E.
State Materials Engineer
Steve Landers By:_____
Structural Material Testing Engineer
Date : 10/17/2019
Phone : (360) 709-5446

Billing Code
T44P - 1
T44V - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : xl5446 **Sample ID :** 0000012712f
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190093
Project Engineer : Jason Q **Bid Item No :**
Org Code : 585409 **Date Received :** 10/10/2019
Local Agency No :

Material : Soils
Contractor : **Pit Number :** NE-61vw-19
Supplier Name : **Date Sampled :** 10/5/2019
Acceptance No : **Date Received :** 10/10/2019
Sampled Location : 14.0' to 15.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-6
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
pH Reading	6.7	
Resistivity	8000	

Result Code: Informational

Remarks :

Kurt R. Williams, P.E.
State Materials Engineer
Steve Landers By:_____
Structural Material Testing Engineer
Date : 10/17/2019
Phone : (360) 709-5446

Billing Code
T44P - 1
T44V - 1

Washington State Department of Transportation
State Materials Laboratory
PO Box 47365 Olympia WA 98504 / 1655 S. 2nd Ave Tumwater WA 98512

Miscellaneous Report

Work Order : XL5446 **Sample ID :** 00000127131
Section : I-405 / SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project
State Route No : 405 **Lab Number :** MC0190092
Project Engineer : Jason Q **Bid Item No :**
Org Code : 585409 **Date Received :** 10/10/2019
Local Agency No :

Material : Soils
Contractor : **Pit Number :** NE-62p-19
Supplier Name : **Date Sampled :** 10/5/2019
Acceptance No : **Date Received :** 10/10/2019
Sampled Location : 19.0' to 20.5' **Sampled By :** Drill crew
Make : **IAS Sample No :** D-8
Manufacturer : **Lot Number :**

Test Name	Test Result	Test Specifications
pH Reading	6.8	
Resistivity	8000	

Result Code: Informational

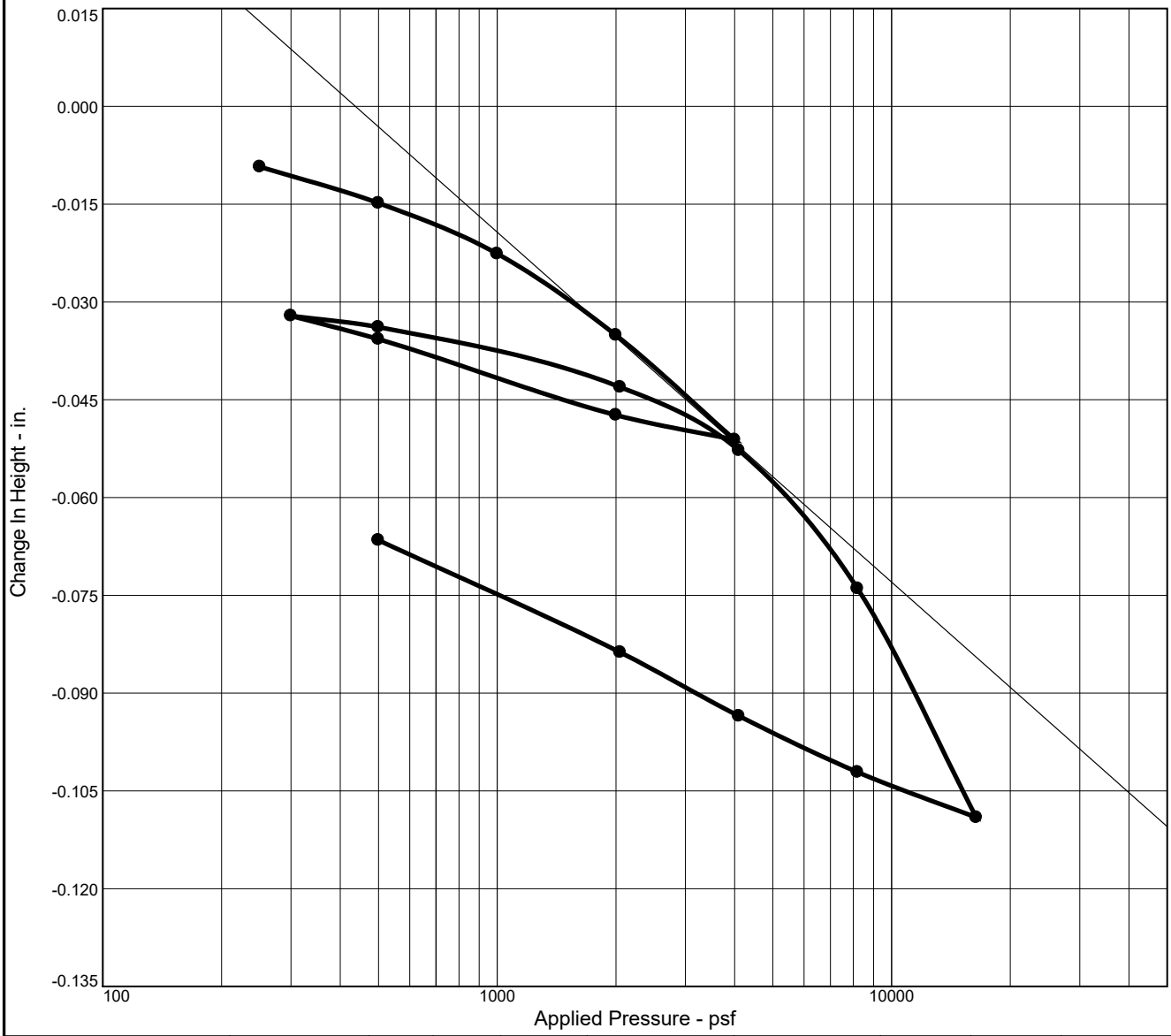
Remarks :

Kurt R. Williams, P.E.
State Materials Engineer
Steve Landers By:_____
Structural Material Testing Engineer
Date : 10/17/2019
Phone : (360) 709-5446

Billing Code
T44P - 1
T44V - 1

B-4 CONSOLIDATION TESTS

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
104.3 %	35.1 %	87.5	39	17	2.71	840	1019	0.10	0.02	0.911

MATERIAL DESCRIPTION	USCS	AASHTO
CL - Lean Clay	CL	

Project No. XL-5446 **Client:** Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-16p-19 **Depth:** 7.5 **Sample Number:** P-3

Remarks:
OCR: 1.2

WSDOT

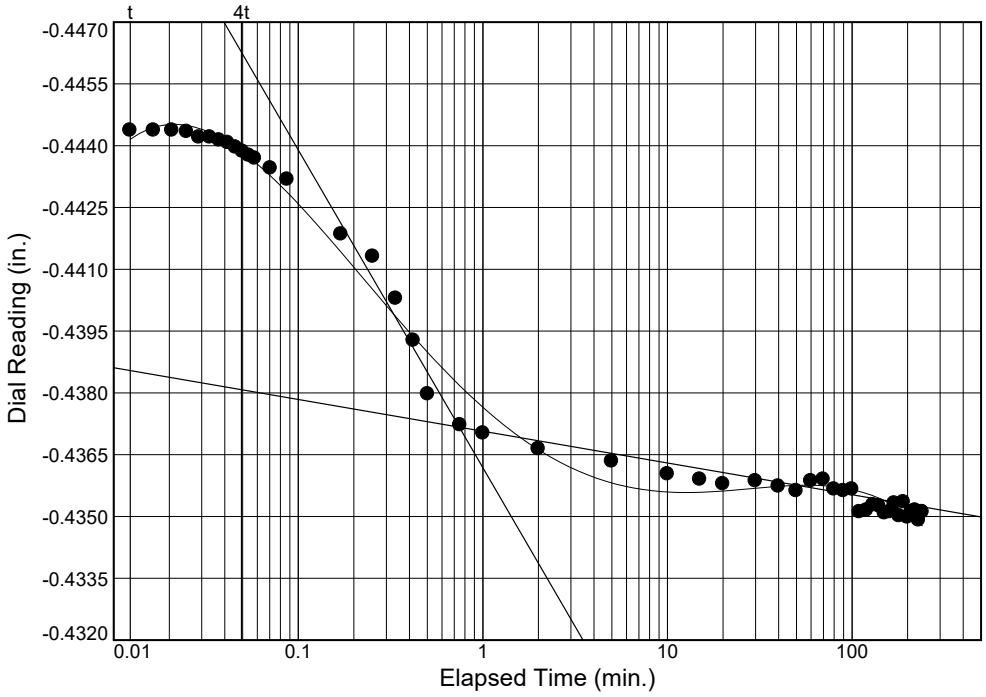
Figure

Tested By: SLW

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

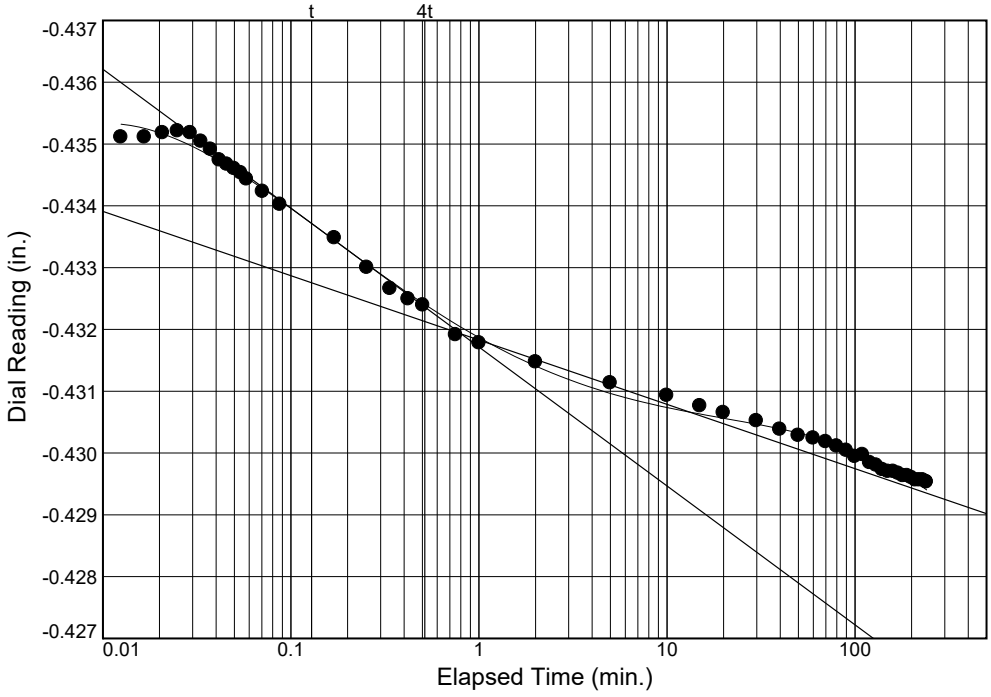
Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 1
Load= 250 psf
D_0 = -0.4444
D_{50} = -0.4408
D_{100} = -0.4372
T_{50} = 0.22 min.

C_v @ T_{50}
2.198 ft.^{2}/day

C_α = 0.001



Load No.= 2
Load= 500 psf
D_0 = -0.4350
D_{50} = -0.4335
D_{100} = -0.4319
T_{50} = 0.16 min.

C_v @ T_{50}
2.922 ft.^{2}/day

C_α = 0.002

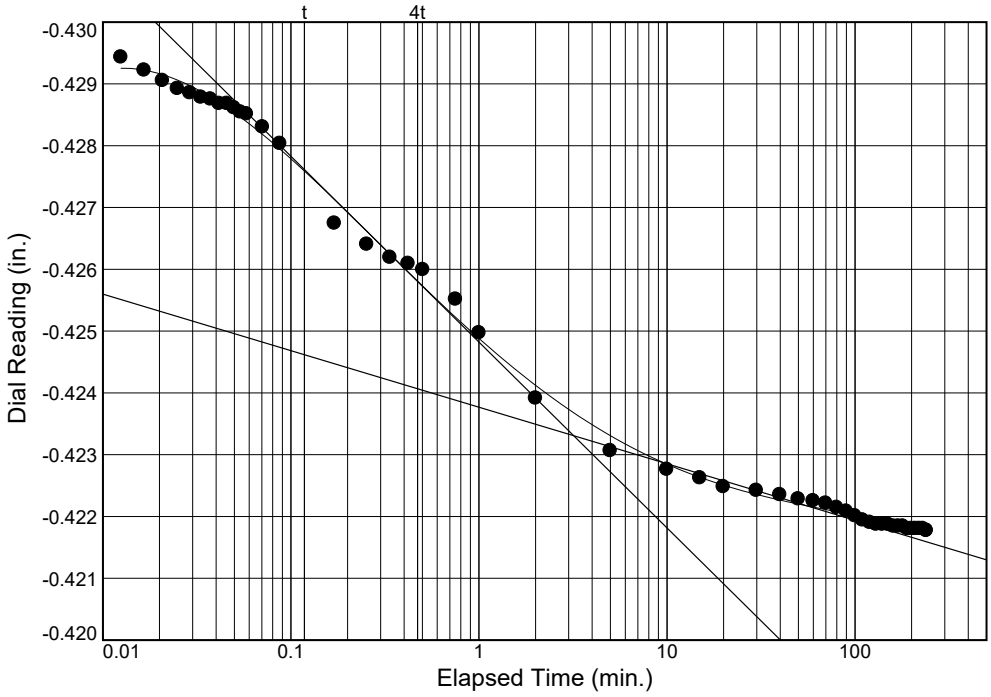
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

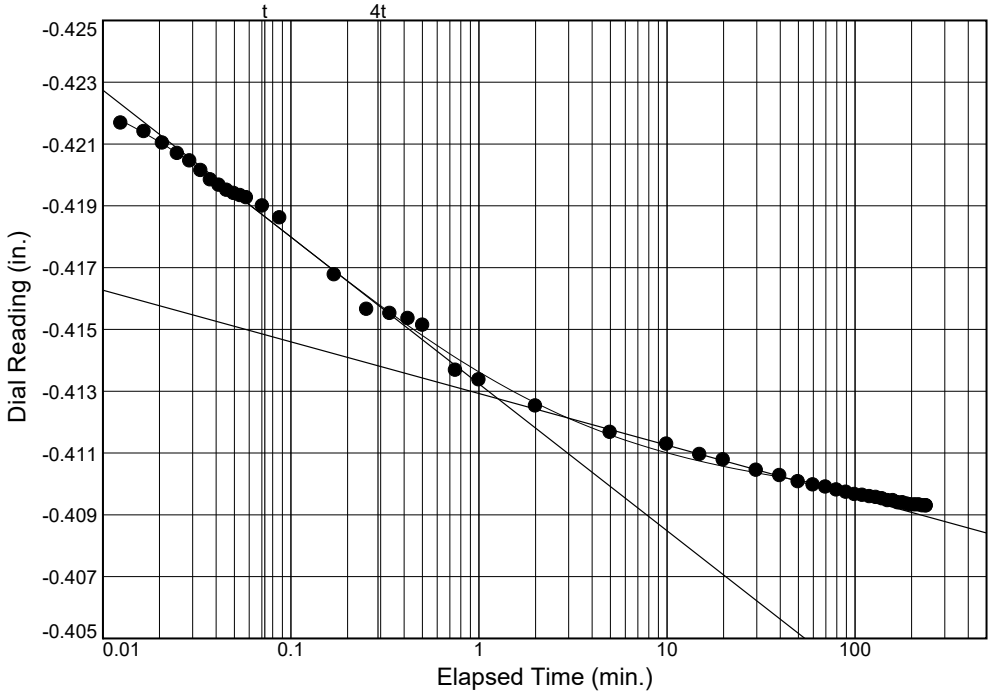
Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 3
Load= 1000 psf
D_0 = -0.4294
D_{50} = -0.4263
D_{100} = -0.4233
T_{50} = 0.31 min.

C_v @ T_{50}
1.516 ft.^{2}/day

C_α = 0.002



Load No.= 4
Load= 2000 psf
D_0 = -0.4215
D_{50} = -0.4171
D_{100} = -0.4128
T_{50} = 0.15 min.

C_v @ T_{50}
3.032 ft.^{2}/day

C_α = 0.003

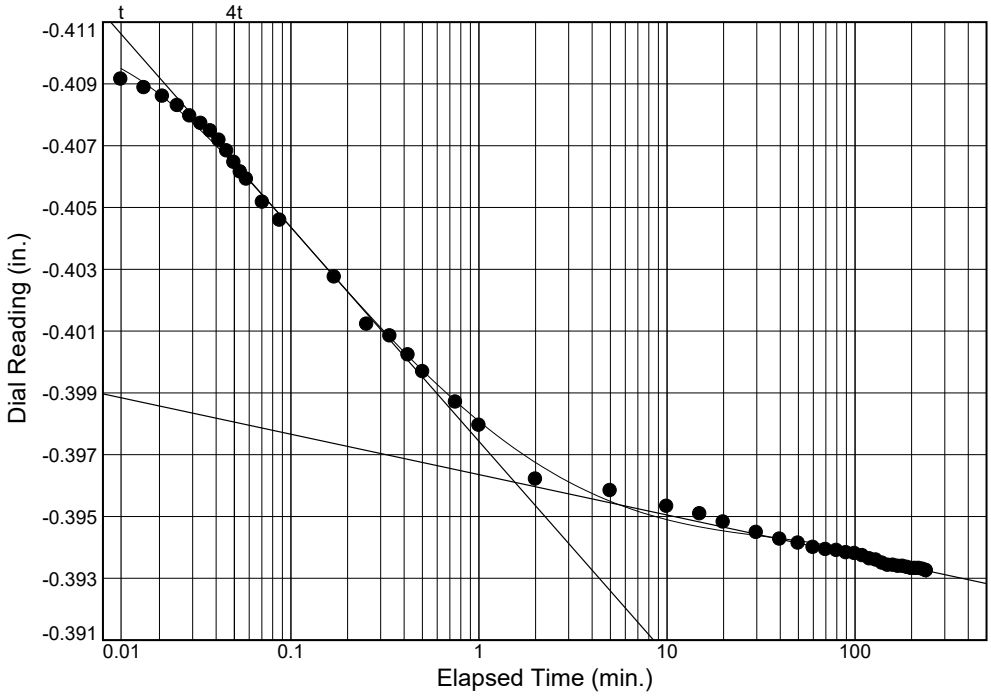
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

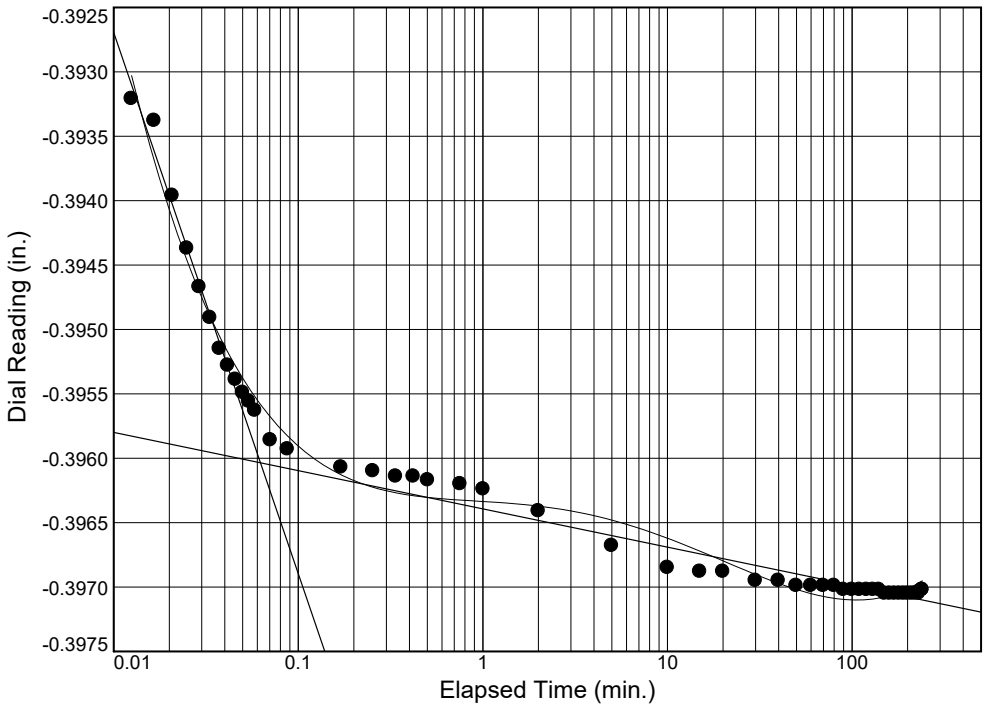
Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 5
Load= 4000 psf
D_0 = -0.4126
D_{50} = -0.4044
D_{100} = -0.3961
T_{50} = 0.10 min.

C_v @ T_{50}
4.502 ft.^{2}/day

C_α = 0.002



Load No.= 6
Load= 2000 psf
D_0 = -0.3932
D_{50} = -0.3946
D_{100} = -0.3960
T_{50} = 0.03 min.

C_v @ T_{50}
16.022 ft.^{2}/day

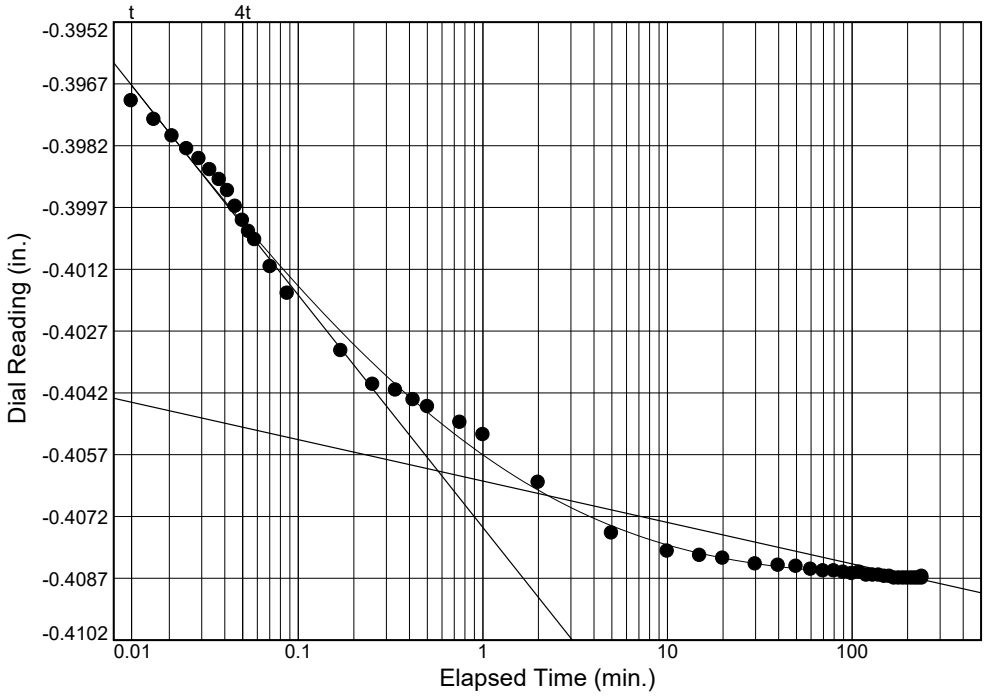
Figure

Washington State Department of Transportation

Dial Reading vs. Time

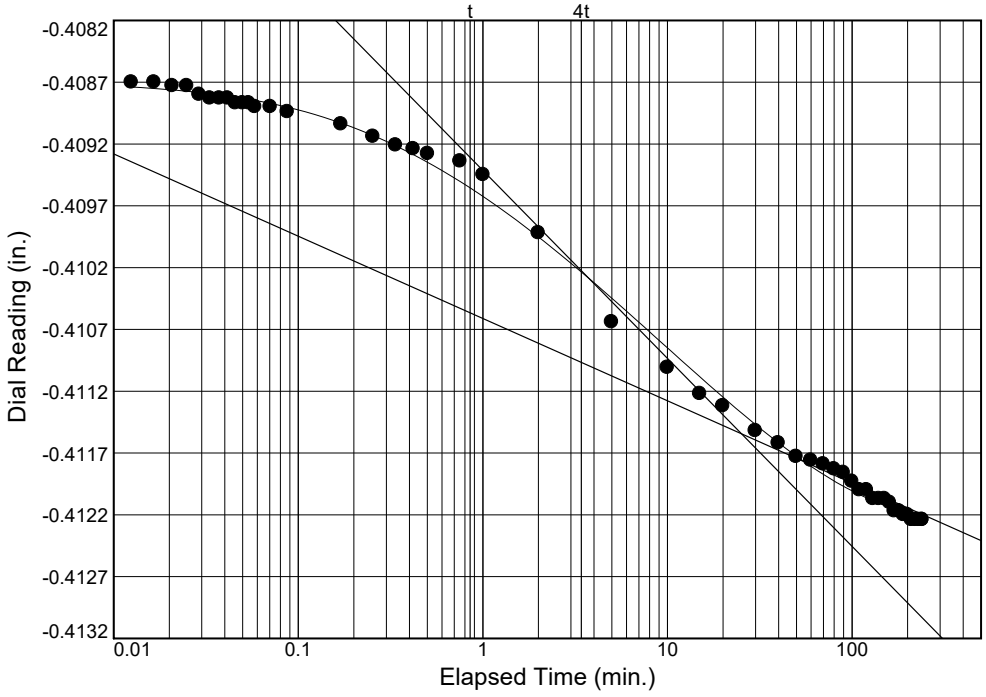
Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 7
Load= 500 psf
D_0 = -0.3934
D_{50} = -0.3998
D_{100} = -0.4061
T_{50} = 0.04 min.

C_v @ T_{50}
10.345 ft.^{2}/day



Load No.= 8
Load= 300 psf
D_0 = -0.4089
D_{50} = -0.4102
D_{100} = -0.4115
T_{50} = 3.26 min.

C_v @ T_{50}
0.141 ft.^{2}/day

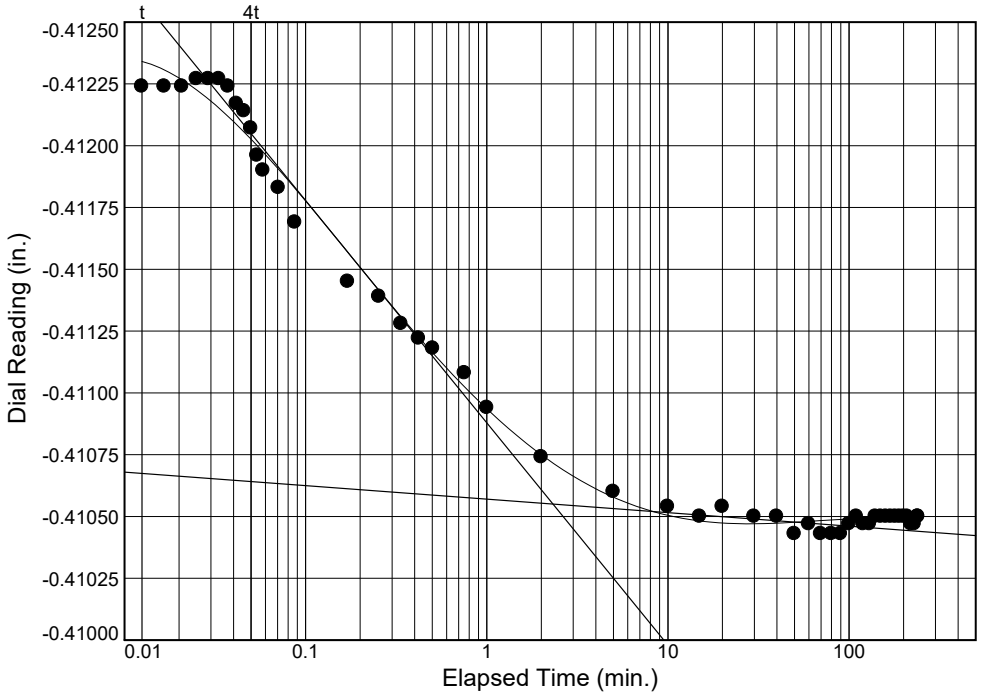
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

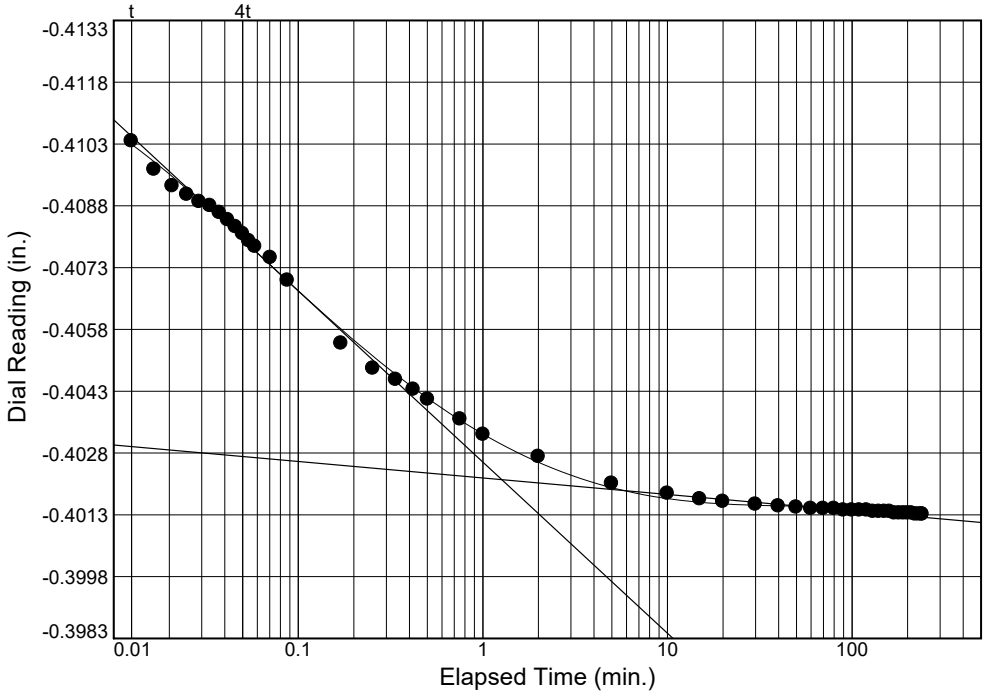
Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 9
Load= 500 psf
D_0 = -0.4127
D_{50} = -0.4116
D_{100} = -0.4106
T_{50} = 0.16 min.

C_v @ T_{50}
2.940 ft.^{2}/day

C_α = 0.000



Load No.= 10
Load= 2050 psf
D_0 = -0.4126
D_{50} = -0.4074
D_{100} = -0.4022
T_{50} = 0.07 min.

C_v @ T_{50}
6.508 ft.^{2}/day

C_α = 0.001

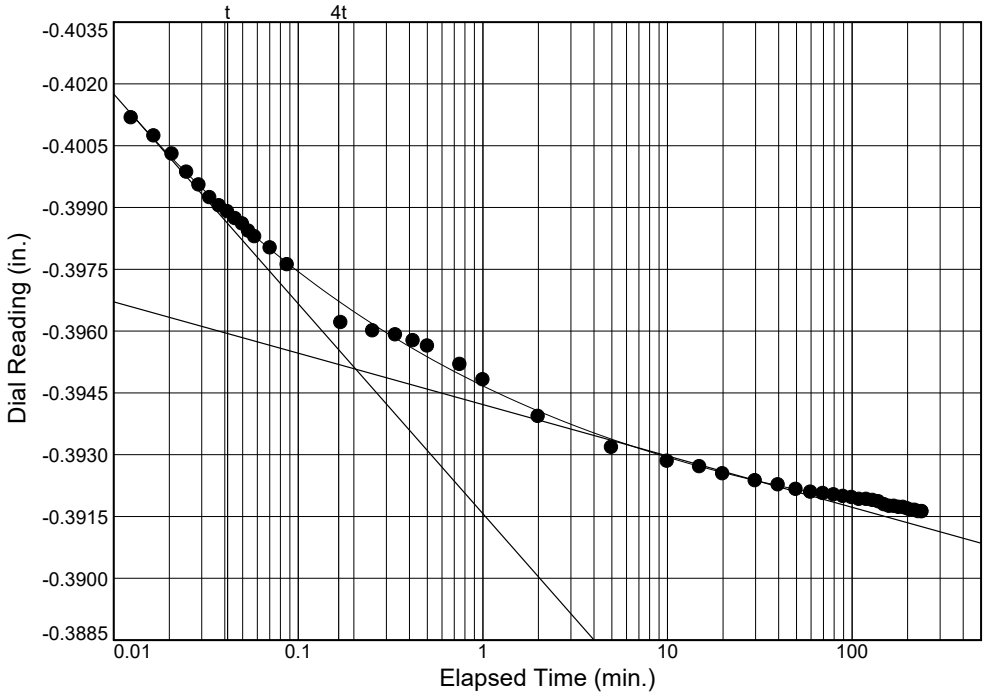
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

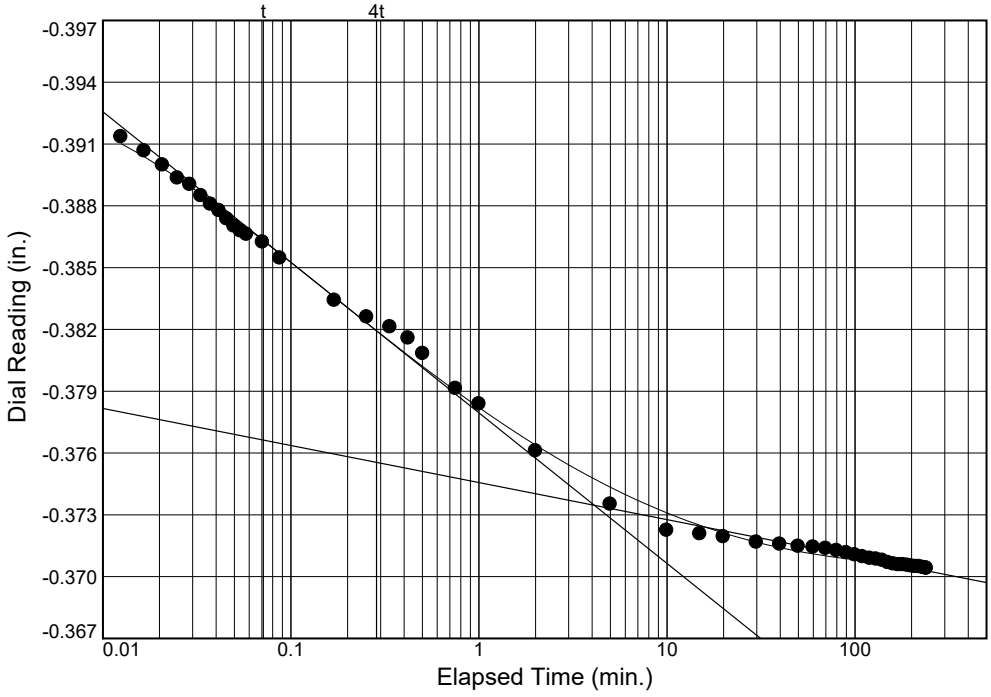
Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 11
Load= 4100 psf
D_0 = -0.4010
D_{50} = -0.3981
D_{100} = -0.3951
T_{50} = 0.07 min.

C_v @ T_{50}
6.628 ft.^{2}/day

C_α = 0.002



Load No.= 12
Load= 8200 psf
D_0 = -0.3907
D_{50} = -0.3821
D_{100} = -0.3735
T_{50} = 0.27 min.

C_v @ T_{50}
1.579 ft.^{2}/day

C_α = 0.003

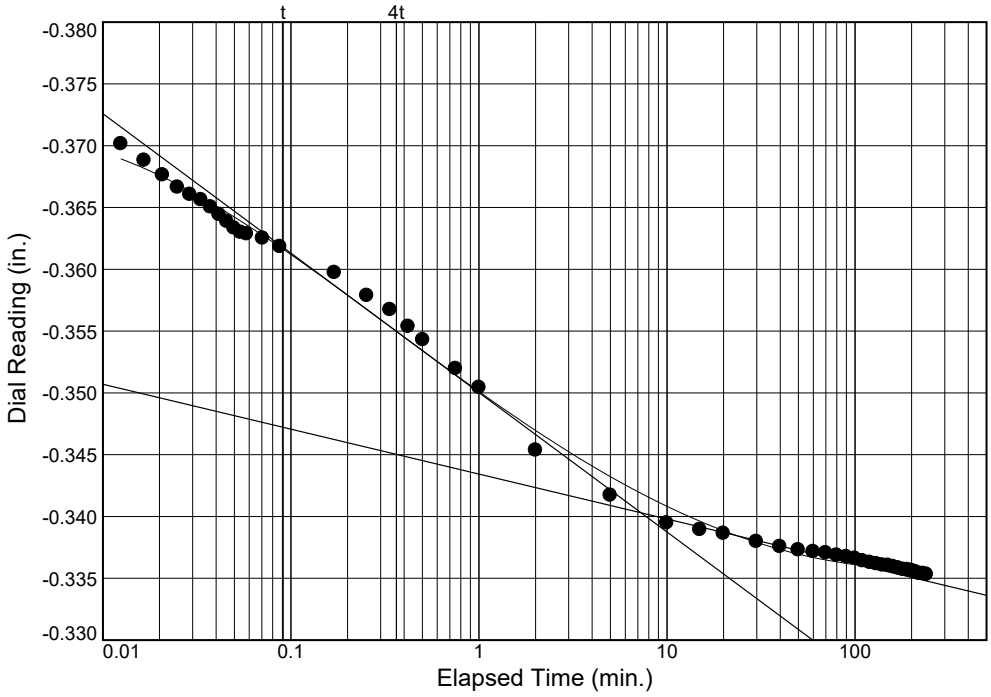
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

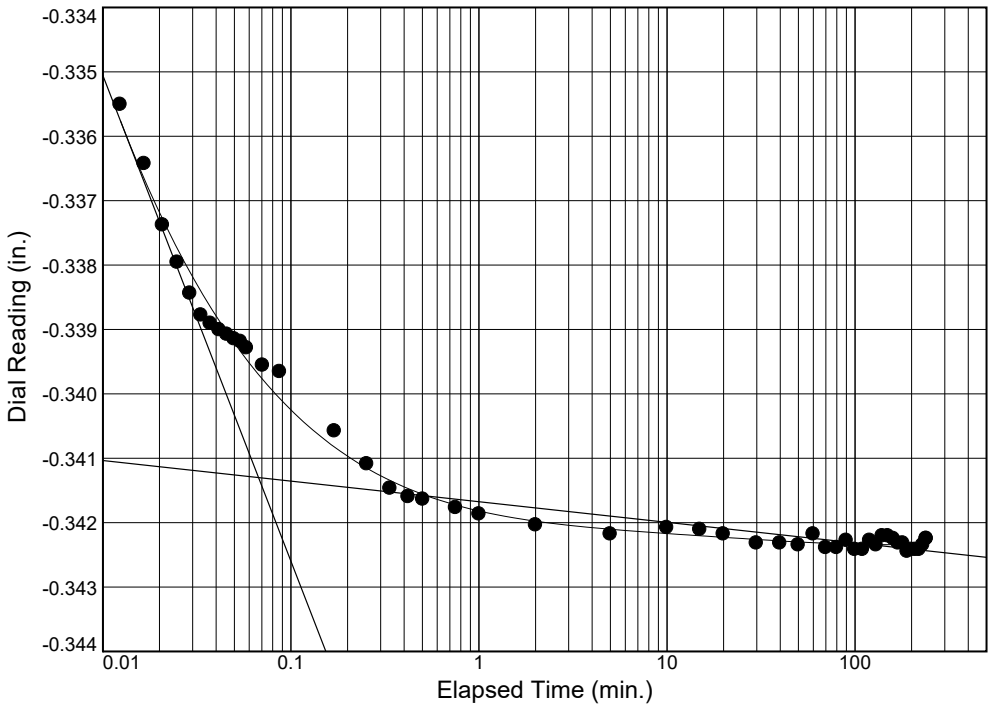
Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 13
Load= 16400 psf
D_0 = -0.3683
D_{50} = -0.3543
D_{100} = -0.3403
T_{50} = 0.42 min.

C_v @ T_{50}
0.968 ft.^{2}/day

C_α = 0.007



Load No.= 14
Load= 8200 psf
D_0 = -0.3353
D_{50} = -0.3383
D_{100} = -0.3413
T_{50} = 0.03 min.

C_v @ T_{50}
12.469 ft.^{2}/day

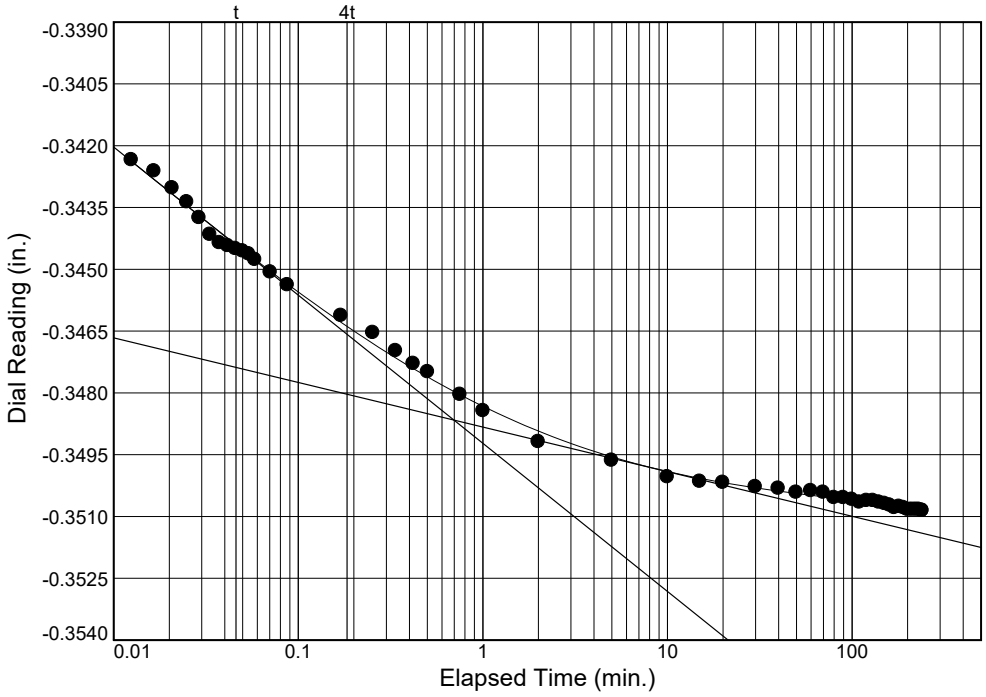
Figure

Washington State Department of Transportation

Dial Reading vs. Time

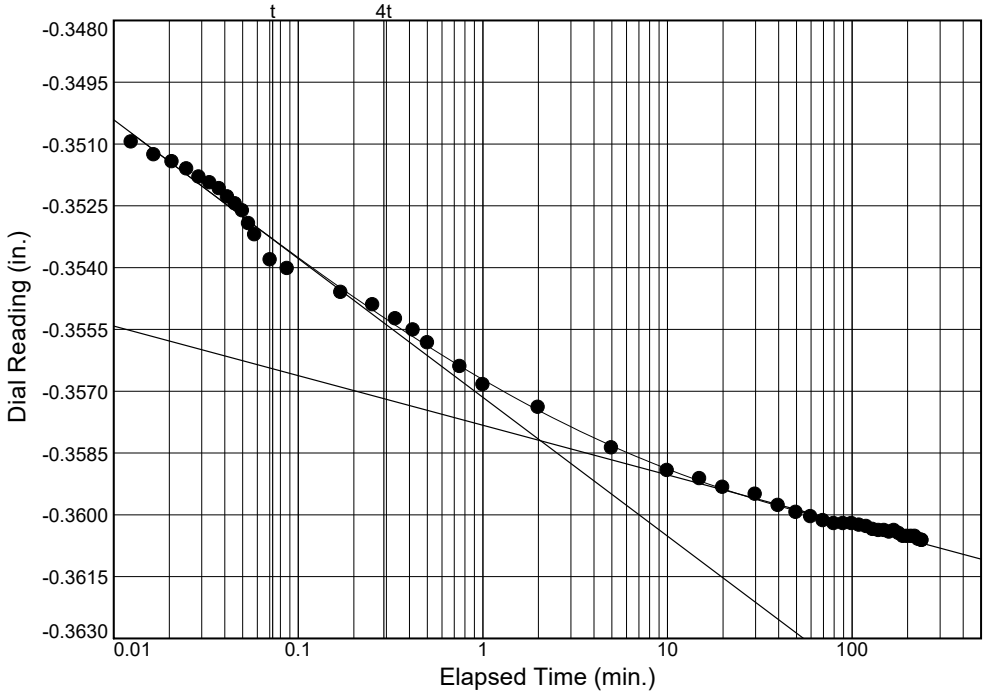
Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 15
Load= 4100 psf
D_0 = -0.3424
D_{50} = -0.3455
D_{100} = -0.3487
T_{50} = 0.10 min.

C_v @ T_{50}
4.041 ft.^{2}/day



Load No.= 16
Load= 2050 psf
D_0 = -0.3514
D_{50} = -0.3548
D_{100} = -0.3582
T_{50} = 0.21 min.

C_v @ T_{50}
1.921 ft.^{2}/day

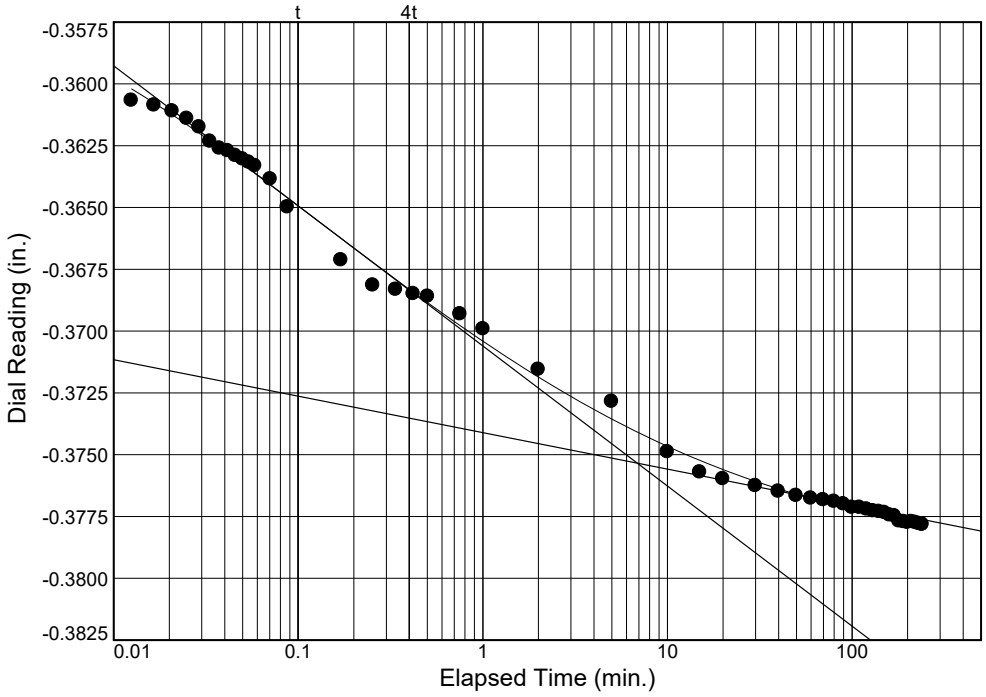
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-16p-19 Depth: 7.5 Sample Number: P-3



Load No.= 17
Load= 500 psf
D_0 = -0.3616
D_{50} = -0.3684
D_{100} = -0.3753
T_{50} = 0.42 min.

C_v @ T_{50}
0.996 ft.^{2}/day

Figure

Washington State Department of Transportation

CONSOLIDATION TEST DATA

2/3/2020

Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project Number: XL-5446
Location: NE-16p-19
Depth: 7.5 **Sample Number:** P-3
Material Description: CL - Lean Clay
Liquid Limit: 39 **Plasticity Index:** 17
USCS: CL
Testing Remarks: OCR: 1.2
Tested by: SLW

Test Specimen Data

NATURAL MOISTURE
Wet w+t =1695.31 g.
Dry w+t =1445.02 g.
Tare Wt. = 731.54 g.
Moisture = 35.1 %

VOID RATIO
Spec. Gr. = 2.71
Est. Ht. Solids = 0.523 in.
Init. V.R. = 0.911
Init. Sat. = 104.3 %

AFTER TEST
Wet w+t = 233.59 g.
Dry w+t = 198.80 g.
Tare Wt. = 84.75 g.
Moisture = 30.5 %

UNIT WEIGHT
Height = 1.000 in.
Diameter = 2.500 in.
Weight = 152.26 g.
Dry Dens. = 87.5 pcf

TEST START
Height = 1.000 in.
Diameter = 2.500 in.

Dry Wt. =114.05* g.

End-Of-Load Summary

Pressure (psf)	Final Dial (in.)	Deformation (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Strain
start	-0.44437	0.00000			0.911	
250	-0.43511	0.00926	2.198	0.001	0.894	0.9 Comprs.
500	-0.42953	0.01484	2.922	0.002	0.883	1.5 Comprs.
1000	-0.42177	0.02260	1.516	0.002	0.868	2.3 Comprs.
2000	-0.40928	0.03509	3.032	0.003	0.844	3.5 Comprs.
4000	-0.39324	0.05113	4.502	0.002	0.814	5.1 Comprs.
2000	-0.39702	0.04735	16.022		0.821	4.7 Comprs.
500	-0.40866	0.03571	10.345		0.843	3.6 Comprs.
300	-0.41224	0.03213	0.141		0.850	3.2 Comprs.
500	-0.41050	0.03387	2.940	0.000	0.847	3.4 Comprs.
2050	-0.40131	0.04306	6.508	0.001	0.829	4.3 Comprs.
4100	-0.39161	0.05276	6.628	0.002	0.811	5.3 Comprs.
8200	-0.37040	0.07397	1.579	0.003	0.770	7.4 Comprs.
16400	-0.33530	0.10907	0.968	0.007	0.703	10.9 Comprs.
8200	-0.34225	0.10212	12.469		0.716	10.2 Comprs.
4100	-0.35086	0.09351	4.041		0.733	9.4 Comprs.
2050	-0.36063	0.08374	1.921		0.751	8.4 Comprs.
500	-0.37782	0.06655	0.996		0.784	6.7 Comprs.

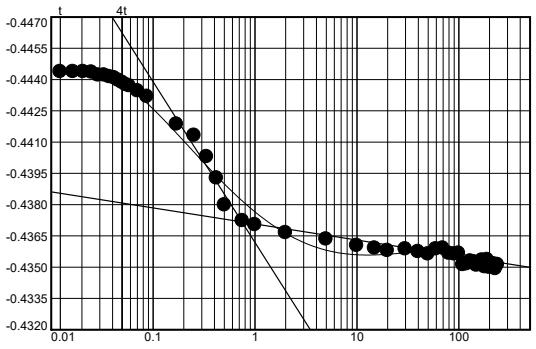
TEST RESULTS SUMMARY

Compression index (C_c), psf = 0.10 **Preconsolidation pressure (P_p), psf =** 1019 **Void ratio at P_p (e_m) =** 0.868

Overburden (σ_{vo}), psf = 840 **Void ratio at σ_{vo} (e_o) =** 0.873 **Recompression index (C_r) =** 0.02

Pressure: 250 psf **TEST READINGS** **Load No. 1**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.44437	26	15.0039	-0.4359
2	0.0123	-0.44437	27	20.0039	-0.43579
3	0.0165	-0.44437	28	30.0039	-0.43586
4	0.0207	-0.44437	29	40.0038	-0.43573
5	0.0249	-0.44434	30	50.0037	-0.43562
6	0.0290	-0.4442	31	60.0037	-0.43586
7	0.0332	-0.4442	32	70.0036	-0.4359
8	0.0374	-0.44413	33	80.0035	-0.43566
9	0.0415	-0.44407	34	90.0034	-0.43562
10	0.0457	-0.44396	35	100.0033	-0.43566
11	0.0499	-0.44386	36	110.0032	-0.43511
12	0.0540	-0.44376	37	120.0032	-0.43515
13	0.0582	-0.44369	38	130.0031	-0.43528
14	0.0707	-0.44345	39	140.0030	-0.43525
15	0.0873	-0.44318	40	150.0030	-0.43508
16	0.1707	-0.44185	41	160.0029	-0.43511
17	0.2540	-0.44131	42	170.0029	-0.43532
18	0.3373	-0.44029	43	180.0028	-0.43501
19	0.4207	-0.43927	44	190.0028	-0.43535
20	0.5040	-0.43797	45	200.0027	-0.43498
21	0.7540	-0.43722	46	210.0026	-0.43511
22	1.0040	-0.43702	47	220.0026	-0.43515
23	2.0040	-0.43664	48	230.0028	-0.43491
24	5.0040	-0.43634	49	240.0028	-0.43511
25	10.0040	-0.43603	50	240.1905	-0.43511

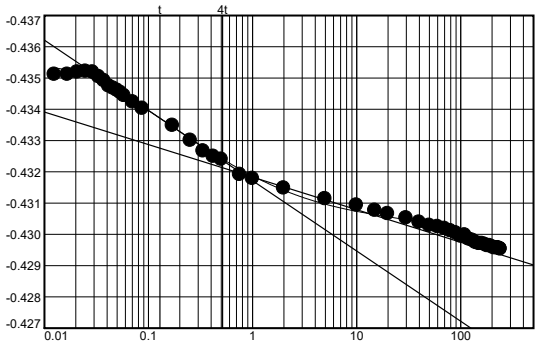


Void Ratio = 0.894 **Compression =** 0.9%

D_0 = -0.4444 **D_{50} =** -0.4408 **D_{100} =** -0.4372 **C_v at 0.22 min. =** 2.198 ft.^{2}/day **C_α =** 0.001

Pressure: 500 psf	TEST READINGS	Load No. 2

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.43511	26	15.0041	-0.43076
2	0.0125	-0.43511	27	20.0040	-0.43065
3	0.0167	-0.43511	28	30.0040	-0.43052
4	0.0208	-0.43518	29	40.0039	-0.43038
5	0.0250	-0.43521	30	50.0039	-0.43028
6	0.0292	-0.43518	31	60.0038	-0.43024
7	0.0333	-0.43504	32	70.0038	-0.43018
8	0.0375	-0.43491	33	80.0037	-0.43011
9	0.0417	-0.43474	34	90.0036	-0.43004
10	0.0458	-0.43467	35	100.0036	-0.42994
11	0.0500	-0.4346	36	110.0035	-0.42997
12	0.0542	-0.43453	37	120.0035	-0.42984
13	0.0583	-0.43443	38	130.0034	-0.4298
14	0.0708	-0.43423	39	140.0033	-0.42973
15	0.0875	-0.43402	40	150.0033	-0.4297
16	0.1708	-0.43348	41	160.0032	-0.4297
17	0.2542	-0.433	42	170.0032	-0.42967
18	0.3375	-0.43266	43	180.0031	-0.42963
19	0.4208	-0.43249	44	190.0030	-0.42963
20	0.5041	-0.43239	45	200.0030	-0.4296
21	0.7542	-0.43191	46	210.0029	-0.42956
22	1.0042	-0.43178	47	220.0029	-0.42956
23	2.0041	-0.43147	48	230.0028	-0.42956
24	5.0041	-0.43113	49	240.0027	-0.42953
25	10.0041	-0.43093	50	240.0697	-0.42953

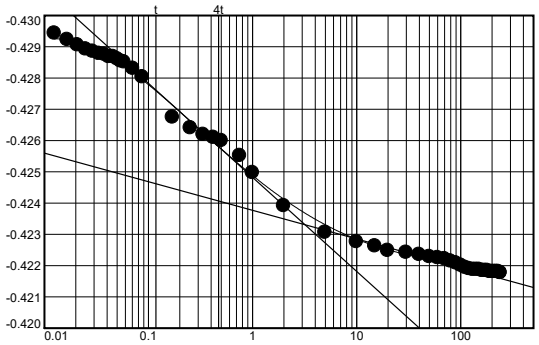


Void Ratio = 0.883 **Compression =** 1.5%

D_0 = -0.4350 **D_{50} =** -0.4335 **D_{100} =** -0.4319 **C_V at 0.16 min. =** 2.922 ft.^{2}/day **C_α =** 0.002

Pressure: 1000 psf	TEST READINGS	Load No. 3

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.42953	26	15.0041	-0.42262
2	0.0125	-0.42943	27	20.0040	-0.42248
3	0.0166	-0.42922	28	30.0040	-0.42242
4	0.0208	-0.42905	29	40.0039	-0.42235
5	0.0250	-0.42892	30	50.0038	-0.42228
6	0.0291	-0.42885	31	60.0038	-0.42225
7	0.0333	-0.42878	32	70.0037	-0.42221
8	0.0375	-0.42875	33	80.0037	-0.42214
9	0.0416	-0.42868	34	90.0036	-0.42208
10	0.0458	-0.42868	35	100.0035	-0.42201
11	0.0500	-0.42861	36	110.0035	-0.42194
12	0.0541	-0.42854	37	120.0034	-0.4219
13	0.0583	-0.42851	38	130.0034	-0.42187
14	0.0708	-0.4283	39	140.0033	-0.42187
15	0.0875	-0.42803	40	150.0032	-0.42187
16	0.1708	-0.42674	41	160.0032	-0.42184
17	0.2541	-0.4264	42	170.0031	-0.42184
18	0.3375	-0.42619	43	180.0031	-0.42184
19	0.4208	-0.42609	44	190.0030	-0.4218
20	0.5041	-0.42599	45	200.0029	-0.4218
21	0.7541	-0.42551	46	210.0029	-0.4218
22	1.0041	-0.42497	47	220.0028	-0.4218
23	2.0041	-0.42391	48	230.0028	-0.4218
24	5.0041	-0.42306	49	240.0027	-0.42177
25	10.0041	-0.42276	50	240.1071	-0.42177

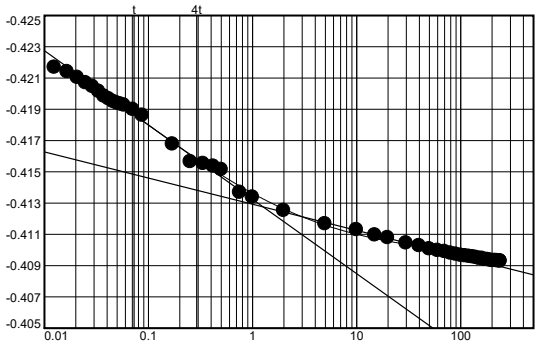


Void Ratio = 0.868 **Compression =** 2.3%

D_0 = -0.4294 **D_{50} =** -0.4263 **D_{100} =** -0.4233 **C_V at 0.31 min. =** 1.516 ft.^{2}/day **C_α =** 0.002

Pressure: 2000 psf	TEST READINGS	Load No. 4

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.42177	26	15.0041	-0.41094
2	0.0125	-0.42167	27	20.0040	-0.41077
3	0.0166	-0.42139	28	30.0040	-0.41043
4	0.0208	-0.42102	29	40.0039	-0.41026
5	0.0250	-0.42068	30	50.0038	-0.41006
6	0.0291	-0.42044	31	60.0038	-0.40996
7	0.0333	-0.42013	32	70.0037	-0.40989
8	0.0375	-0.41983	33	80.0037	-0.40979
9	0.0416	-0.41966	34	90.0036	-0.40972
10	0.0458	-0.41949	35	100.0035	-0.40965
11	0.0500	-0.41939	36	110.0035	-0.40962
12	0.0541	-0.41932	37	120.0034	-0.40958
13	0.0583	-0.41925	38	130.0034	-0.40955
14	0.0708	-0.41898	39	140.0033	-0.40951
15	0.0875	-0.4186	40	150.0032	-0.40945
16	0.1708	-0.41676	41	160.0032	-0.40945
17	0.2541	-0.41564	42	170.0031	-0.40938
18	0.3375	-0.41551	43	180.0031	-0.40938
19	0.4208	-0.41534	44	190.0030	-0.40934
20	0.5041	-0.41513	45	200.0029	-0.40931
21	0.7541	-0.41367	46	210.0029	-0.40931
22	1.0041	-0.41336	47	220.0028	-0.40931
23	2.0041	-0.41251	48	230.0028	-0.40928
24	5.0041	-0.41166	49	240.0027	-0.40928
25	10.0041	-0.41128	50	240.1530	-0.40928

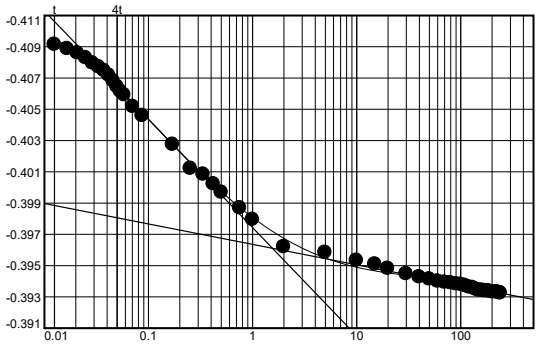


Void Ratio = 0.844 **Compression =** 3.5%

D_0 = -0.4215 **D_{50} =** -0.4171 **D_{100} =** -0.4128 **C_v at 0.15 min. =** 3.032 ft.^{2}/day **C_α =** 0.003

Pressure: 4000 psf	TEST READINGS	Load No. 5

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.40928	26	15.0040	-0.39508
2	0.0125	-0.40914	27	20.0040	-0.39481
3	0.0166	-0.40887	28	30.0040	-0.39447
4	0.0208	-0.40859	29	40.0039	-0.39426
5	0.0250	-0.40829	30	50.0038	-0.39413
6	0.0291	-0.40795	31	60.0038	-0.39399
7	0.0333	-0.40771	32	70.0037	-0.39392
8	0.0375	-0.40747	33	80.0037	-0.39389
9	0.0416	-0.40717	34	90.0036	-0.39382
10	0.0458	-0.40682	35	100.0035	-0.39379
11	0.0500	-0.40645	36	110.0035	-0.39372
12	0.0541	-0.40614	37	120.0034	-0.39362
13	0.0583	-0.40591	38	130.0034	-0.39358
14	0.0708	-0.40516	39	140.0033	-0.39348
15	0.0875	-0.40458	40	150.0032	-0.39341
16	0.1708	-0.40274	41	160.0032	-0.39341
17	0.2541	-0.40121	42	170.0031	-0.39338
18	0.3374	-0.40083	43	180.0031	-0.39338
19	0.4208	-0.40022	44	190.0030	-0.39334
20	0.5041	-0.39968	45	200.0029	-0.39331
21	0.7541	-0.39869	46	210.0029	-0.39331
22	1.0041	-0.39794	47	220.0028	-0.39331
23	2.0041	-0.3962	48	230.0028	-0.39328
24	5.0041	-0.39583	49	240.0027	-0.39324
25	10.0041	-0.39532	50	240.1571	-0.39324

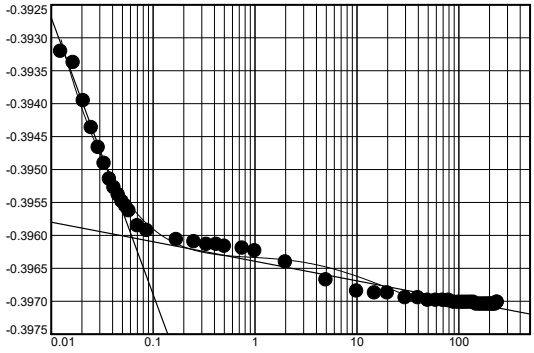


Void Ratio = 0.814 **Compression =** 5.1%

D_0 = -0.4126 **D_{50} =** -0.4044 **D_{100} =** -0.3961 **C_V at 0.10 min. =** 4.502 ft.^{2}/day **C_α =** 0.002

Pressure: 2000 psf	TEST READINGS	Load No. 6

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.39324	26	15.0040	-0.39688
2	0.0125	-0.39321	27	20.0040	-0.39688
3	0.0166	-0.39338	28	30.0040	-0.39695
4	0.0208	-0.39396	29	40.0039	-0.39695
5	0.0250	-0.39437	30	50.0038	-0.39699
6	0.0291	-0.39467	31	60.0038	-0.39699
7	0.0333	-0.39491	32	70.0037	-0.39699
8	0.0375	-0.39515	33	80.0037	-0.39699
9	0.0416	-0.39528	34	90.0036	-0.39702
10	0.0458	-0.39539	35	100.0035	-0.39702
11	0.0500	-0.39549	36	110.0035	-0.39702
12	0.0541	-0.39556	37	120.0034	-0.39702
13	0.0583	-0.39563	38	130.0034	-0.39702
14	0.0708	-0.39586	39	140.0033	-0.39702
15	0.0875	-0.39593	40	150.0032	-0.39705
16	0.1708	-0.39607	41	160.0032	-0.39705
17	0.2541	-0.3961	42	170.0031	-0.39705
18	0.3375	-0.39614	43	180.0031	-0.39705
19	0.4208	-0.39614	44	190.0030	-0.39705
20	0.5041	-0.39617	45	200.0029	-0.39705
21	0.7541	-0.3962	46	210.0029	-0.39705
22	1.0041	-0.39624	47	220.0028	-0.39705
23	2.0041	-0.39641	48	230.0028	-0.39705
24	5.0041	-0.39668	49	240.0027	-0.39702
25	10.0041	-0.39685	50	240.0613	-0.39702

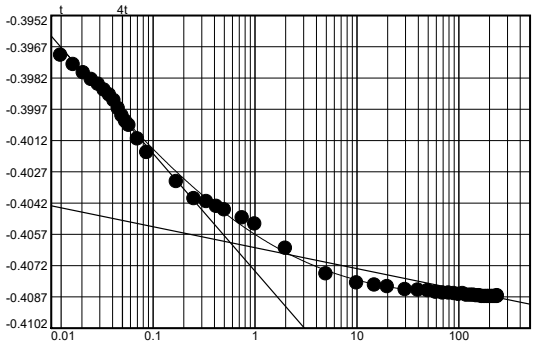


Void Ratio = 0.821 **Compression =** 4.7%

D_0 = -0.3932 **D_{50} =** -0.3946 **D_{100} =** -0.3960 **C_V at 0.03 min. =** 16.022 ft.^{2}/day

Pressure: 500 psf	TEST READINGS	Load No. 7

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.39702	26	15.0041	-0.40815
2	0.0125	-0.39712	27	20.0040	-0.40822
3	0.0166	-0.39757	28	30.0040	-0.40836
4	0.0208	-0.39797	29	40.0039	-0.40839
5	0.0250	-0.39828	30	50.0038	-0.40842
6	0.0291	-0.39852	31	60.0038	-0.40849
7	0.0333	-0.39879	32	70.0037	-0.40853
8	0.0375	-0.39903	33	80.0037	-0.40853
9	0.0416	-0.3993	34	90.0036	-0.40856
10	0.0458	-0.39968	35	100.0035	-0.40859
11	0.0500	-0.40002	36	110.0035	-0.40856
12	0.0541	-0.40029	37	120.0034	-0.40863
13	0.0583	-0.40049	38	130.0034	-0.40863
14	0.0708	-0.40114	39	140.0033	-0.40863
15	0.0875	-0.40179	40	150.0032	-0.40866
16	0.1708	-0.40318	41	160.0032	-0.40866
17	0.2541	-0.404	42	170.0031	-0.4087
18	0.3375	-0.40414	43	180.0030	-0.4087
19	0.4208	-0.40437	44	190.0030	-0.4087
20	0.5041	-0.40454	45	200.0029	-0.4087
21	0.7541	-0.40492	46	210.0028	-0.4087
22	1.0041	-0.40522	47	220.0028	-0.4087
23	2.0041	-0.40638	48	230.0027	-0.4087
24	5.0041	-0.40761	49	240.0026	-0.4087
25	10.0041	-0.40805	50	240.1154	-0.40866

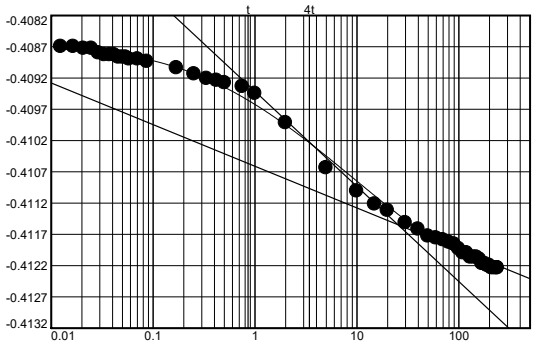


Void Ratio = 0.843 **Compression =** 3.6%

D_0 = -0.3934 **D_{50} =** -0.3998 **D_{100} =** -0.4061 **C_V at 0.04 min. =** 10.345 ft.^{2}/day

Pressure: 300 psf	TEST READINGS	Load No. 8

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.40866	26	15.0040	-0.41122
2	0.0125	-0.4087	27	20.0040	-0.41132
3	0.0166	-0.4087	28	30.0039	-0.41152
4	0.0208	-0.40873	29	40.0039	-0.41162
5	0.0250	-0.40873	30	50.0038	-0.41173
6	0.0291	-0.4088	31	60.0037	-0.41176
7	0.0333	-0.40883	32	70.0037	-0.41179
8	0.0375	-0.40883	33	80.0036	-0.41183
9	0.0416	-0.40883	34	90.0036	-0.41186
10	0.0458	-0.40887	35	100.0035	-0.41193
11	0.0500	-0.40887	36	110.0034	-0.412
12	0.0541	-0.40887	37	120.0034	-0.412
13	0.0583	-0.4089	38	130.0033	-0.41207
14	0.0708	-0.4089	39	140.0032	-0.41207
15	0.0875	-0.40894	40	150.0032	-0.41207
16	0.1708	-0.40904	41	160.0031	-0.4121
17	0.2542	-0.40914	42	170.0031	-0.41217
18	0.3375	-0.40921	43	180.0030	-0.41217
19	0.4208	-0.40924	44	190.0029	-0.4122
20	0.5041	-0.40928	45	200.0029	-0.4122
21	0.7541	-0.40934	46	210.0028	-0.41224
22	1.0041	-0.40945	47	220.0028	-0.41224
23	2.0041	-0.40992	48	230.0027	-0.41224
24	5.0041	-0.41064	49	240.0026	-0.41224
25	10.0041	-0.41101	50	240.0196	-0.41224

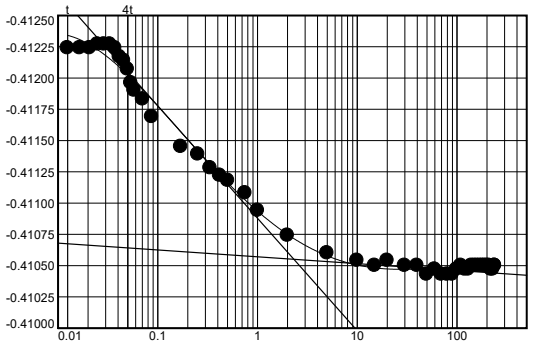


Void Ratio = 0.850 **Compression =** 3.2%

D_0 = -0.4089 **D_{50} =** -0.4102 **D_{100} =** -0.4115 **C_V at 3.26 min. =** 0.141 ft.^{2}/day

Pressure: 500 psf **TEST READINGS** **Load No. 9**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.41224	26	15.0040	-0.4105
2	0.0125	-0.41224	27	20.0040	-0.41054
3	0.0166	-0.41224	28	30.0040	-0.4105
4	0.0208	-0.41224	29	40.0039	-0.4105
5	0.0250	-0.41227	30	50.0038	-0.41043
6	0.0291	-0.41227	31	60.0038	-0.41047
7	0.0333	-0.41227	32	70.0037	-0.41043
8	0.0374	-0.41224	33	80.0037	-0.41043
9	0.0416	-0.41217	34	90.0036	-0.41043
10	0.0458	-0.41214	35	100.0035	-0.41047
11	0.0499	-0.41207	36	110.0035	-0.4105
12	0.0541	-0.41196	37	120.0034	-0.41047
13	0.0583	-0.4119	38	130.0034	-0.41047
14	0.0708	-0.41183	39	140.0033	-0.4105
15	0.0874	-0.41169	40	150.0032	-0.4105
16	0.1708	-0.41145	41	160.0032	-0.4105
17	0.2541	-0.41139	42	170.0031	-0.4105
18	0.3374	-0.41128	43	180.0031	-0.4105
19	0.4208	-0.41122	44	190.0030	-0.4105
20	0.5041	-0.41118	45	200.0029	-0.4105
21	0.7541	-0.41108	46	210.0029	-0.4105
22	1.0041	-0.41094	47	220.0028	-0.41047
23	2.0041	-0.41074	48	230.0028	-0.41047
24	5.0041	-0.4106	49	240.0027	-0.4105
25	10.0041	-0.41054	50	240.0488	-0.4105

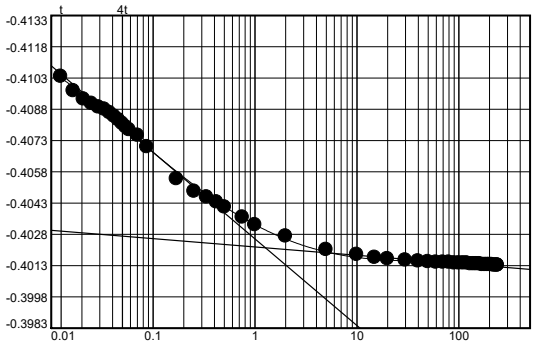


Void Ratio = 0.847 **Compression =** 3.4%

D_0 = -0.4127 **D_{50} =** -0.4116 **D_{100} =** -0.4106 **C_V at 0.16 min. =** 2.940 ft.^{2}/day **C_α =** 0.000

Pressure: 2050 psf | **TEST READINGS** | **Load No. 10**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.4105	26	15.0040	-0.40168
2	0.0125	-0.41037	27	20.0040	-0.40162
3	0.0166	-0.40968	28	30.0040	-0.40155
4	0.0208	-0.40928	29	40.0039	-0.40151
5	0.0250	-0.40907	30	50.0038	-0.40148
6	0.0291	-0.4089	31	60.0038	-0.40145
7	0.0333	-0.4088	32	70.0037	-0.40145
8	0.0375	-0.40863	33	80.0037	-0.40145
9	0.0416	-0.40846	34	90.0036	-0.40141
10	0.0458	-0.40829	35	100.0035	-0.40141
11	0.0500	-0.40812	36	110.0035	-0.40141
12	0.0541	-0.40795	37	120.0034	-0.40141
13	0.0583	-0.40781	38	130.0034	-0.40138
14	0.0708	-0.40754	39	140.0033	-0.40138
15	0.0875	-0.40699	40	150.0032	-0.40138
16	0.1708	-0.40546	41	160.0032	-0.40138
17	0.2541	-0.40485	42	170.0031	-0.40134
18	0.3375	-0.40458	43	180.0031	-0.40134
19	0.4208	-0.40434	44	190.0030	-0.40134
20	0.5041	-0.4041	45	200.0029	-0.40134
21	0.7541	-0.40362	46	210.0029	-0.40134
22	1.0041	-0.40325	47	220.0028	-0.40131
23	2.0041	-0.40271	48	230.0028	-0.40131
24	5.0041	-0.40206	49	240.0027	-0.40131
25	10.0041	-0.40182	50	240.1113	-0.40131

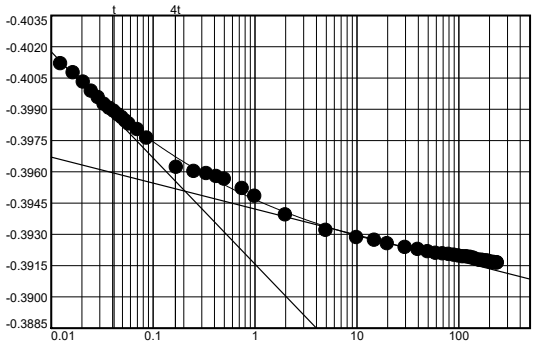


Void Ratio = 0.829 **Compression =** 4.3%

D_0 = -0.4126 **D_{50} =** -0.4074 **D_{100} =** -0.4022 **C_V at 0.07 min. =** 6.508 ft.^{2}/day **C_α =** 0.001

Pressure: 4100 psf	TEST READINGS	Load No. 11

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.40131	26	15.0040	-0.3927
2	0.0125	-0.40117	27	20.0040	-0.39253
3	0.0166	-0.40073	28	30.0040	-0.39236
4	0.0208	-0.40029	29	40.0039	-0.39226
5	0.0250	-0.39985	30	50.0038	-0.39215
6	0.0291	-0.39954	31	60.0038	-0.39208
7	0.0333	-0.39923	32	70.0037	-0.39205
8	0.0375	-0.39903	33	80.0037	-0.39202
9	0.0416	-0.39889	34	90.0036	-0.39198
10	0.0458	-0.39872	35	100.0035	-0.39195
11	0.0500	-0.39859	36	110.0035	-0.39191
12	0.0541	-0.39842	37	120.0034	-0.39191
13	0.0583	-0.39828	38	130.0034	-0.39188
14	0.0708	-0.39801	39	140.0033	-0.39185
15	0.0875	-0.3976	40	150.0032	-0.39178
16	0.1708	-0.3962	41	160.0032	-0.39174
17	0.2541	-0.396	42	170.0031	-0.39174
18	0.3375	-0.3959	43	180.0031	-0.39171
19	0.4208	-0.39576	44	190.0030	-0.39171
20	0.5041	-0.39563	45	200.0029	-0.39168
21	0.7541	-0.39518	46	210.0029	-0.39164
22	1.0041	-0.39481	47	220.0028	-0.39164
23	2.0041	-0.39392	48	230.0027	-0.39161
24	5.0041	-0.39317	49	240.0027	-0.39161
25	10.0041	-0.39283	50	240.0946	-0.39161

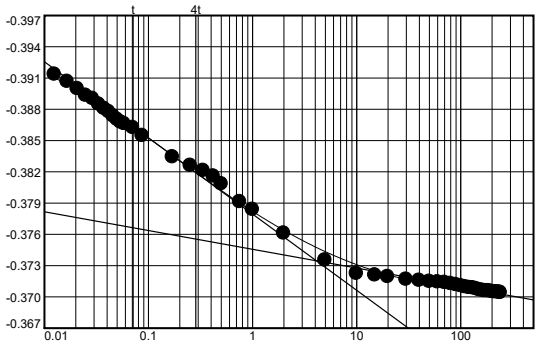


Void Ratio = 0.811 **Compression =** 5.3%

D_0 = -0.4010 **D_{50} =** -0.3981 **D_{100} =** -0.3951 **C_V at 0.07 min. =** 6.628 ft.^{2}/day **C_α =** 0.002

Pressure: 8200 psf	TEST READINGS	Load No. 12

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.39161	26	15.0041	-0.37207
2	0.0125	-0.39134	27	20.0040	-0.37193
3	0.0166	-0.39066	28	30.0040	-0.37166
4	0.0208	-0.38997	29	40.0039	-0.37156
5	0.0250	-0.38933	30	50.0038	-0.37146
6	0.0291	-0.38902	31	60.0038	-0.37142
7	0.0333	-0.38848	32	70.0037	-0.37135
8	0.0375	-0.38807	33	80.0037	-0.37125
9	0.0416	-0.38776	34	90.0036	-0.37115
10	0.0458	-0.38735	35	100.0035	-0.37105
11	0.0500	-0.38701	36	110.0035	-0.37095
12	0.0541	-0.38677	37	120.0034	-0.37088
13	0.0583	-0.3866	38	130.0033	-0.37084
14	0.0708	-0.38623	39	140.0032	-0.37078
15	0.0875	-0.38545	40	150.0032	-0.37067
16	0.1708	-0.3834	41	160.0034	-0.37061
17	0.2541	-0.38259	42	170.0033	-0.37057
18	0.3375	-0.38211	43	180.0032	-0.37057
19	0.4208	-0.38157	44	190.0032	-0.37054
20	0.5041	-0.38082	45	200.0031	-0.3705
21	0.7541	-0.37912	46	210.0031	-0.37047
22	1.0042	-0.37837	47	220.0030	-0.37047
23	2.0041	-0.37609	48	230.0029	-0.37043
24	5.0041	-0.3735	49	240.0029	-0.3704
25	10.0041	-0.37224	50	240.1281	-0.3704

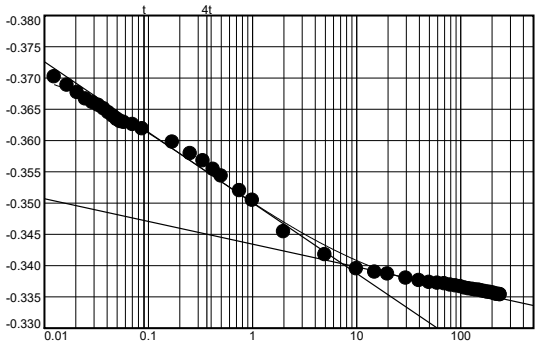


Void Ratio = 0.770 **Compression =** 7.4%

D_0 = -0.3907 **D_{50} =** -0.3821 **D_{100} =** -0.3735 **C_V at 0.27 min. =** 1.579 ft.^{2}/day **C_α =** 0.003

Pressure: 16400 psf | **TEST READINGS** | **Load No. 13**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.3704	26	15.0040	-0.33891
2	0.0125	-0.37013	27	20.0040	-0.33861
3	0.0166	-0.3688	28	30.0039	-0.33796
4	0.0208	-0.36761	29	40.0039	-0.33755
5	0.0250	-0.36662	30	50.0038	-0.33728
6	0.0291	-0.36604	31	60.0037	-0.33714
7	0.0333	-0.3656	32	70.0037	-0.33704
8	0.0375	-0.36502	33	80.0036	-0.33684
9	0.0416	-0.36441	34	90.0035	-0.33673
10	0.0458	-0.36386	35	100.0035	-0.3366
11	0.0500	-0.36332	36	110.0034	-0.33639
12	0.0541	-0.36298	37	120.0033	-0.33626
13	0.0583	-0.36284	38	130.0032	-0.33616
14	0.0708	-0.3625	39	140.0032	-0.33605
15	0.0875	-0.36182	40	150.0031	-0.33602
16	0.1708	-0.35971	41	160.0030	-0.33592
17	0.2541	-0.35787	42	170.0030	-0.33582
18	0.3374	-0.35672	43	180.0029	-0.33571
19	0.4208	-0.35535	44	190.0028	-0.33568
20	0.5041	-0.35427	45	200.0028	-0.33561
21	0.7541	-0.35195	46	210.0027	-0.33551
22	1.0041	-0.35042	47	220.0026	-0.33537
23	2.0041	-0.34535	48	230.0026	-0.33537
24	5.0041	-0.3417	49	240.0025	-0.3353
25	10.0041	-0.33946	50	240.1319	-0.3353

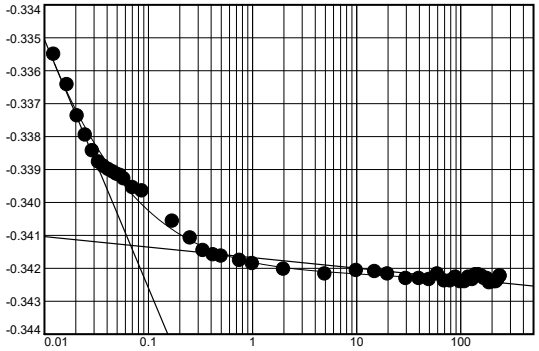


Void Ratio = 0.703 **Compression =** 10.9%

D_0 = -0.3683 **D_{50} =** -0.3543 **D_{100} =** -0.3403 **C_V at 0.42 min. =** 0.968 ft.^{2}/day **C_α =** 0.007

Pressure: 8200 psf	TEST READINGS	Load No. 14

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.3353	26	15.0040	-0.34211
2	0.0124	-0.33551	27	20.0040	-0.34218
3	0.0166	-0.33643	28	30.0039	-0.34232
4	0.0208	-0.33738	29	40.0038	-0.34232
5	0.0249	-0.33796	30	50.0038	-0.34235
6	0.0291	-0.33844	31	60.0037	-0.34218
7	0.0333	-0.33878	32	70.0036	-0.34239
8	0.0374	-0.33891	33	80.0035	-0.34239
9	0.0416	-0.33901	34	90.0035	-0.34228
10	0.0458	-0.33908	35	100.0034	-0.34242
11	0.0499	-0.33915	36	110.0034	-0.34242
12	0.0541	-0.33919	37	120.0033	-0.34228
13	0.0583	-0.33929	38	130.0032	-0.34235
14	0.0708	-0.33956	39	140.0032	-0.34221
15	0.0874	-0.33966	40	150.0031	-0.34221
16	0.1708	-0.34058	41	160.0030	-0.34225
17	0.2541	-0.34109	42	170.0030	-0.34232
18	0.3374	-0.34147	43	180.0029	-0.34232
19	0.4208	-0.3416	44	190.0028	-0.34245
20	0.5041	-0.34164	45	200.0028	-0.34242
21	0.7541	-0.34177	46	210.0027	-0.34242
22	1.0041	-0.34187	47	220.0026	-0.34242
23	2.0041	-0.34204	48	230.0026	-0.34235
24	5.0041	-0.34218	49	240.0025	-0.34225
25	10.0040	-0.34208	50	240.0486	-0.34225

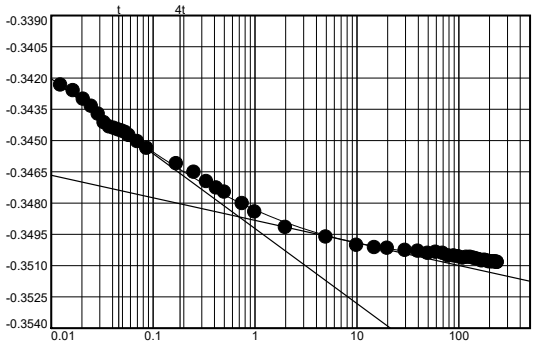


Void Ratio = 0.716 **Compression =** 10.2%

D_0 = -0.3353 **D_{50} =** -0.3383 **D_{100} =** -0.3413 **C_V at 0.03 min. =** 12.469 ft.^{2}/day

Pressure: 4100 psf	TEST READINGS	Load No. 15

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.34225	26	15.0040	-0.35015
2	0.0125	-0.34235	27	20.0040	-0.35018
3	0.0166	-0.34262	28	30.0040	-0.35028
4	0.0208	-0.34303	29	40.0039	-0.35032
5	0.0250	-0.34337	30	50.0038	-0.35042
6	0.0291	-0.34375	31	60.0038	-0.35038
7	0.0333	-0.34416	32	70.0037	-0.35042
8	0.0375	-0.34436	33	80.0037	-0.35055
9	0.0416	-0.34443	34	90.0036	-0.35055
10	0.0458	-0.3445	35	100.0035	-0.35059
11	0.0500	-0.34456	36	110.0035	-0.35066
12	0.0541	-0.34463	37	120.0034	-0.35062
13	0.0583	-0.34477	38	130.0034	-0.35062
14	0.0708	-0.34507	39	140.0033	-0.35066
15	0.0875	-0.34538	40	150.0032	-0.35069
16	0.1708	-0.34613	41	160.0032	-0.35073
17	0.2541	-0.34654	42	170.0031	-0.35079
18	0.3374	-0.34698	43	180.0031	-0.35076
19	0.4208	-0.34729	44	190.0030	-0.35079
20	0.5041	-0.34749	45	200.0029	-0.35083
21	0.7541	-0.34804	46	210.0029	-0.35083
22	1.0041	-0.34844	47	220.0028	-0.35083
23	2.0041	-0.34919	48	230.0028	-0.35083
24	5.0041	-0.34964	49	240.0027	-0.35086
25	10.0041	-0.35004	50	240.0613	-0.35086

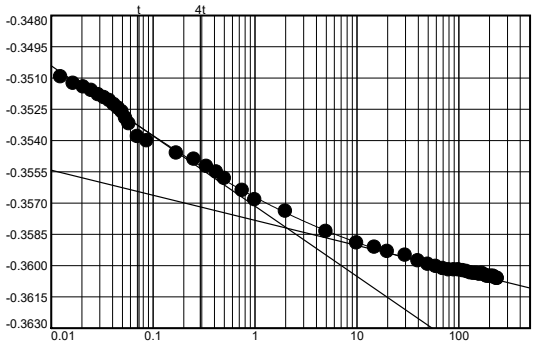


Void Ratio = 0.733 **Compression =** 9.4%

D_0 = -0.3424 **D_{50} =** -0.3455 **D_{100} =** -0.3487 **C_V at 0.10 min. =** 4.041 ft.^{2}/day

Pressure: 2050 psf	TEST READINGS	Load No. 16

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.35086	26	15.0041	-0.35913
2	0.0125	-0.35096	27	20.0040	-0.35934
3	0.0166	-0.35127	28	30.0040	-0.35951
4	0.0208	-0.35144	29	40.0039	-0.35978
5	0.0250	-0.35161	30	50.0038	-0.35995
6	0.0291	-0.35181	31	60.0038	-0.36005
7	0.0333	-0.35195	32	70.0037	-0.36015
8	0.0375	-0.35209	33	80.0037	-0.36022
9	0.0416	-0.35229	34	90.0036	-0.36022
10	0.0458	-0.35246	35	100.0035	-0.36022
11	0.0500	-0.35263	36	110.0035	-0.36026
12	0.0541	-0.35294	37	120.0034	-0.36029
13	0.0583	-0.35321	38	130.0034	-0.36036
14	0.0708	-0.35382	39	140.0033	-0.36039
15	0.0875	-0.35403	40	150.0033	-0.36039
16	0.1708	-0.35461	41	160.0032	-0.36043
17	0.2541	-0.35491	42	170.0032	-0.36039
18	0.3375	-0.35525	43	180.0031	-0.36046
19	0.4208	-0.35552	44	190.0030	-0.36053
20	0.5041	-0.35583	45	200.0030	-0.36053
21	0.7541	-0.35641	46	210.0029	-0.36053
22	1.0041	-0.35685	47	220.0029	-0.36053
23	2.0041	-0.3574	48	230.0028	-0.3606
24	5.0041	-0.35838	49	240.0028	-0.36063
25	10.0041	-0.35893	50	240.0780	-0.36063

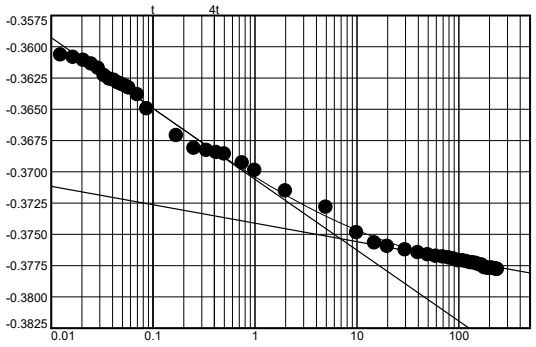


Void Ratio = 0.751 **Compression =** 8.4%

D_0 = -0.3514 **D_{50} =** -0.3548 **D_{100} =** -0.3582 **C_V at 0.21 min. =** 1.921 ft.^{2}/day

Pressure: 500 psf	TEST READINGS	Load No. 17

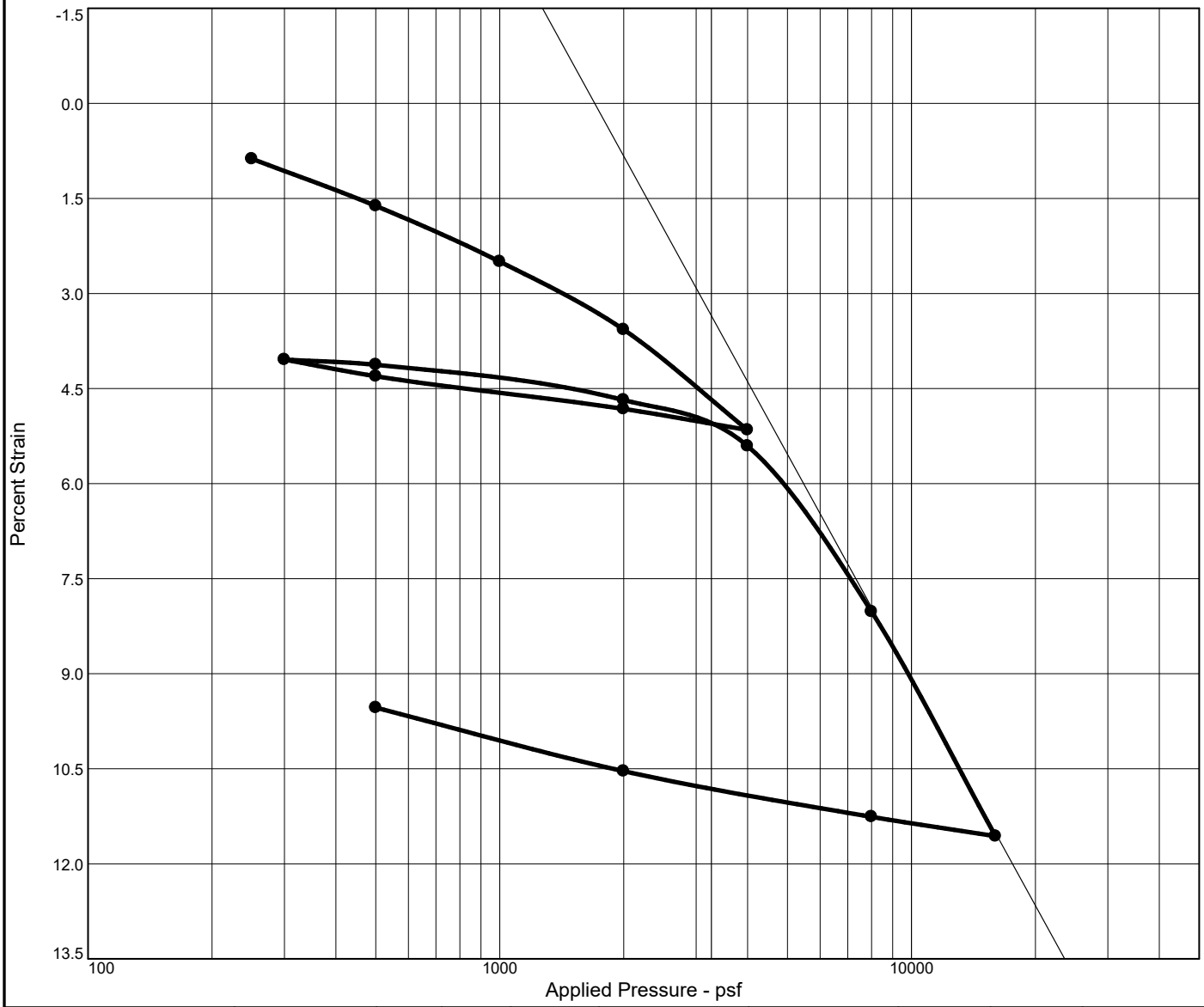
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	-0.36063	26	15.0040	-0.37571
2	0.0125	-0.36067	27	20.0040	-0.37598
3	0.0166	-0.36087	28	30.0040	-0.37626
4	0.0208	-0.36111	29	40.0039	-0.37649
5	0.0250	-0.36141	30	50.0038	-0.37666
6	0.0291	-0.36175	31	60.0038	-0.37677
7	0.0333	-0.36233	32	70.0037	-0.37683
8	0.0375	-0.36261	33	80.0037	-0.3769
9	0.0416	-0.36271	34	90.0036	-0.377
10	0.0458	-0.36291	35	100.0035	-0.37714
11	0.0500	-0.36305	36	110.0035	-0.37714
12	0.0541	-0.36318	37	120.0034	-0.37721
13	0.0583	-0.36332	38	130.0034	-0.37728
14	0.0708	-0.36386	39	140.0033	-0.37731
15	0.0874	-0.36499	40	150.0032	-0.37735
16	0.1708	-0.36713	41	160.0032	-0.37745
17	0.2541	-0.36815	42	170.0031	-0.37748
18	0.3374	-0.36832	43	180.0031	-0.37769
19	0.4208	-0.36849	44	190.0030	-0.37772
20	0.5041	-0.3686	45	200.0029	-0.37775
21	0.7541	-0.36931	46	210.0029	-0.37772
22	1.0041	-0.36992	47	220.0028	-0.37775
23	2.0041	-0.37156	48	230.0028	-0.37779
24	5.0041	-0.37285	49	240.0027	-0.37782
25	10.0041	-0.37489	50	240.1321	-0.37782



Void Ratio = 0.784 **Compression =** 6.7%

D_0 = -0.3616 **D_{50} =** -0.3684 **D_{100} =** -0.3753 **C_V at 0.42 min. =** 0.996 ft.^{2}/day

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
107.2 %	40.9 %	83.8	21	4	2.75	2750	4486	0.24	0.05	1.049

MATERIAL DESCRIPTION	USCS	AASHTO
CL-ML - SILTY CLAY	CL-ML	T-216

Project No. XL-5446 **Client:** Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-21p-19 **Depth:** 35.5 **Sample Number:** S-14

Remarks:

WSDOT

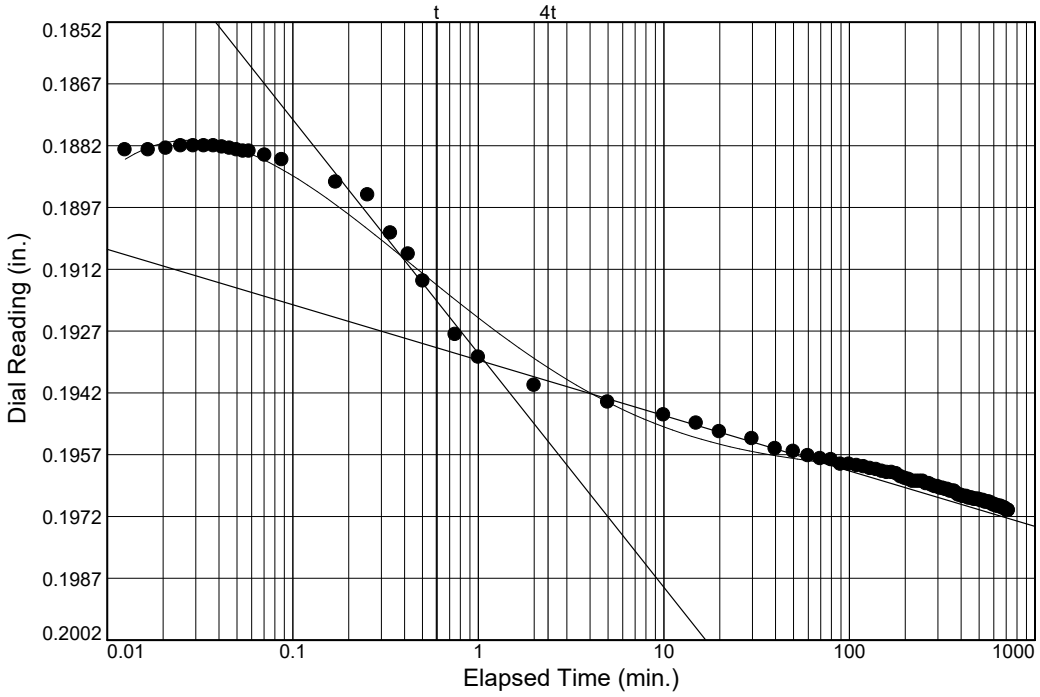
Figure

Tested By: DH **Checked By:** DH

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

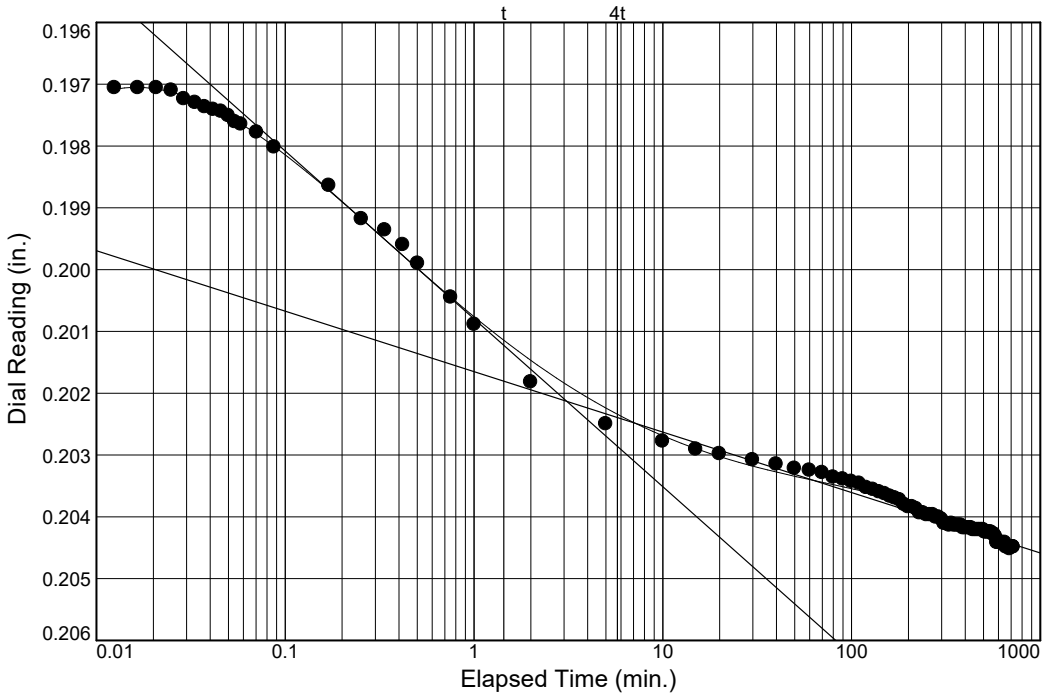
Source of Sample: NE-21p-19 Depth: 35.5 Sample Number: S-14



Load No.= 1
Load= 250 psf
D_0 = 0.1896
D_{50} = 0.1915
D_{100} = 0.1935
T_{50} = 0.57 min.

C_v @ T_{50}
0.857 ft.^{2}/day

C_α = 0.003



Load No.= 2
Load= 500 psf
D_0 = 0.1999
D_{50} = 0.2010
D_{100} = 0.2021
T_{50} = 1.30 min.

C_v @ T_{50}
0.370 ft.^{2}/day

C_α = 0.002

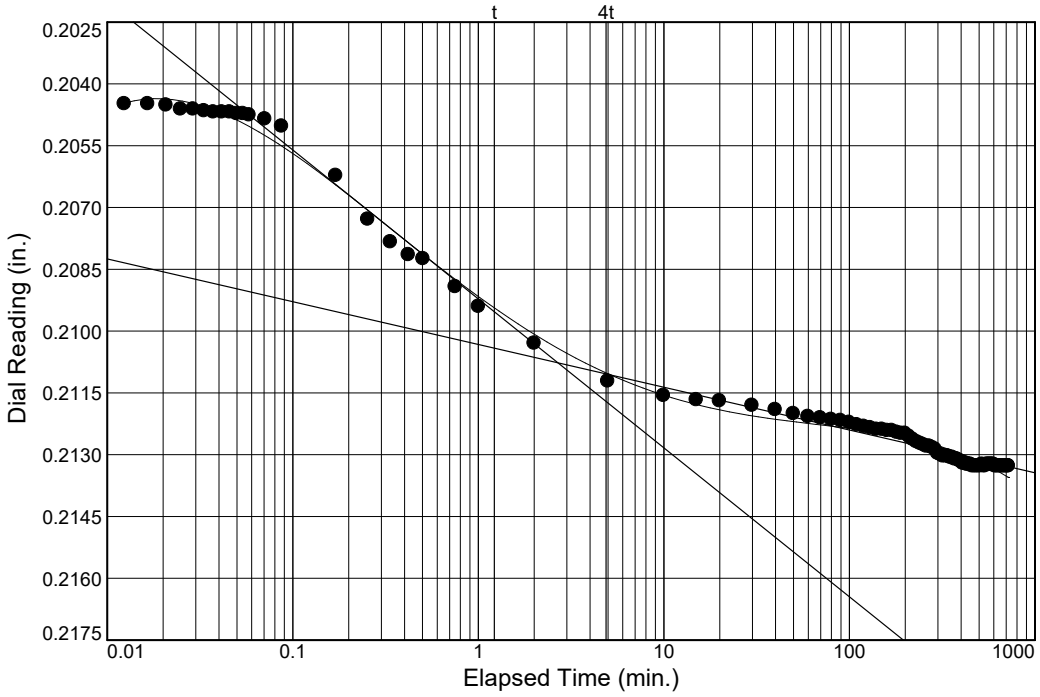
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

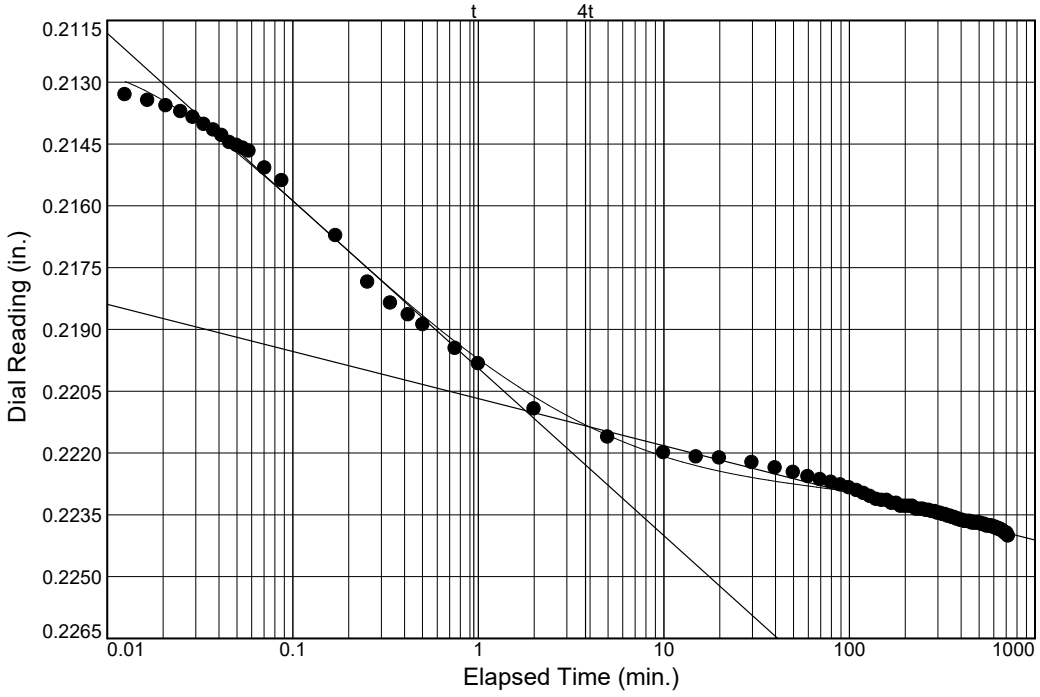
Source of Sample: NE-21p-19 Depth: 35.5 Sample Number: S-14



Load No.= 3
Load= 1000 psf
D_0 = 0.2079
D_{50} = 0.2093
D_{100} = 0.2108
T_{50} = 1.12 min.

C_v @ T_{50}
0.423 ft.^{2}/day

C_α = 0.002



Load No.= 4
Load= 2000 psf
D_0 = 0.2180
D_{50} = 0.2195
D_{100} = 0.2210
T_{50} = 0.84 min.

C_v @ T_{50}
0.552 ft.^{2}/day

C_α = 0.002

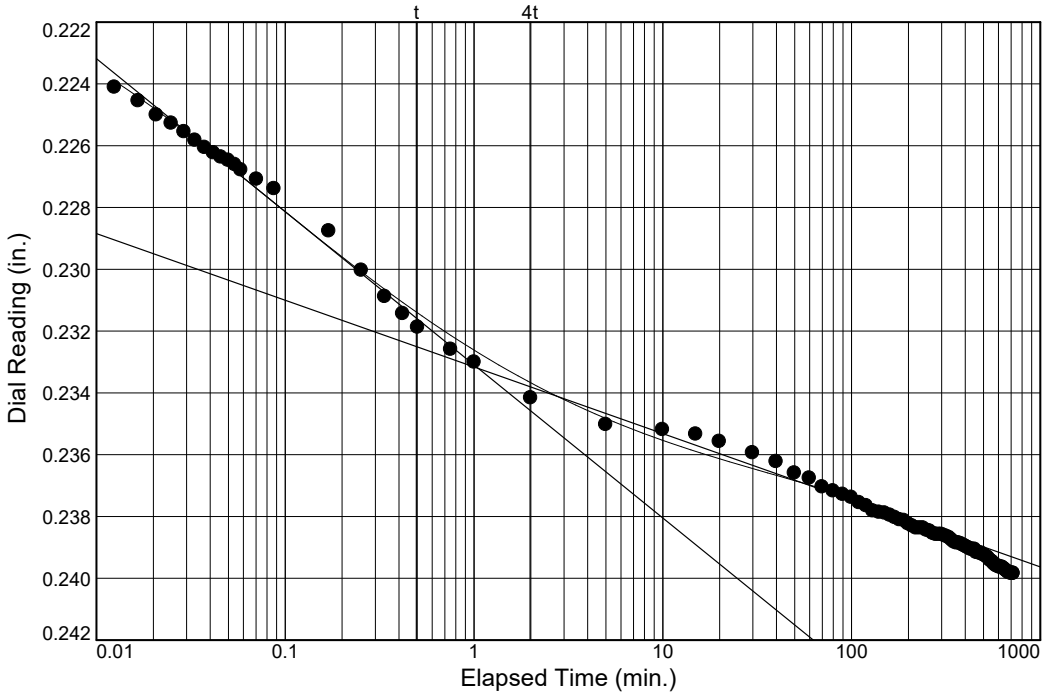
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

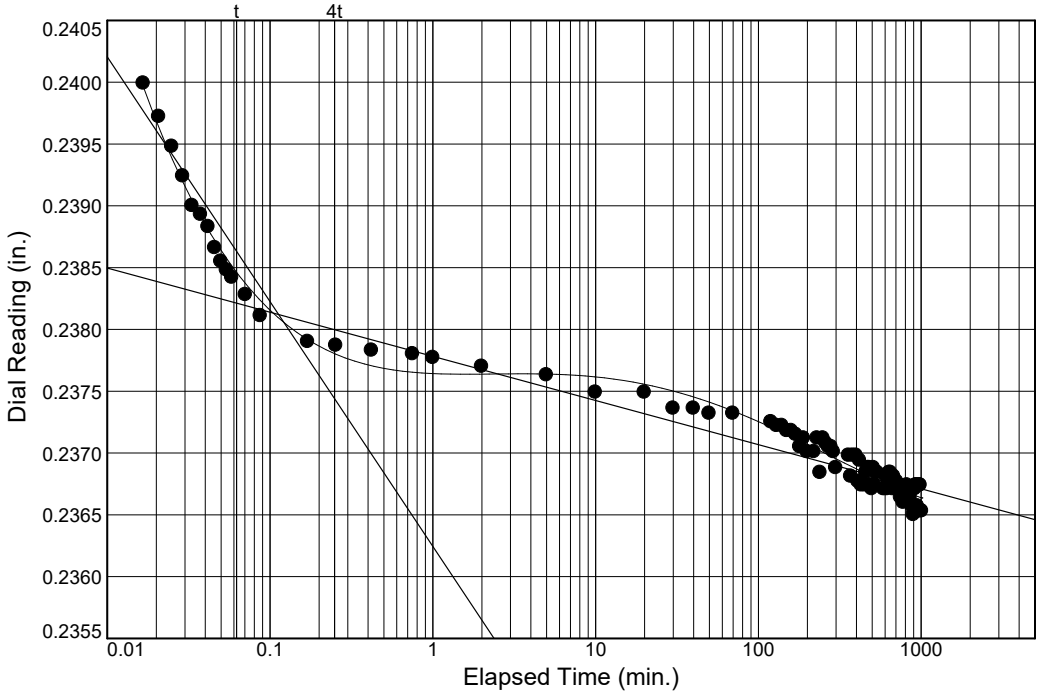
Source of Sample: NE-21p-19 Depth: 35.5 Sample Number: S-14



Load No.= 5
Load= 4000 psf
D_0 = 0.2291
D_{50} = 0.2312
D_{100} = 0.2332
T_{50} = 0.44 min.

C_v @ T_{50}
1.026 ft.^{2}/day

C_α = 0.004



Load No.= 6
Load= 2000 psf
D_0 = 0.2391
D_{50} = 0.2386
D_{100} = 0.2381
T_{50} = 0.05 min.

C_v @ T_{50}
8.691 ft.^{2}/day

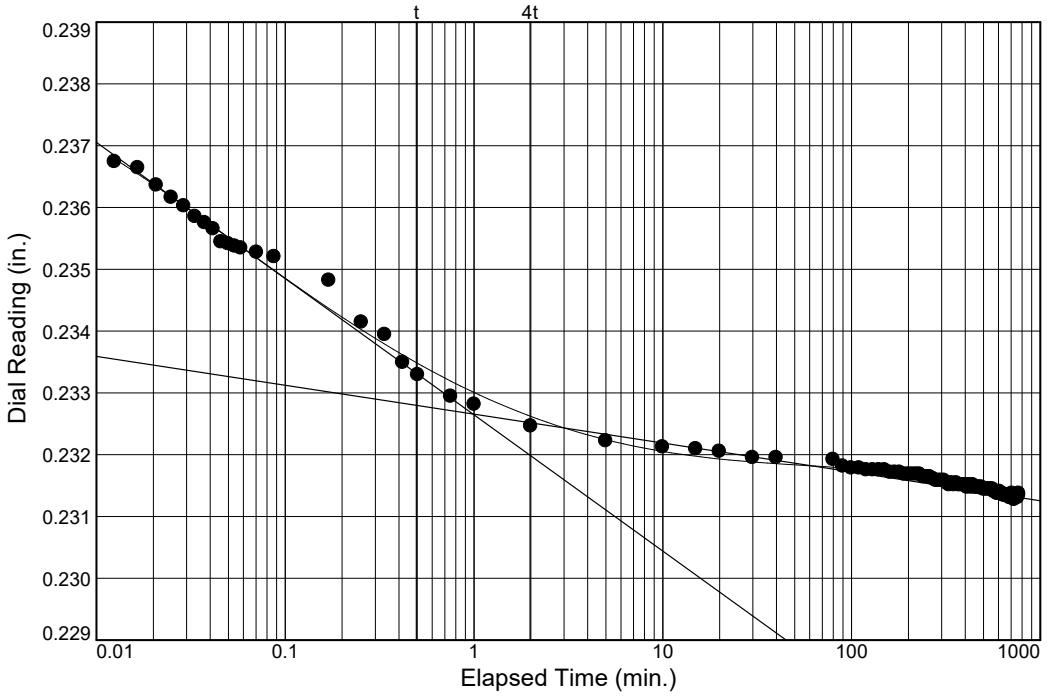
Figure

Washington State Department of Transportation

Dial Reading vs. Time

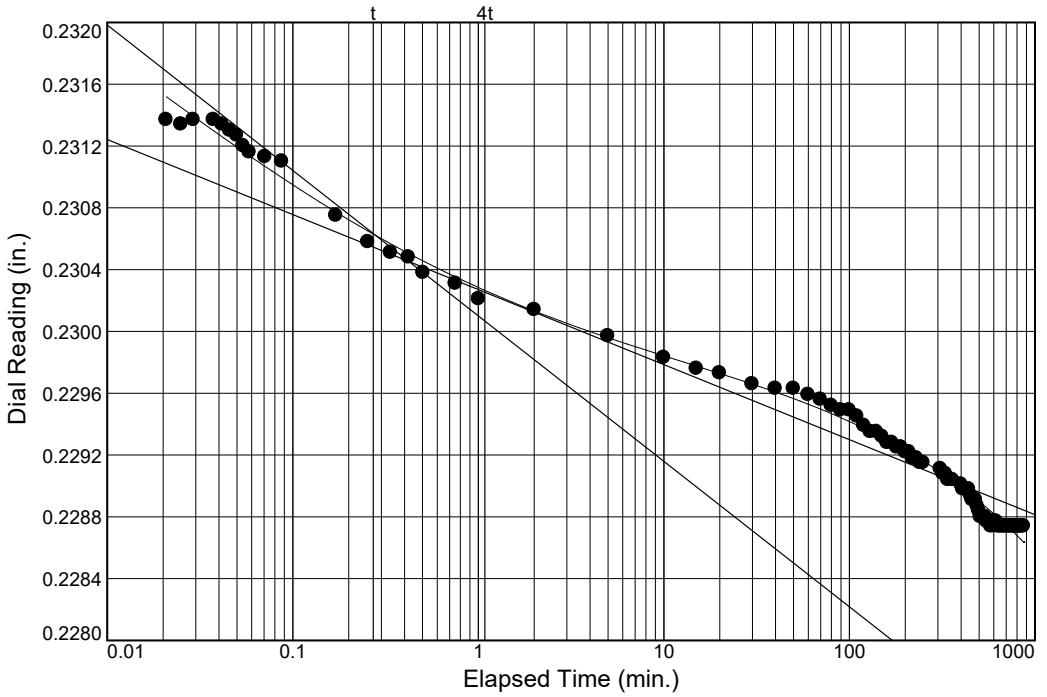
Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-21p-19 Depth: 35.5 Sample Number: S-14



Load No.= 7
Load= 500 psf
D_0 = 0.2344
D_{50} = 0.2335
D_{100} = 0.2327
T_{50} = 0.48 min.

C_v @ T_{50}
0.929 ft.^{2}/day



Load No.= 8
Load= 300 psf
D_0 = 0.2310
D_{50} = 0.2307
D_{100} = 0.2305
T_{50} = 0.20 min.

C_v @ T_{50}
2.268 ft.^{2}/day

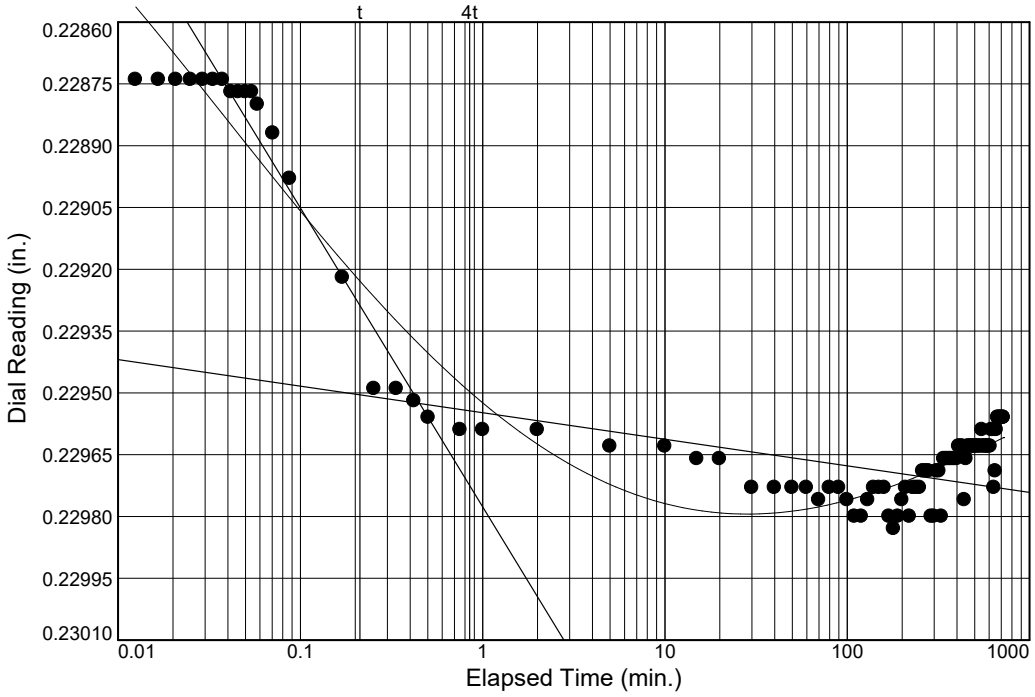
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

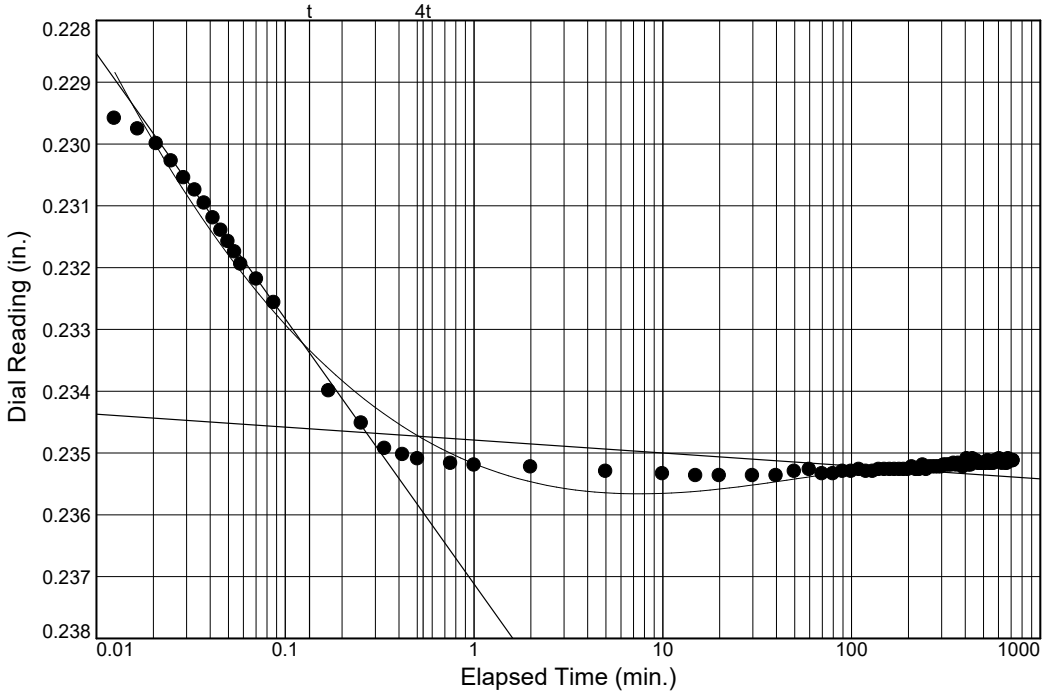
Source of Sample: NE-21p-19 Depth: 35.5 Sample Number: S-14



Load No.= 9
Load= 500 psf
D_0 = 0.2290
D_{50} = 0.2292
D_{100} = 0.2295
T_{50} = 0.23 min.

C_v @ T_{50}
2.000 ft.^{2}/day

C_α = 0.000



Load No.= 10
Load= 2000 psf
D_0 = 0.2319
D_{50} = 0.2333
D_{100} = 0.2347
T_{50} = 0.13 min.

C_v @ T_{50}
3.478 ft.^{2}/day

C_α = 0.000

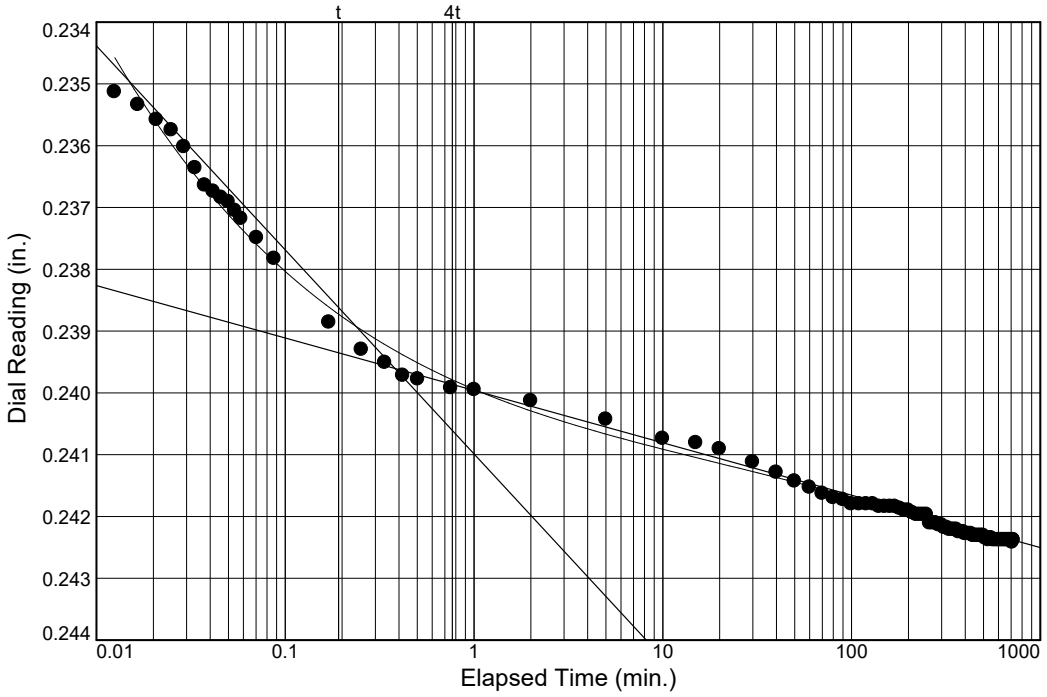
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

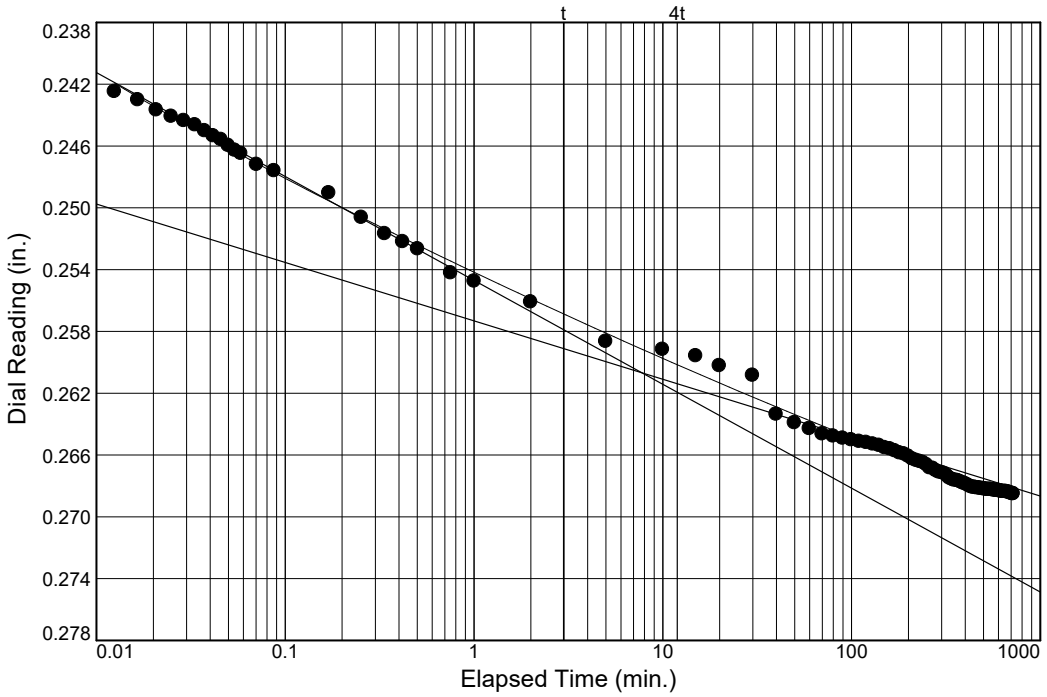
Source of Sample: NE-21p-19 Depth: 35.5 Sample Number: S-14



Load No.= 11
Load= 4000 psf
D_0 = 0.2377
D_{50} = 0.2386
D_{100} = 0.2396
T_{50} = 0.17 min.

C_v @ T_{50}
2.547 ft.^{2}/day

C_α = 0.002



Load No.= 12
Load= 8000 psf
D_0 = 0.2536
D_{50} = 0.2571
D_{100} = 0.2607
T_{50} = 3.33 min.

C_v @ T_{50}
0.129 ft.^{2}/day

C_α = 0.008

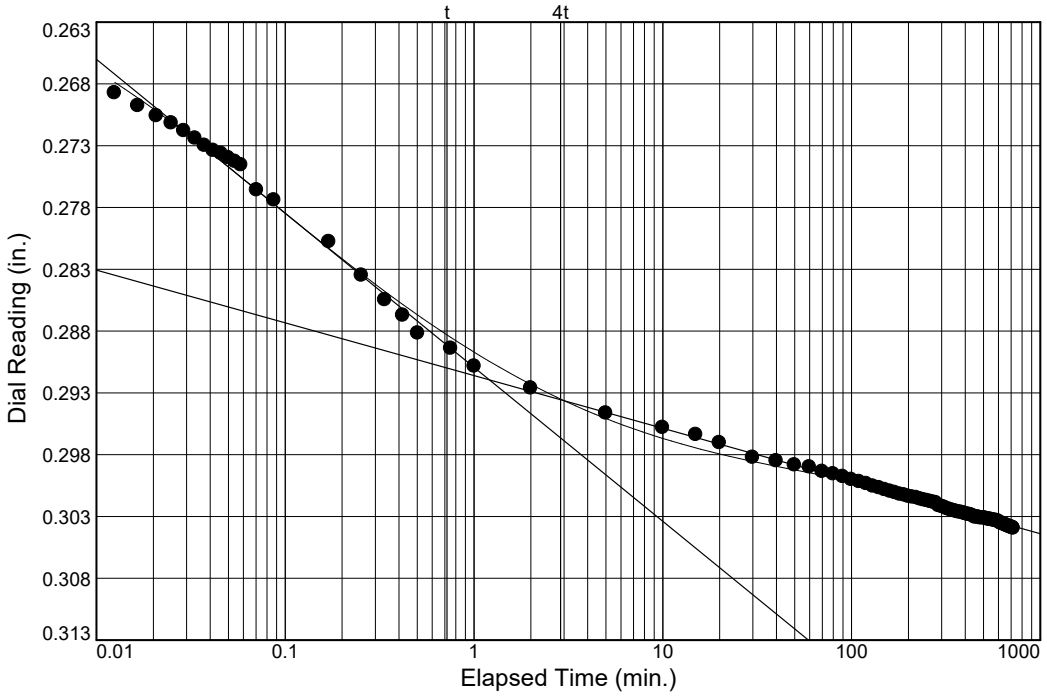
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

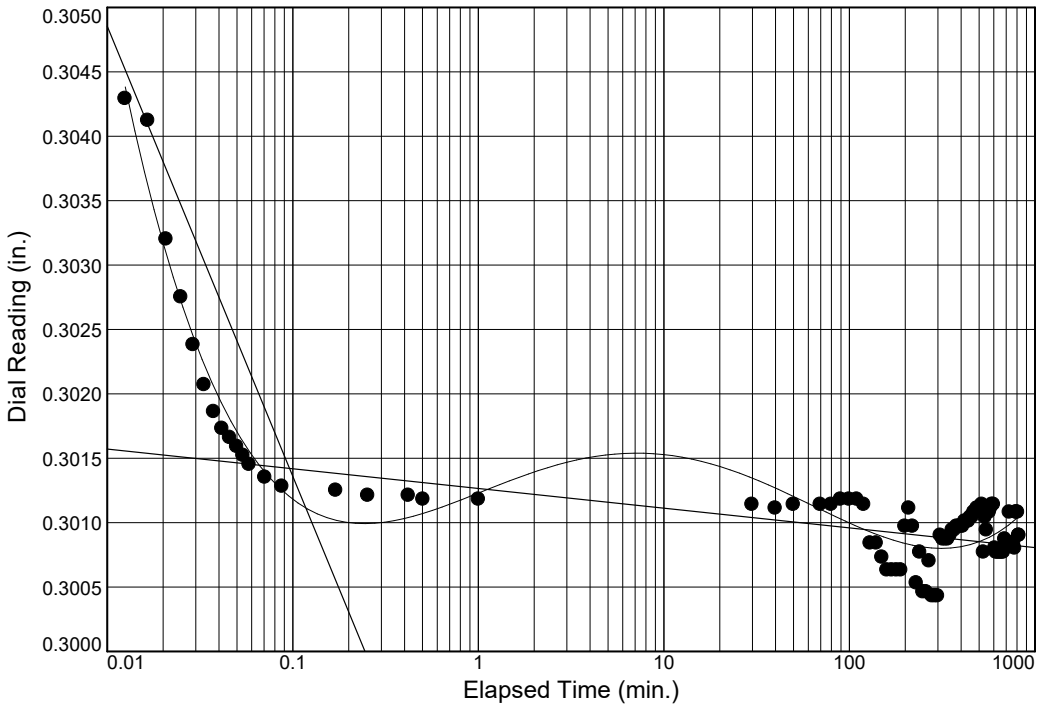
Source of Sample: NE-21p-19 Depth: 35.5 Sample Number: S-14



Load No.= 13
Load= 16000 psf
D_0 = 0.2831
D_{50} = 0.2875
D_{100} = 0.2920
T_{50} = 0.60 min.

C_v @ T_{50}
0.664 ft.^{2}/day

C_α = 0.009



Load No.= 14
Load= 8000 psf
D_0 = 0.3039
D_{50} = 0.3027
D_{100} = 0.3014
T_{50} = 0.03 min.

C_v @ T_{50}
15.218 ft.^{2}/day

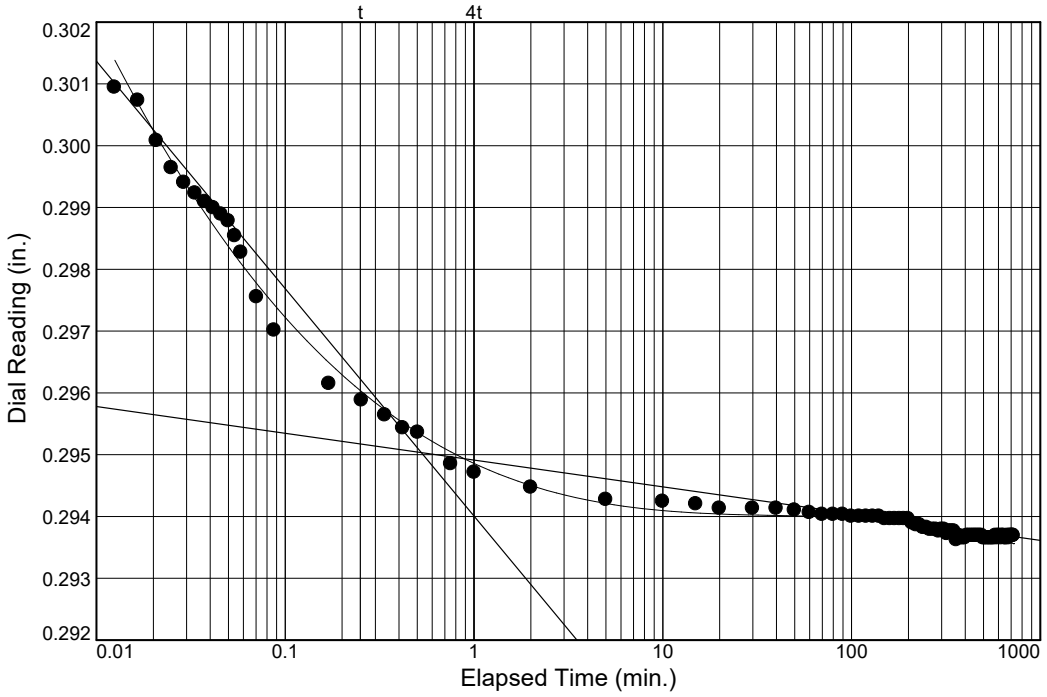
Figure

Washington State Department of Transportation

Dial Reading vs. Time

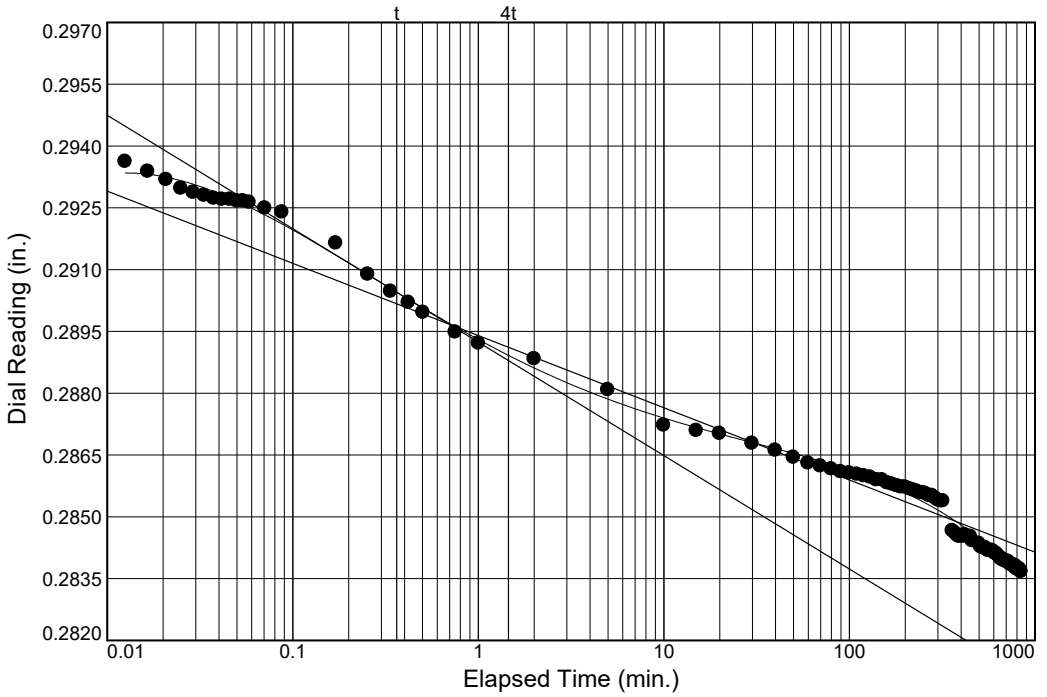
Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-21p-19 Depth: 35.5 Sample Number: S-14



Load No.= 15
Load= 2000 psf
D_0 = 0.2972
D_{50} = 0.2961
D_{100} = 0.2950
T_{50} = 0.23 min.

C_v @ T_{50}
1.692 ft.^{2}/day



Load No.= 16
Load= 500 psf
D_0 = 0.2920
D_{50} = 0.2908
D_{100} = 0.2897
T_{50} = 0.26 min.

C_v @ T_{50}
1.511 ft.^{2}/day

Figure

Washington State Department of Transportation

CONSOLIDATION TEST DATA

6/21/2019

Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project Number: XL-5446
Location: NE-21p-19
Depth: 35.5 **Sample Number:** S-14
Material Description: CL-ML - SILTY CLAY
Liquid Limit: 21 **Plasticity Index:** 4
USCS: CL-ML **AASHTO:** T-216
Tested by: DH **Checked by:** DH

Test Specimen Data

NATURAL MOISTURE
Wet w+t = 287.42 g.
Dry w+t = 228.60 g.
Tare Wt. = 84.70 g.
Moisture = 40.9 %

VOID RATIO
Spec. Gr. = 2.75
Est. Ht. Solids = 0.488 in.
Init. V.R. = 1.049
Init. Sat. = 107.2 %

AFTER TEST
Wet w+t = 231.42 g.
Dry w+t = 201.00 g.
Tare Wt. = 90.27 g.
Moisture = 27.5 %

UNIT WEIGHT
Height = 1.000 in.
Diameter = 2.500 in.
Weight = 152.09 g.
Dry Dens. = 83.8 pcf

TEST START
Height = 1.000 in.
Diameter = 2.500 in.

Dry Wt. = 110.73 g.

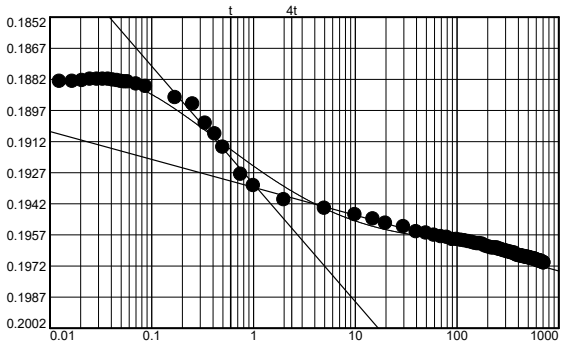
End-Of-Load Summary

Pressure (psf)	Final Dial (in.)	Deformation (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Strain
start	0.18831	0.00000			1.049	
250	0.19706	0.00875	0.857	0.003	1.031	0.9 Comprs.
500	0.20449	0.01618	0.370	0.002	1.016	1.6 Comprs.
1000	0.21328	0.02497	0.423	0.002	0.998	2.5 Comprs.
2000	0.22402	0.03571	0.552	0.002	0.976	3.6 Comprs.
4000	0.23985	0.05154	1.026	0.004	0.943	5.2 Comprs.
2000	0.23653	0.04822	8.691		0.950	4.8 Comprs.
500	0.23137	0.04306	0.929		0.961	4.3 Comprs.
300	0.22874	0.04043	2.268		0.966	4.0 Comprs.
500	0.22956	0.04125	2.000	0.000	0.964	4.1 Comprs.
2000	0.23513	0.04682	3.478	0.000	0.953	4.7 Comprs.
4000	0.24238	0.05407	2.547	0.002	0.938	5.4 Comprs.
8000	0.26851	0.08020	0.129	0.008	0.885	8.0 Comprs.
16000	0.30395	0.11564	0.664	0.009	0.812	11.6 Comprs.
8000	0.30090	0.11259	15.218		0.818	11.3 Comprs.
2000	0.29369	0.10538	1.692		0.833	10.5 Comprs.
500	0.28367	0.09536	1.511		0.854	9.5 Comprs.

Compression index (C_c), psf = 0.24 **Preconsolidation pressure (P_p), psf =** 4486 **Void ratio at P_p (e_m) =** 0.935
Overburden (σ_{vo}), psf = 2750 **Void ratio at σ_{vo} (e_o) =** 0.963 **Recompression index (C_r) =** 0.05

Pressure: 250 psf **TEST READINGS** **Load No. 1**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.18831	39	140.0019	0.19607
2	0.0125	0.18831	40	150.0018	0.19611
3	0.0167	0.18831	41	160.0016	0.19614
4	0.0208	0.18827	42	170.0014	0.19614
5	0.0250	0.18821	43	180.0013	0.19617
6	0.0292	0.18821	44	190.0011	0.19624
7	0.0333	0.18821	45	200.0010	0.19628
8	0.0375	0.18821	46	210.0008	0.19631
9	0.0417	0.18824	47	220.0007	0.19635
10	0.0458	0.18827	48	230.0005	0.19635
11	0.0500	0.18831	49	240.0004	0.19635
12	0.0542	0.18834	50	250.0002	0.19635
13	0.0583	0.18834	51	260.0001	0.19641
14	0.0708	0.18844	52	270.0041	0.19641
15	0.0875	0.18855	53	280.0039	0.19645
16	0.1708	0.18909	54	290.0037	0.19648
17	0.2542	0.1894	55	300.0036	0.19648
18	0.3375	0.19033	56	310.0034	0.19652
19	0.4208	0.19084	57	320.0033	0.19652
20	0.5041	0.19149	58	330.0031	0.19655
21	0.7542	0.19279	59	340.0029	0.19655
22	1.0042	0.19334	60	350.0028	0.19659
23	2.0041	0.19402	61	360.0026	0.19659
24	5.0041	0.19443	62	370.0025	0.19659
25	10.0040	0.19474	63	380.0023	0.19665
26	15.0039	0.19494	64	390.0021	0.19669
27	20.0038	0.19515	65	400.0020	0.19669
28	30.0037	0.19532	66	410.0018	0.19672
29	40.0035	0.19556	67	420.0017	0.19672
30	50.0034	0.19563	68	430.0015	0.19672
31	60.0032	0.19573	69	440.0014	0.19676
32	70.0030	0.1958	70	450.0012	0.19676
33	80.0029	0.19583	71	460.0010	0.19676
34	90.0027	0.19594	72	470.0009	0.19679
35	100.0026	0.19594	73	480.0007	0.19679
36	110.0024	0.19597	74	490.0006	0.19679
37	120.0023	0.196	75	500.0004	0.19679
38	130.0021	0.19604	76	510.0003	0.19682



Pressure: 250 psf **TEST READINGS (continued)** **Load No. 1**

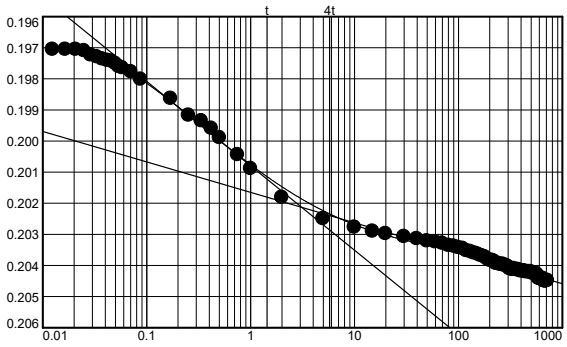
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0001	0.19682	87	620.0028	0.19693	97	720.0012	0.19706
78	530.0041	0.19682	88	630.0026	0.19696	98	720.0432	0.19706
79	540.0040	0.19686	89	640.0024	0.19696			
80	550.0038	0.19686	90	650.0023	0.19696			
81	560.0037	0.19686	91	660.0022	0.19696			
82	570.0035	0.19686	92	670.0020	0.197			
83	580.0034	0.19689	93	680.0018	0.197			
84	590.0032	0.19689	94	690.0017	0.197			
85	600.0031	0.19693	95	700.0016	0.19703			
86	610.0029	0.19693	96	710.0014	0.19706			

Void Ratio = 1.031 **Compression =** 0.9%

D_0 = 0.1896 **D_{50} =** 0.1915 **D_{100} =** 0.1935 **C_v at 0.57 min. =** 0.857 ft.^{2}/day **C_α =** 0.003

Pressure: 500 psf **TEST READINGS** **Load No. 2**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.19706	23	2.0041	0.20182
2	0.0125	0.19706	24	5.0040	0.2025
3	0.0166	0.19706	25	10.0040	0.20278
4	0.0208	0.19706	26	15.0039	0.20291
5	0.0250	0.1971	27	20.0038	0.20298
6	0.0291	0.19724	28	30.0037	0.20308
7	0.0333	0.1973	29	40.0035	0.20315
8	0.0375	0.19737	30	50.0034	0.20322
9	0.0416	0.19741	31	60.0032	0.20325
10	0.0458	0.19744	32	70.0030	0.20329
11	0.0500	0.19751	33	80.0029	0.20336
12	0.0541	0.19761	34	90.0027	0.20339
13	0.0583	0.19765	35	100.0026	0.20343
14	0.0708	0.19778	36	110.0024	0.20346
15	0.0875	0.19802	37	120.0023	0.20353
16	0.1708	0.19864	38	130.0021	0.20356
17	0.2541	0.19918	39	140.0020	0.2036
18	0.3374	0.19936	40	150.0018	0.20363
19	0.4208	0.1996	41	160.0017	0.20367
20	0.5041	0.1999	42	170.0015	0.2037
21	0.7541	0.20045	43	180.0014	0.20373
22	1.0041	0.20089	44	190.0012	0.2038



Pressure: 500 psf | **TEST READINGS (continued)** | **Load No. 2**

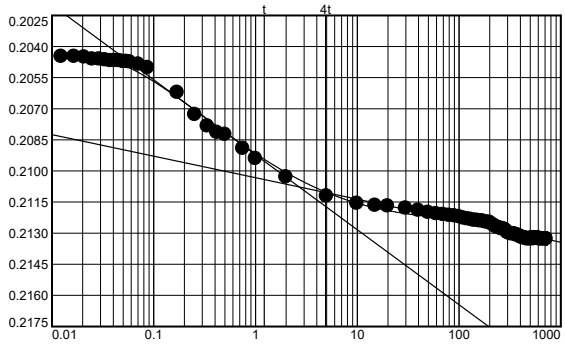
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0011	0.20384	63	380.0024	0.20414	81	560.0038	0.20428
46	210.0009	0.20384	64	390.0022	0.20418	82	570.0036	0.20428
47	220.0008	0.20387	65	400.0021	0.20418	83	580.0035	0.20432
48	230.0006	0.20394	66	410.0019	0.20418	84	590.0033	0.20442
49	240.0005	0.20394	67	420.0018	0.20418	85	600.0032	0.20442
50	250.0003	0.20397	68	430.0016	0.20418	86	610.0030	0.20442
51	260.0001	0.20397	69	440.0015	0.20421	87	620.0029	0.20442
52	270.0041	0.20397	70	450.0013	0.20421	88	630.0027	0.20442
53	280.0040	0.20401	71	460.0012	0.20421	89	640.0025	0.20445
54	290.0038	0.20401	72	470.0010	0.20421	90	650.0024	0.20442
55	300.0037	0.20404	73	480.0008	0.20421	91	660.0022	0.20449
56	310.0035	0.20411	74	490.0007	0.20421	92	670.0021	0.20449
57	320.0034	0.20411	75	500.0005	0.20421	93	680.0019	0.20449
58	330.0032	0.20414	76	510.0004	0.20425	94	690.0018	0.20452
59	340.0031	0.20411	77	520.0002	0.20425	95	700.0016	0.20449
60	350.0029	0.20414	78	530.0001	0.20425	96	710.0014	0.20449
61	360.0027	0.20414	79	540.0041	0.20425	97	720.0013	0.20449
62	370.0026	0.20414	80	550.0040	0.20425	98	720.0515	0.20449

Void Ratio = 1.016 **Compression =** 1.6%

D_0 = 0.1999 **D_{50} =** 0.2010 **D_{100} =** 0.2021 **C_V at 1.30 min. =** 0.370 ft.^{2}/day **C_α =** 0.002

Pressure: 1000 psf | **TEST READINGS** | **Load No. 3**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.20449	15	0.0874	0.20503
2	0.0124	0.20449	16	0.1708	0.20623
3	0.0166	0.20449	17	0.2541	0.20729
4	0.0208	0.20452	18	0.3374	0.20784
5	0.0249	0.20462	19	0.4208	0.20815
6	0.0291	0.20462	20	0.5041	0.20825
7	0.0333	0.20466	21	0.7541	0.20893
8	0.0374	0.20469	22	1.0041	0.20941
9	0.0416	0.20469	23	2.0041	0.2103
10	0.0458	0.20469	24	5.0040	0.21122
11	0.0499	0.20473	25	10.0003	0.21157
12	0.0541	0.20473	26	15.0002	0.21167
13	0.0583	0.20476	27	20.0001	0.2117
14	0.0708	0.20486	28	30.0042	0.21181



Pressure: 1000 psf	TEST READINGS (continued)	Load No. 3

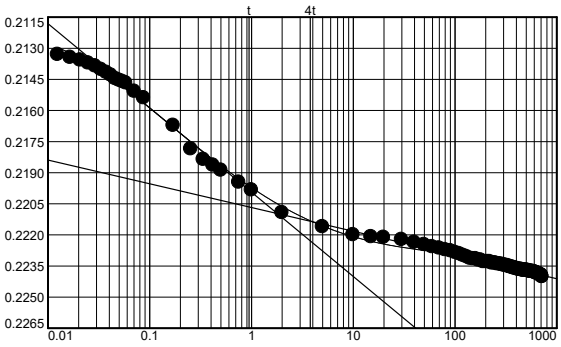
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0040	0.21191	53	280.0002	0.21283	77	520.0007	0.21324
30	50.0038	0.21201	54	290.0001	0.21287	78	530.0006	0.21328
31	60.0037	0.21208	55	300.0041	0.21297	79	540.0004	0.21328
32	70.0035	0.21211	56	310.0039	0.213	80	550.0003	0.21324
33	80.0034	0.21215	57	320.0038	0.21304	81	560.0001	0.21324
34	90.0032	0.21218	58	330.0036	0.21304	82	570.0000	0.21324
35	100.0031	0.21222	59	340.0035	0.21304	83	580.0040	0.21324
36	110.0029	0.21228	60	350.0033	0.21307	84	590.0039	0.21324
37	120.0027	0.21232	61	360.0032	0.21307	85	600.0037	0.21324
38	130.0026	0.21235	62	370.0030	0.21311	86	610.0036	0.21328
39	140.0024	0.21239	63	380.0029	0.21311	87	620.0034	0.21328
40	150.0023	0.21239	64	390.0027	0.21314	88	630.0033	0.21328
41	160.0021	0.21242	65	400.0026	0.21317	89	640.0031	0.21328
42	170.0020	0.21242	66	410.0024	0.21321	90	650.0030	0.21328
43	180.0018	0.21246	67	420.0022	0.21321	91	660.0028	0.21328
44	190.0017	0.21249	68	430.0021	0.21324	92	670.0027	0.21328
45	200.0015	0.21249	69	440.0019	0.21324	93	680.0025	0.21328
46	210.0013	0.21256	70	450.0018	0.21324	94	690.0024	0.21328
47	220.0012	0.21263	71	460.0016	0.21328	95	700.0022	0.21328
48	230.0010	0.21269	72	470.0015	0.21328	96	710.0021	0.21328
49	240.0009	0.21273	73	480.0013	0.21328	97	720.0019	0.21328
50	250.0007	0.21276	74	490.0012	0.21328	98	720.1147	0.21328
51	260.0005	0.2128	75	500.0010	0.21328			
52	270.0004	0.2128	76	510.0009	0.21328			

Void Ratio = 0.998 **Compression =** 2.5%

D_0 = 0.2079 **D_{50} =** 0.2093 **D_{100} =** 0.2108 **C_v at 1.12 min. =** 0.423 ft.^{2}/day **C_α =** 0.002

Pressure: 2000 psf | **TEST READINGS** | **Load No. 4**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.21328	39	140.0020	0.22313
2	0.0125	0.21331	40	150.0019	0.22316
3	0.0166	0.21345	41	160.0017	0.22316
4	0.0208	0.21358	42	170.0016	0.22323
5	0.0250	0.21372	43	180.0014	0.22323
6	0.0291	0.21386	44	190.0013	0.2233
7	0.0333	0.21403	45	200.0011	0.2233
8	0.0375	0.21417	46	210.0010	0.2233
9	0.0416	0.2143	47	220.0008	0.2233
10	0.0458	0.21447	48	230.0007	0.22337
11	0.0500	0.21454	49	240.0005	0.22337
12	0.0541	0.21461	50	250.0004	0.22337
13	0.0583	0.21468	51	260.0002	0.2234
14	0.0708	0.21509	52	270.0001	0.2234
15	0.0875	0.2154	53	280.0041	0.22343
16	0.1708	0.21673	54	290.0039	0.22343
17	0.2541	0.21786	55	300.0037	0.22347
18	0.3375	0.21837	56	310.0036	0.22347
19	0.4208	0.21865	57	320.0034	0.2235
20	0.5041	0.21889	58	330.0033	0.2235
21	0.7541	0.21947	59	340.0031	0.22354
22	1.0041	0.21984	60	350.0030	0.22354
23	2.0041	0.22094	61	360.0028	0.22357
24	5.0041	0.22162	62	370.0026	0.22357
25	10.0040	0.222	63	380.0025	0.22361
26	15.0039	0.2221	64	390.0023	0.22361
27	20.0038	0.22213	65	400.0022	0.22364
28	30.0037	0.22224	66	410.0020	0.22364
29	40.0035	0.22237	67	420.0019	0.22367
30	50.0034	0.22248	68	430.0017	0.22367
31	60.0032	0.22258	69	440.0016	0.22367
32	70.0031	0.22265	70	450.0014	0.22367
33	80.0029	0.22272	71	460.0012	0.22371
34	90.0028	0.22278	72	470.0011	0.22371
35	100.0026	0.22285	73	480.0009	0.22371
36	110.0025	0.22292	74	490.0008	0.22371
37	120.0023	0.22299	75	500.0006	0.22371
38	130.0022	0.22306	76	510.0005	0.22371



Pressure: 2000 psf | **TEST READINGS (continued)** | **Load No. 4**

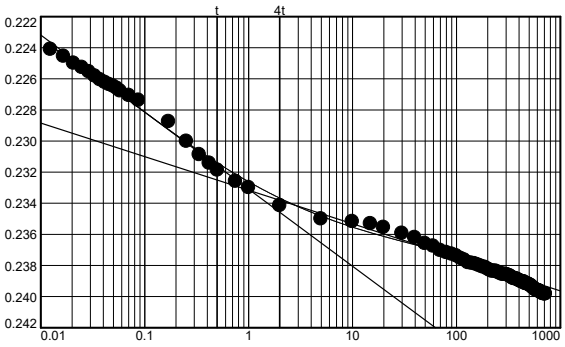
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0003	0.22374	87	620.0029	0.22381	97	720.0013	0.22402
78	530.0001	0.22374	88	630.0028	0.22385	98	720.1474	0.22402
79	540.0042	0.22374	89	640.0026	0.22385			
80	550.0040	0.22378	90	650.0024	0.22385			
81	560.0038	0.22378	91	660.0023	0.22388			
82	570.0037	0.22378	92	670.0021	0.22388			
83	580.0035	0.22378	93	680.0019	0.22391			
84	590.0034	0.22378	94	690.0018	0.22395			
85	600.0032	0.22381	95	700.0017	0.22395			
86	610.0031	0.22381	96	710.0015	0.22395			

Void Ratio = 0.976 **Compression =** 3.6%

D_0 = 0.2180 **D_{50} =** 0.2195 **D_{100} =** 0.2210 **C_v at 0.84 min. =** 0.552 ft.^{2}/day **C_α =** 0.002

Pressure: 4000 psf | **TEST READINGS** | **Load No. 5**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.22402	23	2.0041	0.23417
2	0.0125	0.22412	24	5.0041	0.23503
3	0.0167	0.22456	25	10.0040	0.2352
4	0.0208	0.22501	26	15.0039	0.23534
5	0.0250	0.22528	27	20.0038	0.23558
6	0.0292	0.22556	28	30.0037	0.23595
7	0.0333	0.22583	29	40.0035	0.23623
8	0.0375	0.22607	30	50.0034	0.2366
9	0.0417	0.22624	31	60.0032	0.23677
10	0.0458	0.22638	32	70.0030	0.23705
11	0.0500	0.22648	33	80.0029	0.23718
12	0.0542	0.22662	34	90.0027	0.23729
13	0.0583	0.22679	35	100.0026	0.23739
14	0.0708	0.22709	36	110.0024	0.23756
15	0.0875	0.2274	37	120.0023	0.23766
16	0.1708	0.22877	38	130.0021	0.23783
17	0.2542	0.23004	39	140.0020	0.23787
18	0.3375	0.23089	40	150.0018	0.2379
19	0.4208	0.23144	41	160.0016	0.23797
20	0.5041	0.23188	42	170.0015	0.23804
21	0.7541	0.2326	43	180.0013	0.23811
22	1.0041	0.23301	44	190.0011	0.23814



Pressure: 4000 psf | **TEST READINGS (continued)** | **Load No. 5**

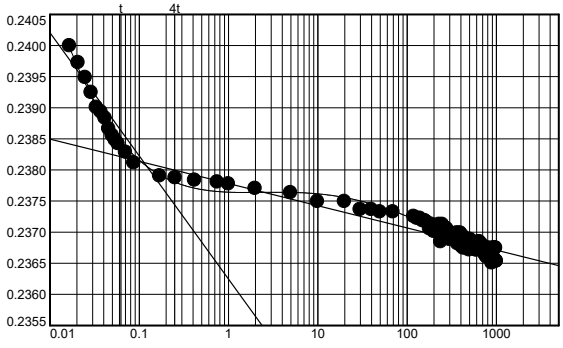
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0010	0.23824	63	380.0022	0.23889	81	560.0036	0.23948
46	210.0008	0.23831	64	390.0021	0.23893	82	570.0035	0.23954
47	220.0007	0.23838	65	400.0019	0.23896	83	580.0034	0.23958
48	230.0005	0.23838	66	410.0018	0.239	84	590.0032	0.23961
49	240.0003	0.23838	67	420.0016	0.23903	85	600.0030	0.23961
50	250.0002	0.23845	68	430.0014	0.23907	86	610.0029	0.23965
51	260.0000	0.23848	69	440.0013	0.23907	87	620.0028	0.23965
52	270.0040	0.23855	70	450.0011	0.23907	88	630.0026	0.23965
53	280.0038	0.23859	71	460.0010	0.23917	89	640.0024	0.23968
54	290.0037	0.23859	72	470.0008	0.23917	90	650.0023	0.23972
55	300.0035	0.23859	73	480.0007	0.2392	91	660.0022	0.23975
56	310.0034	0.23862	74	490.0005	0.2392	92	670.0020	0.23978
57	320.0032	0.23866	75	500.0004	0.23924	93	680.0018	0.23982
58	330.0031	0.23869	76	510.0002	0.23927	94	690.0017	0.23982
59	340.0029	0.23876	77	520.0001	0.2393	95	700.0015	0.23985
60	350.0027	0.23883	78	530.0041	0.23934	96	710.0014	0.23985
61	360.0026	0.23886	79	540.0040	0.23941	97	720.0012	0.23985
62	370.0024	0.23886	80	550.0038	0.23944	98	720.1682	0.23985

Void Ratio = 0.943 **Compression =** 5.2%

D_0 = 0.2291 **D_{50} =** 0.2312 **D_{100} =** 0.2332 **C_V at 0.44 min. =** 1.026 ft.^{2}/day **C_α =** 0.004

Pressure: 2000 psf | **TEST READINGS** | **Load No. 6**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.23985	15	0.1708	0.2379
2	0.0167	0.23999	16	0.2542	0.23787
3	0.0208	0.23972	17	0.4208	0.23783
4	0.0250	0.23948	18	0.7542	0.2378
5	0.0292	0.23924	19	1.0041	0.23777
6	0.0333	0.239	20	2.0041	0.2377
7	0.0375	0.23893	21	5.0041	0.23763
8	0.0417	0.23883	22	10.0040	0.23749
9	0.0458	0.23866	23	20.0038	0.23749
10	0.0500	0.23855	24	30.0037	0.23736
11	0.0542	0.23848	25	40.0035	0.23736
12	0.0583	0.23842	26	50.0034	0.23732
13	0.0708	0.23828	27	70.0031	0.23732
14	0.0875	0.23811	28	120.0023	0.23725



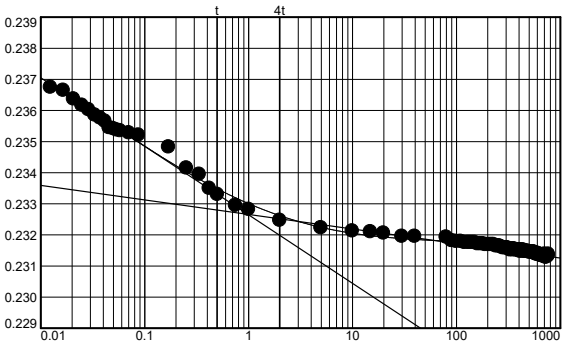
Pressure: 2000 psf	TEST READINGS (continued)	Load No. 6

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	130.0022	0.23722	53	450.0013	0.23674	77	740.0014	0.23674
30	140.0020	0.23722	54	460.0011	0.23684	78	750.0012	0.23664
31	150.0019	0.23718	55	470.0010	0.23688	79	770.0009	0.23664
32	160.0017	0.23718	56	480.0008	0.23688	80	780.0008	0.2366
33	170.0016	0.23715	57	490.0011	0.23674	81	820.0001	0.23674
34	180.0014	0.23705	58	500.0010	0.23671	82	830.0042	0.23667
35	190.0013	0.23712	59	510.0008	0.23688	83	840.0040	0.23671
36	200.0011	0.23701	60	520.0007	0.23674	84	850.0038	0.23671
37	220.0008	0.23701	61	530.0005	0.23684	85	860.0037	0.23664
38	230.0007	0.23712	62	540.0004	0.23684	86	870.0035	0.23671
39	240.0005	0.23684	63	590.0037	0.23671	87	880.0034	0.23657
40	250.0004	0.23712	64	600.0036	0.23671	88	890.0032	0.23671
41	260.0002	0.23708	65	610.0034	0.23681	89	900.0031	0.2365
42	270.0000	0.23705	66	620.0033	0.23671	90	910.0029	0.23671
43	280.0040	0.23705	67	630.0031	0.23674	91	920.0028	0.23671
44	290.0039	0.23701	68	640.0030	0.23684	92	930.0026	0.23674
45	300.0037	0.23688	69	650.0028	0.23684	93	940.0024	0.23674
46	360.0027	0.23698	70	660.0026	0.23674	94	950.0023	0.23657
47	370.0026	0.23681	71	670.0025	0.23671	95	960.0021	0.23653
48	380.0024	0.23698	72	680.0023	0.23681	96	970.0019	0.23653
49	400.0021	0.23698	73	690.0022	0.23674	97	980.0018	0.23674
50	410.0019	0.23677	74	700.0020	0.23671	98	990.0016	0.23674
51	420.0017	0.23694	75	710.0018	0.23677	99	1000.0015	0.23653
52	430.0016	0.23674	76	720.0017	0.23674	100	1009.2141	0.23653

Void Ratio = 0.950 **Compression =** 4.8%

D_0 = 0.2391 **D_{50} =** 0.2386 **D_{100} =** 0.2381 **C_v at 0.05 min. =** 8.691 ft.^{2}/day

Pressure: 500 psf			TEST READINGS			Load No. 7
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	
1	0.0000	0.23653	39	170.0014	0.23171	
2	0.0125	0.23674	40	180.0013	0.23171	
3	0.0166	0.23664	41	190.0011	0.23168	
4	0.0208	0.23636	42	200.0010	0.23168	
5	0.0250	0.23616	43	210.0008	0.23168	
6	0.0291	0.23602	44	220.0007	0.23168	
7	0.0333	0.23585	45	230.0005	0.23168	
8	0.0375	0.23575	46	240.0004	0.23164	
9	0.0416	0.23565	47	250.0002	0.23164	
10	0.0458	0.23544	48	260.0001	0.23164	
11	0.0500	0.23541	49	270.0041	0.23161	
12	0.0541	0.23537	50	280.0039	0.23158	
13	0.0583	0.23534	51	290.0038	0.23158	
14	0.0708	0.23527	52	300.0036	0.23158	
15	0.0875	0.2352	53	310.0035	0.23158	
16	0.1708	0.23482	54	320.0033	0.23154	
17	0.2541	0.23414	55	330.0032	0.23151	
18	0.3374	0.23394	56	340.0030	0.23154	
19	0.4208	0.23349	57	350.0028	0.23151	
20	0.5041	0.23329	58	360.0027	0.23154	
21	0.7541	0.23294	59	370.0025	0.23151	
22	1.0041	0.23281	60	380.0024	0.23151	
23	2.0041	0.23246	61	390.0022	0.23151	
24	5.0040	0.23222	62	400.0021	0.23151	
25	10.0040	0.23212	63	410.0019	0.23147	
26	15.0039	0.23209	64	420.0018	0.23151	
27	20.0038	0.23205	65	430.0016	0.23147	
28	30.0037	0.23195	66	440.0015	0.23151	
29	40.0035	0.23195	67	450.0013	0.23147	
30	80.0028	0.23192	68	460.0012	0.23147	
31	90.0027	0.23181	69	470.0010	0.23147	
32	100.0025	0.23178	70	480.0009	0.23147	
33	110.0024	0.23178	71	490.0007	0.23147	
34	120.0022	0.23175	72	500.0006	0.23144	
35	130.0020	0.23175	73	510.0004	0.23144	
36	140.0019	0.23175	74	520.0003	0.23144	
37	150.0017	0.23175	75	530.0001	0.23144	
38	160.0016	0.23171	76	540.0041	0.23144	



Pressure: 500 psf	TEST READINGS (continued)	Load No. 7

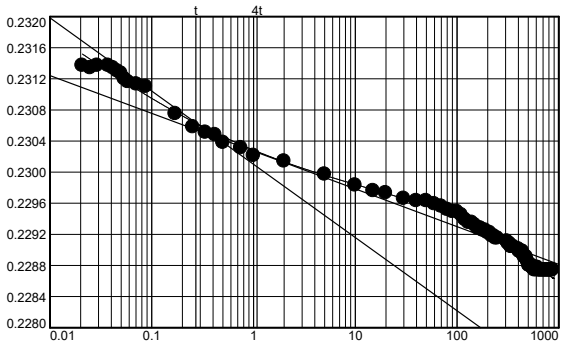
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	550.0040	0.23144	87	650.0025	0.23134	97	750.0009	0.23134
78	560.0038	0.23144	88	660.0023	0.23134	98	760.0007	0.2313
79	570.0037	0.2314	89	670.0022	0.23134	99	770.0006	0.23134
80	580.0035	0.2314	90	680.0020	0.23134	100	770.4967	0.23137
81	590.0034	0.23137	91	690.0018	0.2313			
82	600.0032	0.23137	92	700.0017	0.23134			
83	610.0031	0.2314	93	710.0015	0.23137			
84	620.0029	0.23137	94	720.0014	0.23134			
85	630.0028	0.23137	95	730.0012	0.23127			
86	640.0026	0.23134	96	740.0011	0.2313			

Void Ratio = 0.961 **Compression =** 4.3%

D_0 = 0.2344 **D_{50} =** 0.2335 **D_{100} =** 0.2327 **C_v at 0.48 min. =** 0.929 ft.^{2}/day

Pressure: 300 psf	TEST READINGS	Load No. 8

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.23137	23	15.0039	0.22976
2	0.0208	0.23137	24	20.0038	0.22973
3	0.0250	0.23134	25	30.0036	0.22966
4	0.0291	0.23137	26	40.0035	0.22963
5	0.0374	0.23137	27	50.0033	0.22963
6	0.0416	0.23134	28	60.0032	0.22959
7	0.0458	0.2313	29	70.0030	0.22956
8	0.0499	0.23127	30	80.0029	0.22952
9	0.0541	0.2312	31	90.0027	0.22949
10	0.0583	0.23116	32	100.0025	0.22949
11	0.0708	0.23113	33	110.0024	0.22945
12	0.0874	0.2311	34	120.0022	0.22939
13	0.1708	0.23075	35	130.0021	0.22935
14	0.2541	0.23058	36	140.0019	0.22935
15	0.3374	0.23051	37	150.0017	0.22932
16	0.4208	0.23048	38	160.0016	0.22928
17	0.5041	0.23038	39	170.0014	0.22928
18	0.7541	0.23031	40	180.0013	0.22925
19	1.0041	0.23021	41	190.0011	0.22925
20	2.0041	0.23014	42	200.0010	0.22922
21	5.0040	0.22997	43	210.0008	0.22922
22	10.0040	0.22983	44	220.0007	0.22918



Pressure: 300 psf **TEST READINGS (continued)** **Load No. 8**

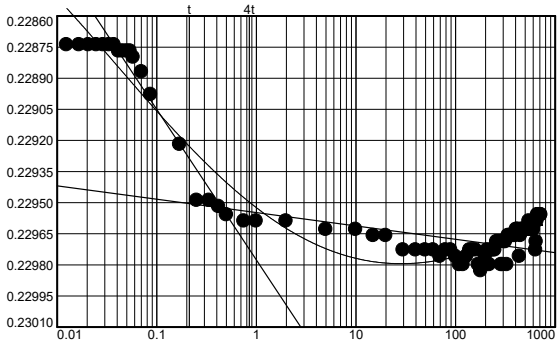
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	230.0005	0.22918	64	510.0004	0.2288	83	700.0017	0.22874
46	240.0004	0.22915	65	520.0003	0.2288	84	710.0015	0.22874
47	250.0002	0.22915	66	530.0001	0.2288	85	720.0014	0.22874
48	310.0034	0.22911	67	540.0041	0.2288	86	730.0012	0.22874
49	320.0033	0.22908	68	550.0040	0.22877	87	740.0011	0.22874
50	330.0031	0.22908	69	560.0038	0.22877	88	750.0009	0.22874
51	340.0030	0.22904	70	570.0037	0.22877	89	760.0007	0.22874
52	360.0027	0.22904	71	580.0035	0.22874	90	770.0006	0.22874
53	400.0021	0.22901	72	590.0034	0.22877	91	780.0004	0.22874
54	410.0019	0.22898	73	600.0032	0.22874	92	790.0003	0.22874
55	420.0018	0.22898	74	610.0031	0.22877	93	800.0001	0.22874
56	430.0016	0.22898	75	620.0029	0.22877	94	810.0041	0.22874
57	440.0015	0.22898	76	630.0028	0.22874	95	820.0040	0.22874
58	450.0013	0.22894	77	640.0026	0.22874	96	830.0038	0.22874
59	460.0012	0.22891	78	650.0025	0.22874	97	840.0036	0.22874
60	470.0010	0.22891	79	660.0023	0.22874	98	850.0035	0.22874
61	480.0009	0.22891	80	670.0022	0.22874	99	860.0033	0.22874
62	490.0007	0.22887	81	680.0020	0.22874	100	869.6368	0.22874
63	500.0006	0.22884	82	690.0018	0.22874			

Void Ratio = 0.966 **Compression =** 4.0%

D_0 = 0.2310 **D_{50} =** 0.2307 **D_{100} =** 0.2305 **C_v at 0.20 min. =** 2.268 ft.^{2}/day

Pressure: 500 psf **TEST READINGS** **Load No. 9**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.22874	14	0.0708	0.22887
2	0.0125	0.22874	15	0.0875	0.22898
3	0.0167	0.22874	16	0.1708	0.22922
4	0.0208	0.22874	17	0.2542	0.22949
5	0.0250	0.22874	18	0.3375	0.22949
6	0.0292	0.22874	19	0.4208	0.22952
7	0.0333	0.22874	20	0.5041	0.22956
8	0.0375	0.22874	21	0.7542	0.22959
9	0.0417	0.22877	22	1.0042	0.22959
10	0.0458	0.22877	23	2.0041	0.22959
11	0.0500	0.22877	24	5.0041	0.22963
12	0.0542	0.22877	25	10.0040	0.22963
13	0.0583	0.2288	26	15.0039	0.22966



Pressure: 500 psf **TEST READINGS (continued)** **Load No. 9**

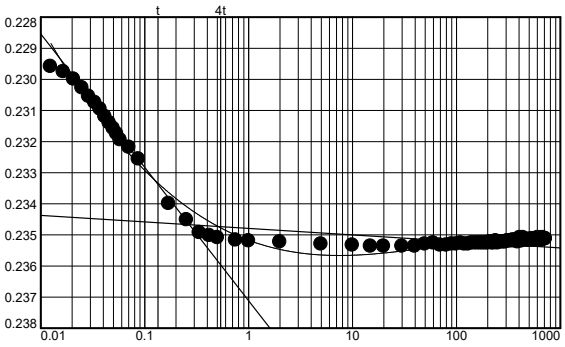
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	20.0038	0.22966	51	260.0001	0.22969	75	500.0005	0.22963
28	30.0037	0.22973	52	270.0041	0.22969	76	510.0004	0.22963
29	40.0035	0.22973	53	280.0039	0.22969	77	520.0002	0.22963
30	50.0034	0.22973	54	290.0038	0.2298	78	530.0001	0.22963
31	60.0032	0.22973	55	300.0036	0.2298	79	540.0041	0.22963
32	70.0030	0.22976	56	310.0035	0.22969	80	550.0039	0.22959
33	80.0029	0.22973	57	320.0033	0.22969	81	560.0038	0.22963
34	90.0027	0.22973	58	330.0032	0.2298	82	570.0036	0.22963
35	100.0026	0.22976	59	340.0030	0.22966	83	580.0035	0.22963
36	110.0024	0.2298	60	350.0028	0.22966	84	590.0033	0.22963
37	120.0023	0.2298	61	360.0027	0.22966	85	600.0031	0.22963
38	130.0021	0.22976	62	370.0025	0.22966	86	610.0030	0.22963
39	140.0020	0.22973	63	380.0024	0.22966	87	620.0028	0.22959
40	150.0018	0.22973	64	390.0022	0.22966	88	630.0027	0.22959
41	160.0016	0.22973	65	400.0021	0.22966	89	640.0025	0.22973
42	170.0015	0.2298	66	410.0019	0.22963	90	650.0024	0.22969
43	180.0013	0.22983	67	420.0018	0.22963	91	660.0022	0.22959
44	190.0012	0.2298	68	430.0016	0.22963	92	670.0021	0.22956
45	200.0010	0.22976	69	440.0014	0.22976	93	680.0019	0.22956
46	210.0009	0.22973	70	450.0013	0.22966	94	690.0018	0.22956
47	220.0007	0.2298	71	460.0011	0.22963	95	700.0016	0.22956
48	230.0005	0.22973	72	470.0010	0.22963	96	710.0015	0.22956
49	240.0004	0.22973	73	480.0008	0.22963	97	720.0013	0.22956
50	250.0002	0.22973	74	490.0007	0.22963	98	720.0516	0.22956

Void Ratio = 0.964 **Compression =** 4.1%

D_0 = 0.2290 **D_{50} =** 0.2292 **D_{100} =** 0.2295 **C_v at 0.23 min. =** 2.000 $ft.^2/day$ **C_α =** 0.000

Pressure: 2000 psf | **TEST READINGS** | **Load No. 10**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.22956	39	140.0020	0.23527
2	0.0125	0.22959	40	150.0018	0.23527
3	0.0166	0.22976	41	160.0016	0.23527
4	0.0208	0.23	42	170.0015	0.23527
5	0.0250	0.23028	43	180.0013	0.23527
6	0.0291	0.23055	44	190.0012	0.23527
7	0.0333	0.23075	45	200.0010	0.23527
8	0.0374	0.23096	46	210.0008	0.23523
9	0.0416	0.2312	47	220.0007	0.23527
10	0.0458	0.2314	48	230.0005	0.23527
11	0.0499	0.23158	49	240.0004	0.2352
12	0.0541	0.23175	50	250.0002	0.23527
13	0.0583	0.23195	51	260.0001	0.23523
14	0.0708	0.23219	52	270.0041	0.23523
15	0.0874	0.23257	53	280.0039	0.23523
16	0.1708	0.234	54	290.0038	0.23523
17	0.2541	0.23452	55	300.0036	0.23523
18	0.3374	0.23493	56	310.0034	0.2352
19	0.4208	0.23503	57	320.0033	0.2352
20	0.5041	0.2351	58	330.0031	0.2352
21	0.7541	0.23517	59	340.0030	0.2352
22	1.0041	0.2352	60	350.0028	0.23517
23	2.0041	0.23523	61	360.0027	0.2352
24	5.0040	0.2353	62	370.0025	0.23517
25	10.0040	0.23534	63	380.0024	0.2352
26	15.0039	0.23537	64	390.0022	0.23523
27	20.0038	0.23537	65	400.0021	0.23517
28	30.0037	0.23537	66	410.0019	0.2351
29	40.0035	0.23537	67	420.0017	0.2352
30	50.0034	0.2353	68	430.0016	0.2352
31	60.0032	0.23527	69	440.0014	0.2351
32	70.0030	0.23534	70	450.0013	0.23513
33	80.0029	0.23534	71	460.0011	0.23513
34	90.0027	0.2353	72	470.0009	0.23517
35	100.0026	0.2353	73	480.0008	0.23517
36	110.0024	0.23527	74	490.0006	0.23517
37	120.0023	0.2353	75	500.0004	0.23517
38	130.0021	0.2353	76	510.0003	0.23517



Pressure: 2000 psf | **TEST READINGS (continued)** | **Load No. 10**

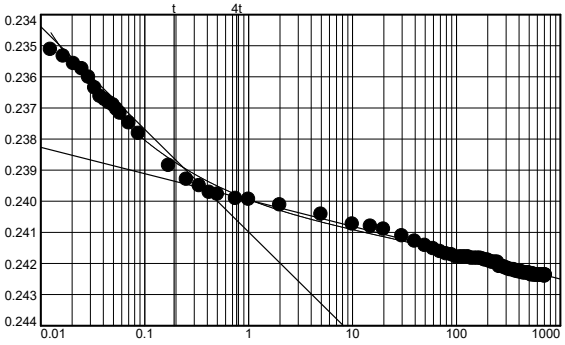
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0001	0.23517	87	620.0026	0.23513	97	720.0011	0.23513
78	530.0041	0.23513	88	630.0025	0.23517	98	720.1222	0.23513
79	540.0040	0.23517	89	640.0023	0.23513			
80	550.0038	0.23517	90	650.0022	0.23513			
81	560.0036	0.23517	91	660.0020	0.23517			
82	570.0035	0.23517	92	670.0019	0.23517			
83	580.0033	0.23513	93	680.0017	0.2351			
84	590.0031	0.23513	94	690.0016	0.23513			
85	600.0030	0.23513	95	700.0014	0.23513			
86	610.0028	0.2351	96	710.0012	0.23513			

Void Ratio = 0.953 **Compression =** 4.7%

D_0 = 0.2319 **D_{50} =** 0.2333 **D_{100} =** 0.2347 **C_v at 0.13 min. =** 3.478 ft.^{2}/day **C_α =** 0.000

Pressure: 4000 psf | **TEST READINGS** | **Load No. 11**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.23513	23	2.0041	0.24013
2	0.0125	0.23513	24	5.0040	0.24043
3	0.0166	0.23534	25	10.0040	0.24074
4	0.0208	0.23558	26	15.0039	0.24081
5	0.0250	0.23575	27	20.0038	0.24091
6	0.0291	0.23602	28	30.0037	0.24112
7	0.0333	0.23636	29	40.0035	0.24129
8	0.0375	0.23664	30	50.0034	0.24143
9	0.0416	0.23674	31	60.0032	0.24153
10	0.0458	0.23684	32	70.0031	0.24163
11	0.0500	0.23691	33	80.0029	0.2417
12	0.0541	0.23705	34	90.0028	0.24173
13	0.0583	0.23718	35	100.0026	0.2418
14	0.0708	0.23749	36	110.0025	0.2418
15	0.0875	0.23783	37	120.0023	0.2418
16	0.1708	0.23886	38	130.0022	0.2418
17	0.2541	0.2393	39	140.0020	0.24184
18	0.3374	0.23951	40	150.0019	0.24184
19	0.4208	0.23972	41	160.0017	0.24184
20	0.5041	0.23978	42	170.0016	0.24184
21	0.7541	0.23992	43	180.0014	0.24187
22	1.0041	0.23995	44	190.0012	0.2419



Pressure: 4000 psf | **TEST READINGS (continued)** | **Load No. 11**

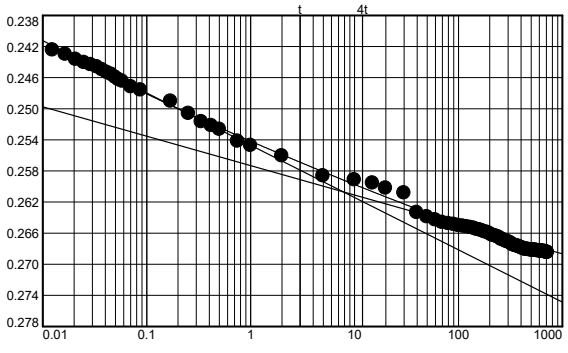
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0011	0.2419	63	380.0025	0.24225	81	560.0040	0.24238
46	210.0009	0.24194	64	390.0024	0.24225	82	570.0038	0.24238
47	220.0008	0.24197	65	400.0022	0.24228	83	580.0037	0.24238
48	230.0006	0.24197	66	410.0021	0.24228	84	590.0035	0.24238
49	240.0005	0.24197	67	420.0019	0.24228	85	600.0034	0.24238
50	250.0003	0.24197	68	430.0018	0.24228	86	610.0032	0.24238
51	260.0002	0.24211	69	440.0016	0.24231	87	620.0031	0.24238
52	270.0000	0.24211	70	450.0015	0.24231	88	630.0029	0.24238
53	280.0040	0.24211	71	460.0013	0.24231	89	640.0028	0.24238
54	290.0039	0.24214	72	470.0012	0.24231	90	650.0026	0.24238
55	300.0037	0.24214	73	480.0010	0.24231	91	660.0025	0.24238
56	310.0036	0.24218	74	490.0009	0.24231	92	670.0023	0.24238
57	320.0034	0.24218	75	500.0007	0.24231	93	680.0022	0.24238
58	330.0033	0.24221	76	510.0006	0.24235	94	690.0020	0.24238
59	340.0031	0.24221	77	520.0004	0.24235	95	700.0018	0.24238
60	350.0030	0.24221	78	530.0002	0.24238	96	710.0017	0.24242
61	360.0028	0.24221	79	540.0001	0.24235	97	720.0016	0.24238
62	370.0027	0.24225	80	550.0041	0.24235	98	720.0935	0.24238

Void Ratio = 0.938 **Compression =** 5.4%

D_0 = 0.2377 **D_{50} =** 0.2386 **D_{100} =** 0.2396 **C_V at 0.17 min. =** 2.547 ft.^{2}/day **C_α =** 0.002

Pressure: 8000 psf | **TEST READINGS** | **Load No. 12**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.24238	15	0.0875	0.24762
2	0.0125	0.24249	16	0.1708	0.24905
3	0.0166	0.24303	17	0.2541	0.25063
4	0.0208	0.24368	18	0.3375	0.25169
5	0.0250	0.24409	19	0.4208	0.2522
6	0.0291	0.24437	20	0.5041	0.25268
7	0.0333	0.24464	21	0.7541	0.25422
8	0.0375	0.24502	22	1.0041	0.25476
9	0.0416	0.24536	23	2.0041	0.2561
10	0.0458	0.2456	24	5.0040	0.25866
11	0.0500	0.24597	25	10.0040	0.25918
12	0.0541	0.24628	26	15.0039	0.25959
13	0.0583	0.24649	27	20.0038	0.26024
14	0.0708	0.24721	28	30.0037	0.26085



Pressure: 8000 psf | **TEST READINGS (continued)** | **Load No. 12**

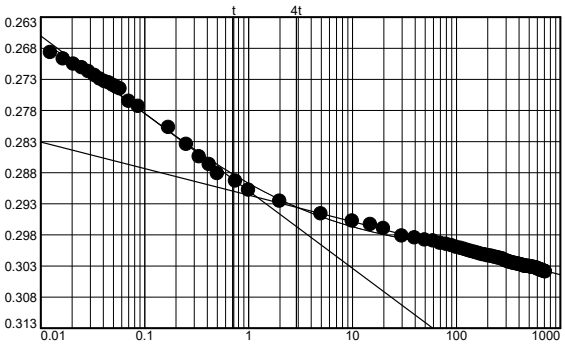
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0035	0.26338	53	280.0041	0.26701	77	520.0004	0.26824
30	50.0034	0.26393	54	290.0039	0.26711	78	530.0002	0.26824
31	60.0032	0.26431	55	300.0038	0.26715	79	540.0000	0.26824
32	70.0031	0.26465	56	310.0036	0.26721	80	550.0041	0.26824
33	80.0029	0.26479	57	320.0035	0.26732	81	560.0039	0.26828
34	90.0028	0.26492	58	330.0033	0.26749	82	570.0037	0.26828
35	100.0026	0.26503	59	340.0032	0.26756	83	580.0036	0.26831
36	110.0025	0.26513	60	350.0030	0.26763	84	590.0034	0.26831
37	120.0023	0.2652	61	360.0029	0.26766	85	600.0032	0.26831
38	130.0021	0.2653	62	370.0027	0.26769	86	610.0031	0.26834
39	140.0020	0.2654	63	380.0026	0.26776	87	620.0029	0.26834
40	150.0019	0.26554	64	390.0024	0.26783	88	630.0028	0.26838
41	160.0017	0.26561	65	400.0023	0.26786	89	640.0026	0.26838
42	170.0016	0.26574	66	410.0021	0.26793	90	650.0025	0.26838
43	180.0014	0.26588	67	420.0020	0.268	91	660.0023	0.26838
44	190.0013	0.26595	68	430.0018	0.26807	92	670.0022	0.26841
45	200.0011	0.26609	69	440.0016	0.2681	93	680.0020	0.26841
46	210.0010	0.26626	70	450.0015	0.2681	94	690.0019	0.26845
47	220.0008	0.26636	71	460.0013	0.26814	95	700.0017	0.26848
48	230.0006	0.26643	72	470.0012	0.26814	96	710.0016	0.26851
49	240.0005	0.2665	73	480.0010	0.26817	97	720.0014	0.26851
50	250.0004	0.26663	74	490.0008	0.26817	98	720.1808	0.26851
51	260.0002	0.26684	75	500.0007	0.26821			
52	270.0001	0.26687	76	510.0005	0.26821			

Void Ratio = 0.885 **Compression =** 8.0%

D_0 = 0.2536 **D_{50} =** 0.2571 **D_{100} =** 0.2607 **C_v at 3.33 min. =** 0.129 ft.^{2}/day **C_α =** 0.008

Pressure: 16000 psf	TEST READINGS	Load No. 13

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.26851	39	140.0020	0.3007
2	0.0125	0.26875	40	150.0019	0.30084
3	0.0166	0.26978	41	160.0017	0.30097
4	0.0208	0.2706	42	170.0016	0.30108
5	0.0250	0.27118	43	180.0014	0.30121
6	0.0291	0.2718	44	190.0013	0.30128
7	0.0333	0.27241	45	200.0011	0.30138
8	0.0374	0.273	46	210.0010	0.30145
9	0.0416	0.27341	47	220.0008	0.30149
10	0.0458	0.27364	48	230.0007	0.30159
11	0.0499	0.27399	49	240.0005	0.30166
12	0.0541	0.27429	50	250.0004	0.30173
13	0.0583	0.27457	51	260.0002	0.30179
14	0.0708	0.27659	52	270.0001	0.30186
15	0.0874	0.27741	53	280.0041	0.3019
16	0.1708	0.28079	54	290.0039	0.30214
17	0.2541	0.2835	55	300.0038	0.3022
18	0.3374	0.28548	56	310.0037	0.30227
19	0.4208	0.28674	57	320.0035	0.30238
20	0.5041	0.28818	58	330.0034	0.30244
21	0.7541	0.28941	59	340.0032	0.30251
22	1.0041	0.29085	60	350.0031	0.30255
23	2.0041	0.29263	61	360.0029	0.30262
24	5.0040	0.29465	62	370.0028	0.30265
25	10.0040	0.29581	63	380.0026	0.30268
26	15.0039	0.29639	64	390.0025	0.30272
27	20.0038	0.29704	65	400.0023	0.30279
28	30.0037	0.29824	66	410.0022	0.30282
29	40.0035	0.29851	67	420.0020	0.30285
30	50.0034	0.29885	68	430.0019	0.30289
31	60.0032	0.29902	69	440.0017	0.30296
32	70.0031	0.29937	70	450.0016	0.30306
33	80.0029	0.29957	71	460.0014	0.30306
34	90.0028	0.29978	72	470.0013	0.30306
35	100.0026	0.30002	73	480.0011	0.30313
36	110.0025	0.30019	74	490.0010	0.30313
37	120.0023	0.30036	75	500.0008	0.30313
38	130.0022	0.30056	76	510.0007	0.30316



Pressure: 16000 psf — **TEST READINGS (continued)** — **Load No. 13**

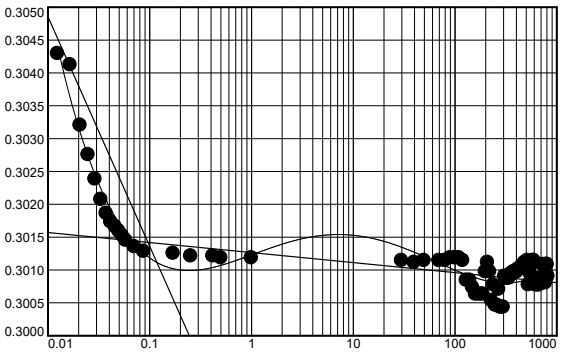
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0005	0.3032	87	620.0032	0.30357	97	720.0017	0.30395
78	530.0004	0.30323	88	630.0030	0.30357	98	720.2102	0.30395
79	540.0002	0.30323	89	640.0029	0.30364			
80	550.0001	0.30326	90	650.0027	0.30364			
81	560.0041	0.3033	91	660.0026	0.30371			
82	570.0040	0.30333	92	670.0024	0.30378			
83	580.0038	0.30333	93	680.0023	0.30378			
84	590.0036	0.30337	94	690.0021	0.30385			
85	600.0035	0.3034	95	700.0020	0.30388			
86	610.0033	0.3035	96	710.0018	0.30388			

Void Ratio = 0.812 **Compression =** 11.6%

D_0 = 0.2831 **D_{50} =** 0.2875 **D_{100} =** 0.2920 **C_v at 0.60 min. =** 0.664 ft.^{2}/day **C_α =** 0.009

Pressure: 8000 psf — **TEST READINGS** — **Load No. 14**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.30395	23	50.0034	0.30114
2	0.0125	0.30429	24	70.0031	0.30114
3	0.0166	0.30412	25	80.0029	0.30114
4	0.0208	0.3032	26	90.0027	0.30118
5	0.0250	0.30275	27	100.0026	0.30118
6	0.0291	0.30238	28	110.0024	0.30118
7	0.0333	0.30207	29	120.0023	0.30114
8	0.0375	0.30186	30	130.0021	0.30084
9	0.0416	0.30173	31	140.0020	0.30084
10	0.0458	0.30166	32	150.0018	0.30073
11	0.0500	0.30159	33	160.0016	0.30063
12	0.0541	0.30152	34	170.0015	0.30063
13	0.0583	0.30145	35	180.0013	0.30063
14	0.0708	0.30135	36	190.0012	0.30063
15	0.0875	0.30128	37	200.0010	0.30097
16	0.1708	0.30125	38	210.0008	0.30111
17	0.2541	0.30121	39	220.0007	0.30097
18	0.4208	0.30121	40	230.0005	0.30053
19	0.5041	0.30118	41	240.0004	0.30077
20	1.0041	0.30118	42	250.0002	0.30046
21	30.0037	0.30114	43	260.0001	0.30046
22	40.0035	0.30111	44	270.0041	0.3007



Pressure: 8000 psf	TEST READINGS (continued)	Load No. 14

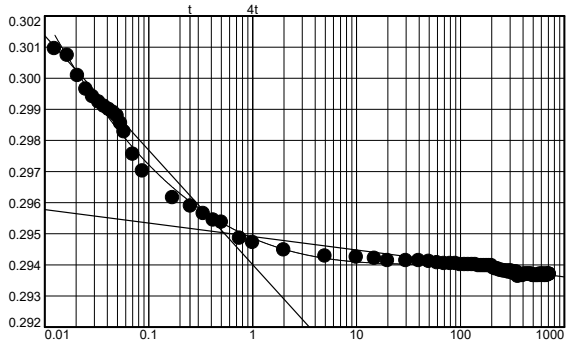
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	280.0040	0.30043	64	470.0010	0.30108	83	660.0021	0.30077
46	290.0038	0.30043	65	480.0008	0.30108	84	670.0019	0.30077
47	300.0037	0.30043	66	490.0007	0.30111	85	680.0018	0.30077
48	310.0035	0.3009	67	500.0005	0.30111	86	690.0016	0.30087
49	320.0034	0.30087	68	510.0004	0.30111	87	700.0015	0.30084
50	330.0032	0.30087	69	520.0002	0.30114	88	710.0013	0.30084
51	340.0031	0.30087	70	530.0000	0.30077	89	720.0012	0.30084
52	350.0029	0.3009	71	540.0040	0.30104	90	730.0010	0.30108
53	360.0028	0.30094	72	550.0039	0.30094	91	740.0008	0.30084
54	370.0026	0.30094	73	560.0037	0.30111	92	750.0007	0.30084
55	380.0024	0.30097	74	570.0036	0.30108	93	760.0005	0.30084
56	390.0023	0.30097	75	580.0034	0.30111	94	770.0004	0.30084
57	400.0021	0.30097	76	590.0032	0.30114	95	780.0002	0.3008
58	410.0020	0.30097	77	600.0031	0.30114	96	790.0001	0.30108
59	420.0018	0.30101	78	610.0029	0.3008	97	800.0041	0.30108
60	430.0016	0.30101	79	620.0027	0.30077	98	810.0039	0.30108
61	440.0015	0.30101	80	630.0026	0.30077	99	820.0037	0.3009
62	450.0013	0.30104	81	640.0024	0.30077	100	822.6248	0.3009
63	460.0012	0.30104	82	650.0023	0.30077			

Void Ratio = 0.818 **Compression =** 11.3%

D_0 = 0.3039 D_{50} = 0.3027 D_{100} = 0.3014 C_v **at 0.03 min. =** 15.218 ft.^{2}/day

Pressure: 2000 psf	TEST READINGS	Load No. 15

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.3009	14	0.0708	0.29755
2	0.0125	0.30094	15	0.0875	0.29701
3	0.0166	0.30073	16	0.1708	0.29615
4	0.0208	0.30008	17	0.2541	0.29588
5	0.0250	0.29964	18	0.3375	0.29564
6	0.0291	0.2994	19	0.4208	0.29543
7	0.0333	0.29923	20	0.5041	0.29536
8	0.0375	0.29909	21	0.7541	0.29485
9	0.0416	0.29899	22	1.0041	0.29471
10	0.0458	0.29889	23	2.0041	0.29447
11	0.0500	0.29878	24	5.0040	0.29427
12	0.0541	0.29854	25	10.0040	0.29424
13	0.0583	0.29827	26	15.0039	0.2942



Pressure: 2000 psf	TEST READINGS (continued)	Load No. 15

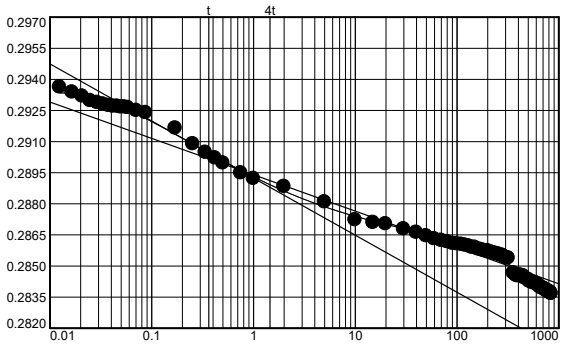
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	20.0038	0.29413	51	260.0001	0.29379	75	500.0007	0.29365
28	30.0037	0.29413	52	270.0041	0.29379	76	510.0005	0.29365
29	40.0035	0.29413	53	280.0040	0.29379	77	520.0004	0.29365
30	50.0034	0.2941	54	290.0038	0.29376	78	530.0002	0.29365
31	60.0032	0.29406	55	300.0036	0.29379	79	540.0001	0.29365
32	70.0030	0.29403	56	310.0035	0.29379	80	550.0041	0.29365
33	80.0029	0.29403	57	320.0033	0.29372	81	560.0039	0.29365
34	90.0027	0.29403	58	330.0032	0.29376	82	570.0038	0.29365
35	100.0026	0.294	59	340.0030	0.29376	83	580.0036	0.29369
36	110.0024	0.294	60	350.0028	0.29376	84	590.0035	0.29365
37	120.0023	0.294	61	360.0027	0.29362	85	600.0033	0.29369
38	130.0021	0.294	62	370.0025	0.29369	86	610.0031	0.29369
39	140.0020	0.294	63	380.0024	0.29365	87	620.0030	0.29365
40	150.0018	0.29396	64	390.0022	0.29365	88	630.0028	0.29369
41	160.0017	0.29396	65	400.0021	0.29365	89	640.0026	0.29369
42	170.0015	0.29396	66	410.0019	0.29369	90	650.0025	0.29365
43	180.0013	0.29396	67	420.0017	0.29369	91	660.0023	0.29365
44	190.0012	0.29396	68	430.0016	0.29369	92	670.0022	0.29369
45	200.0010	0.29396	69	440.0014	0.29369	93	680.0020	0.29365
46	210.0009	0.29389	70	450.0013	0.29369	94	690.0019	0.29369
47	220.0007	0.29386	71	460.0011	0.29369	95	700.0017	0.29369
48	230.0005	0.29386	72	470.0009	0.29369	96	710.0016	0.29369
49	240.0004	0.29382	73	480.0008	0.29369	97	720.0014	0.29369
50	250.0002	0.29382	74	490.0006	0.29369	98	720.0892	0.29369

Void Ratio = 0.833 **Compression =** 10.5%

D_0 = 0.2972 **D_{50} =** 0.2961 **D_{100} =** 0.2950 **C_v at 0.23 min. =** 1.692 $ft.^2/day$

Pressure: 500 psf **TEST READINGS** **Load No. 16**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.29369	39	140.0020	0.28589
2	0.0125	0.29362	40	150.0018	0.28589
3	0.0166	0.29338	41	160.0017	0.28582
4	0.0208	0.29318	42	170.0015	0.28579
5	0.0250	0.29297	43	180.0014	0.28575
6	0.0291	0.29287	44	190.0012	0.28572
7	0.0333	0.2928	45	200.0010	0.28572
8	0.0375	0.29273	46	210.0009	0.28568
9	0.0416	0.2927	47	220.0007	0.28565
10	0.0458	0.2927	48	230.0006	0.28562
11	0.0500	0.29266	49	240.0004	0.28558
12	0.0541	0.29266	50	250.0003	0.28558
13	0.0583	0.29263	51	260.0001	0.28555
14	0.0708	0.29249	52	270.0041	0.28551
15	0.0875	0.29239	53	280.0040	0.28551
16	0.1708	0.29164	54	290.0038	0.28545
17	0.2542	0.29088	55	300.0037	0.28541
18	0.3375	0.29047	56	310.0035	0.28538
19	0.4208	0.2902	57	320.0034	0.28538
20	0.5041	0.28996	58	360.0028	0.28466
21	0.7541	0.28948	59	370.0026	0.28462
22	1.0041	0.28921	60	380.0025	0.28456
23	2.0041	0.28883	61	390.0023	0.28452
24	5.0041	0.28808	62	410.0020	0.28452
25	10.0040	0.28722	63	420.0018	0.28456
26	15.0039	0.28709	64	430.0016	0.28452
27	20.0038	0.28702	65	450.0018	0.28452
28	30.0037	0.28678	66	460.0016	0.28442
29	40.0035	0.28661	67	500.0010	0.28435
30	50.0034	0.28644	68	510.0008	0.28428
31	60.0032	0.2863	69	520.0007	0.28425
32	70.0030	0.28623	70	540.0004	0.28425
33	80.0029	0.28616	71	550.0002	0.28421
34	90.0027	0.28609	72	560.0001	0.28418
35	100.0026	0.28606	73	580.0039	0.28418
36	110.0024	0.28603	74	590.0038	0.28418
37	120.0023	0.28599	75	600.0036	0.28415
38	130.0021	0.28596	76	610.0035	0.28411



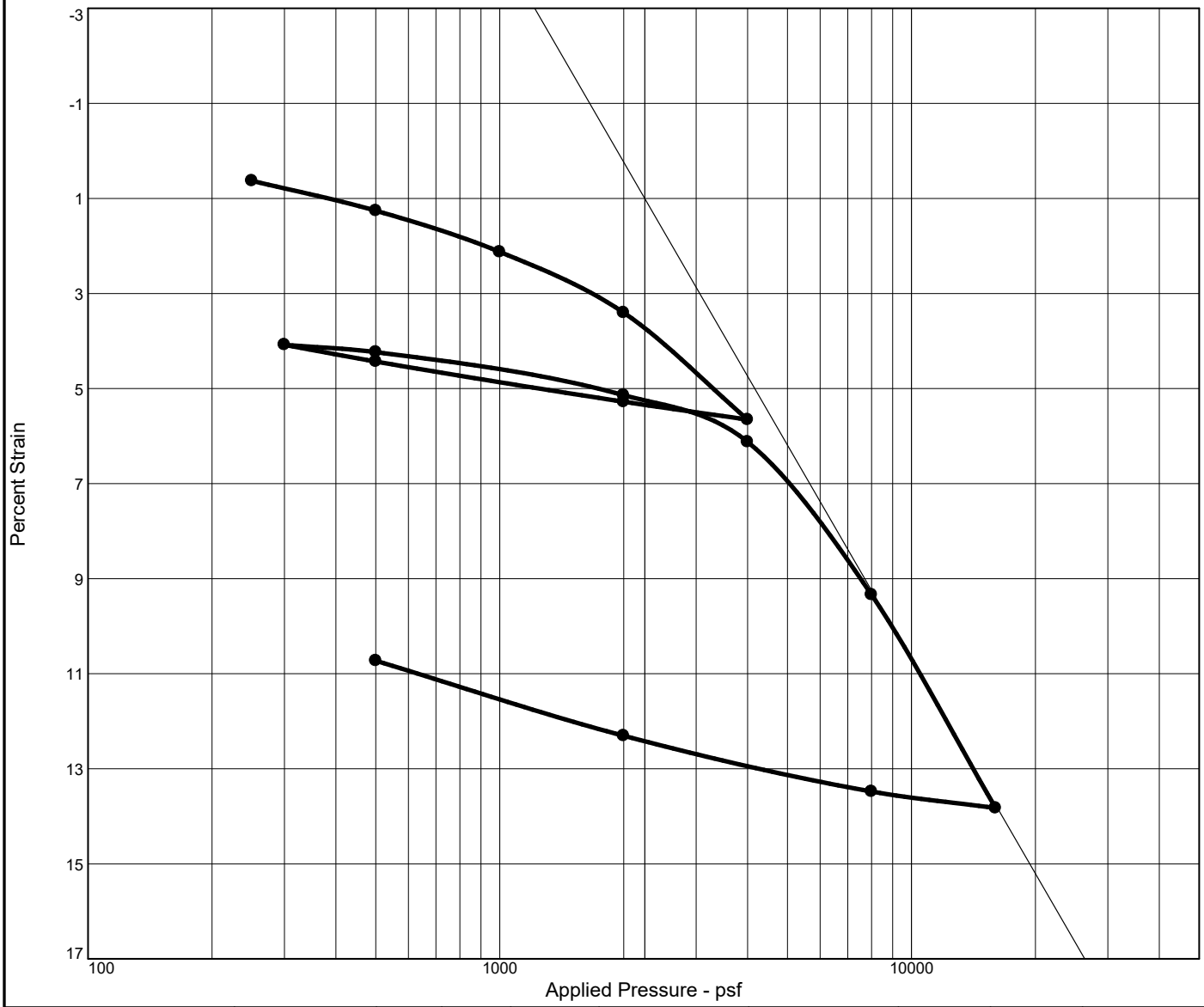
Pressure: 500 psf	TEST READINGS (continued)	Load No. 16

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	620.0033	0.28411	87	720.0018	0.28391	97	820.0003	0.28373
78	630.0031	0.28408	88	730.0016	0.28387	98	830.0001	0.28373
79	640.0030	0.28404	89	740.0015	0.28384	99	840.0042	0.28367
80	650.0029	0.28401	90	750.0013	0.28384	100	846.0376	0.28367
81	660.0027	0.28397	91	760.0012	0.28384			
82	670.0025	0.28397	92	770.0010	0.2838			
83	680.0024	0.28394	93	780.0009	0.28377			
84	690.0022	0.28394	94	790.0007	0.2838			
85	700.0021	0.28391	95	800.0006	0.28373			
86	710.0019	0.28391	96	810.0004	0.28373			

Void Ratio = 0.854 **Compression =** 9.5%

D_0 = 0.2920 D_{50} = 0.2908 D_{100} = 0.2897 C_v **at 0.26 min. =** 1.511 $ft.^2/day$

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
102.2 %	38.8 %	84.2	24	6	2.76	1060	3783	0.31	0.04	1.047

MATERIAL DESCRIPTION	USCS	AASHTO
CL-ML - SILTY CLAY	CL-ML	T216

Project No. XL-5446 **Client:** Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-30vw-19 **Depth:** 31.5 to 31.9 **Sample Number:** S-12

Remarks:

WSDOT

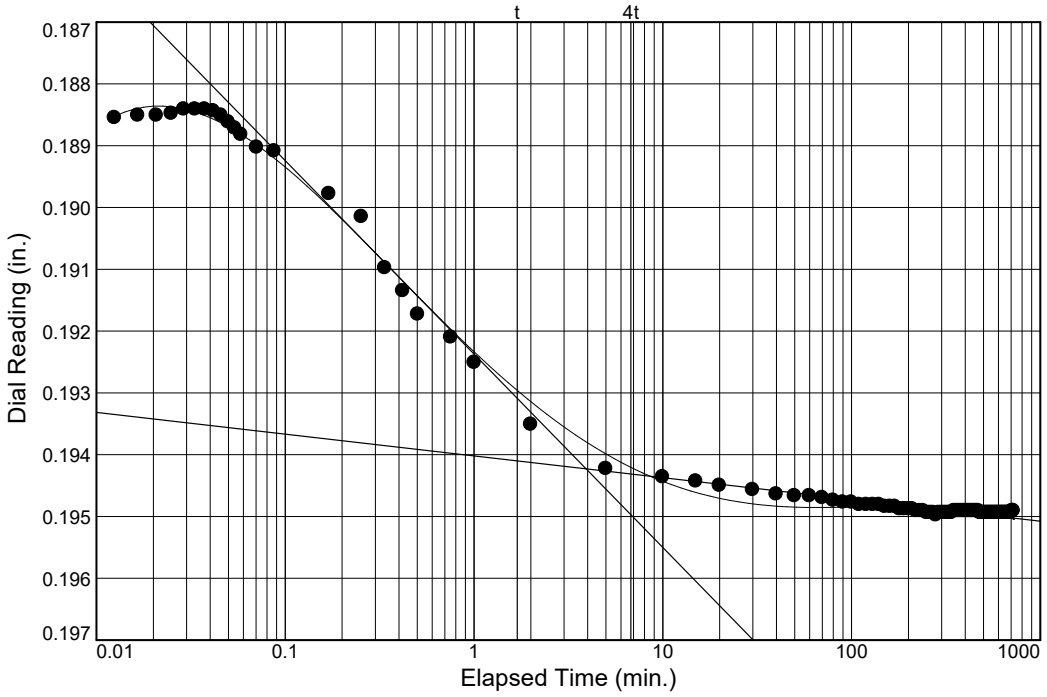
Figure

Tested By: DH **Checked By:** DH

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

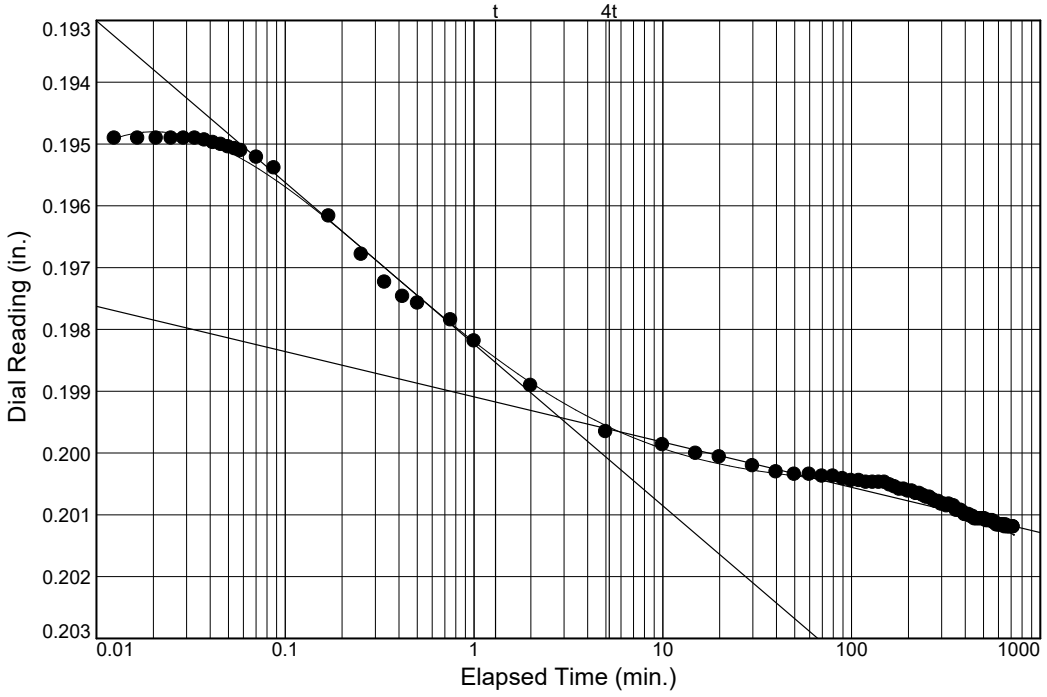
Source of Sample: NE-30vw-19 Depth: 31.5 to 31.9 Sample Number: S-12



Load No.= 1
Load= 250 psf
D_0 = 0.1917
D_{50} = 0.1930
D_{100} = 0.1942
T_{50} = 1.71 min.

C_v @ T_{50}
0.286 ft.^{2}/day

C_α = 0.001



Load No.= 2
Load= 500 psf
D_0 = 0.1973
D_{50} = 0.1984
D_{100} = 0.1994
T_{50} = 1.20 min.

C_v @ T_{50}
0.403 ft.^{2}/day

C_α = 0.001

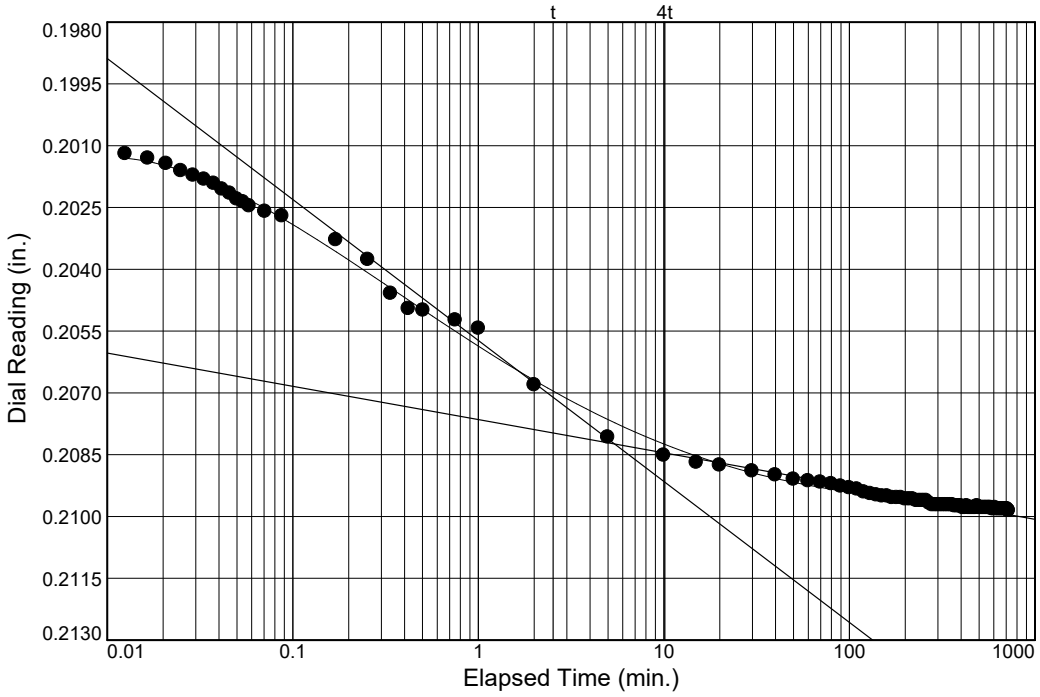
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

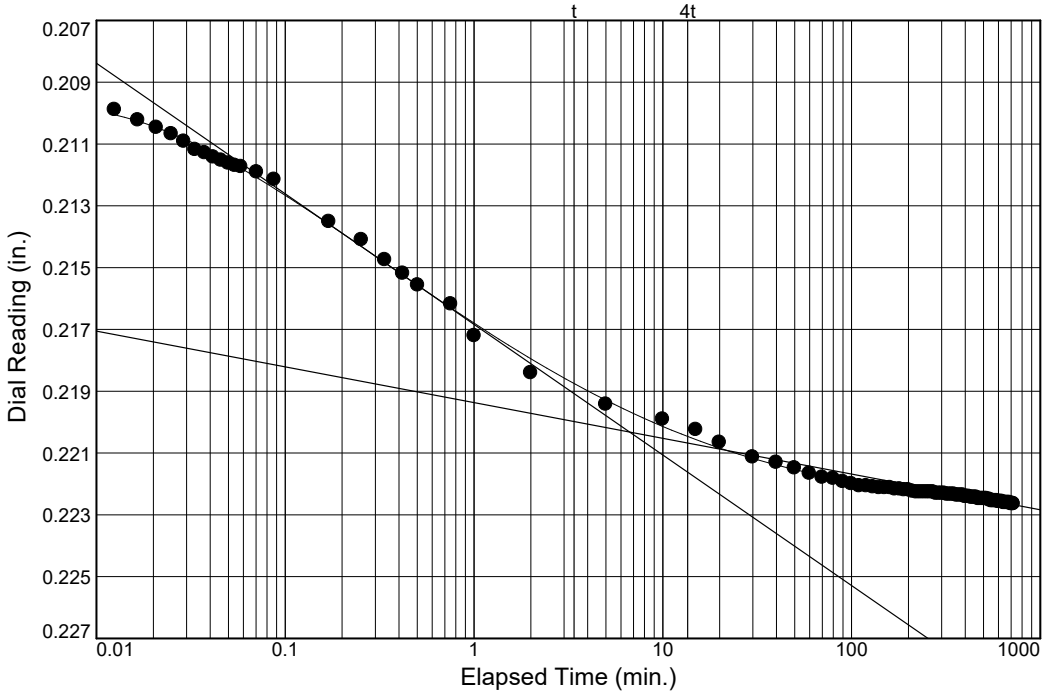
Source of Sample: NE-30vw-19 Depth: 31.5 to 31.9 Sample Number: S-12



Load No.= 3
Load= 1000 psf
D_0 = 0.2057
D_{50} = 0.2070
D_{100} = 0.2082
T_{50} = 2.52 min.

C_v @ T_{50}
0.189 ft.^{2}/day

C_α = 0.002



Load No.= 4
Load= 2000 psf
D_0 = 0.2170
D_{50} = 0.2187
D_{100} = 0.2203
T_{50} = 3.22 min.

C_v @ T_{50}
0.145 ft.^{2}/day

C_α = 0.002

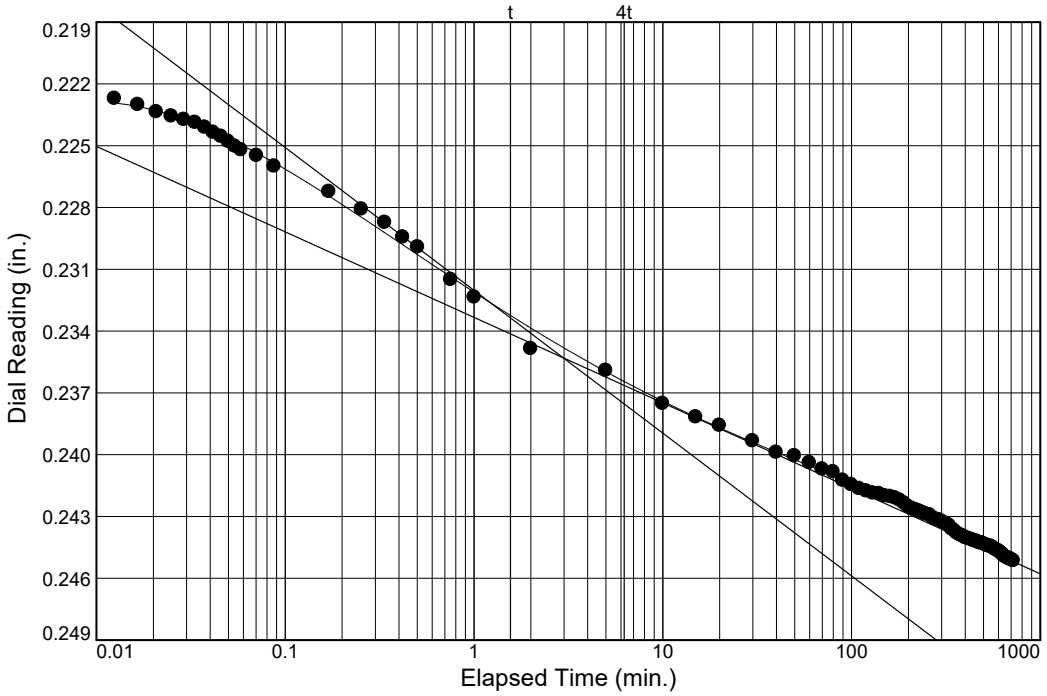
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

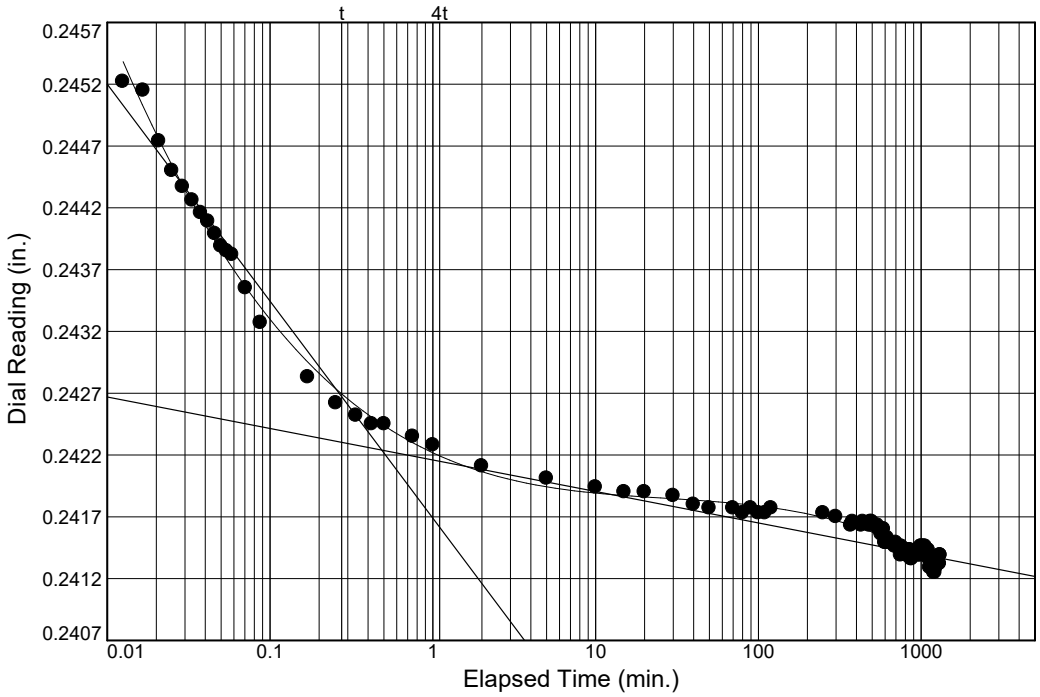
Source of Sample: NE-30vw-19 Depth: 31.5 to 31.9 Sample Number: S-12



Load No.= 5
Load= 4000 psf
D_0 = 0.2300
D_{50} = 0.2327
D_{100} = 0.2353
T_{50} = 1.24 min.

C_v @ T_{50}
0.362 ft.^{2}/day

C_α = 0.008



Load No.= 6
Load= 2000 psf
D_0 = 0.2432
D_{50} = 0.2427
D_{100} = 0.2422
T_{50} = 0.26 min.

C_v @ T_{50}
1.678 ft.^{2}/day

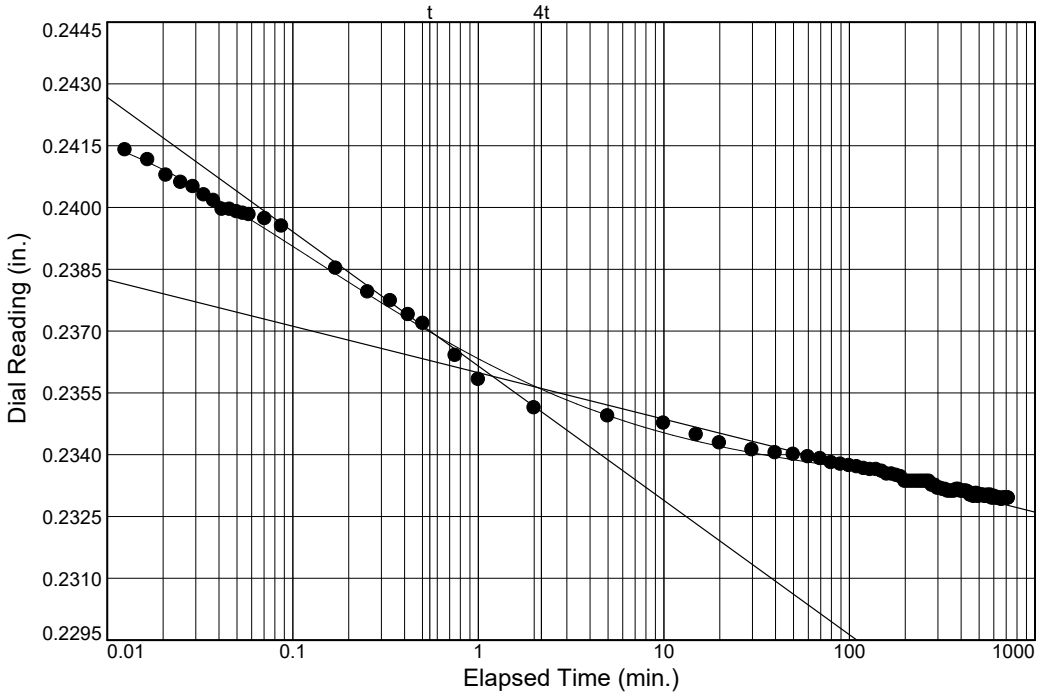
Figure

Washington State Department of Transportation

Dial Reading vs. Time

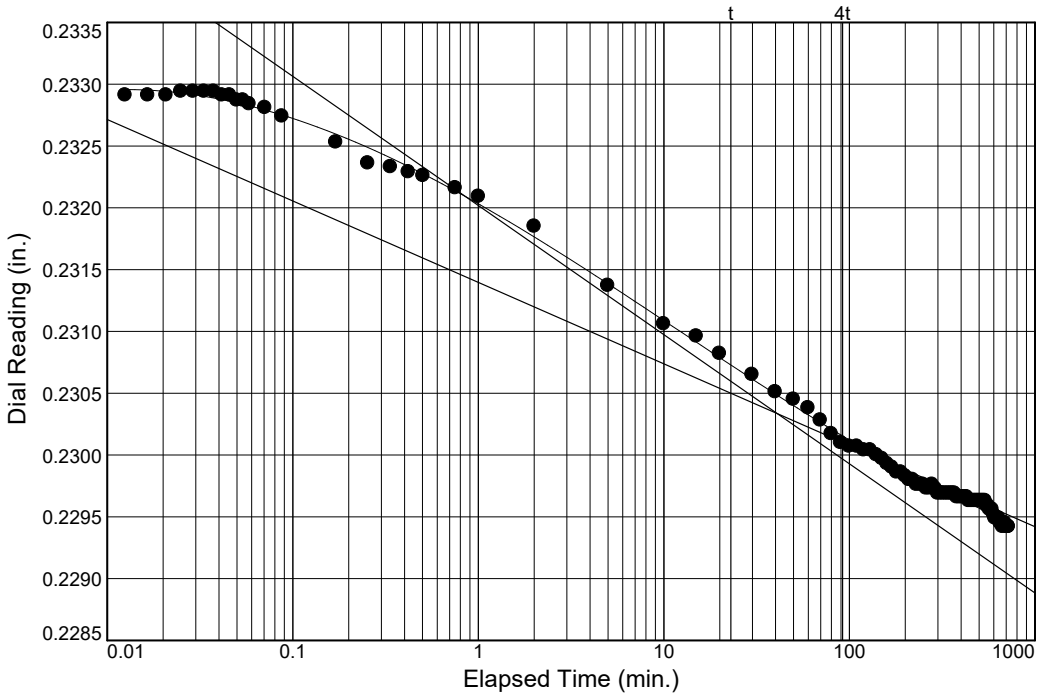
Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-30vw-19 Depth: 31.5 to 31.9 Sample Number: S-12



Load No.= 7
Load= 500 psf
D_0 = 0.2384
D_{50} = 0.2371
D_{100} = 0.2359
T_{50} = 0.48 min.

C_v @ T_{50}
0.935 ft.^{2}/day



Load No.= 8
Load= 300 psf
D_0 = 0.2313
D_{50} = 0.2308
D_{100} = 0.2303
T_{50} = 18.64 min.

C_v @ T_{50}
0.024 ft.^{2}/day

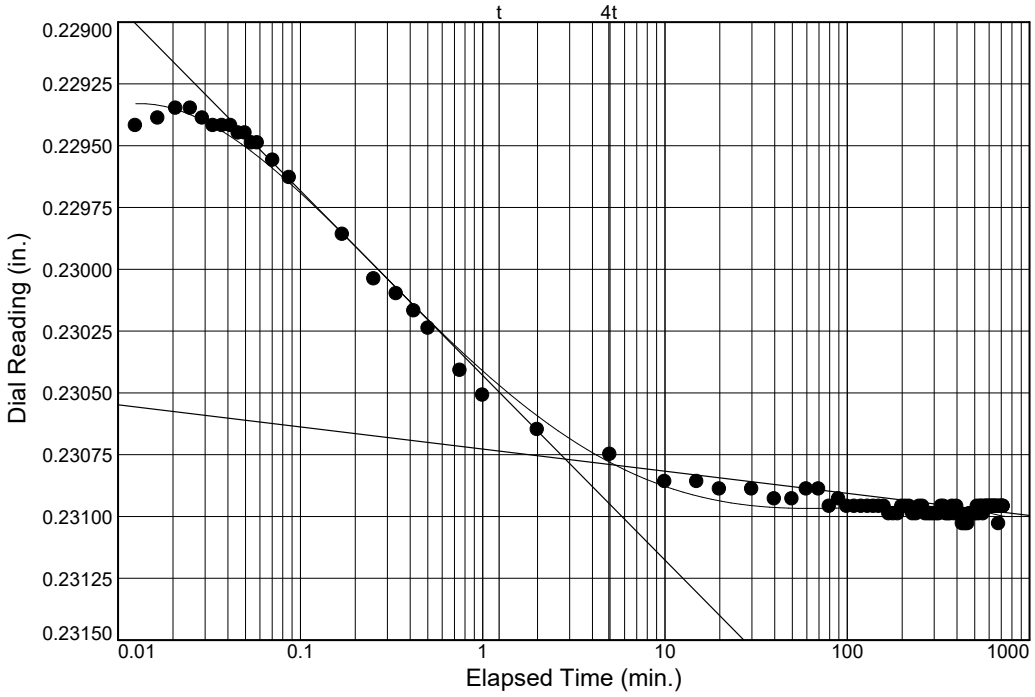
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

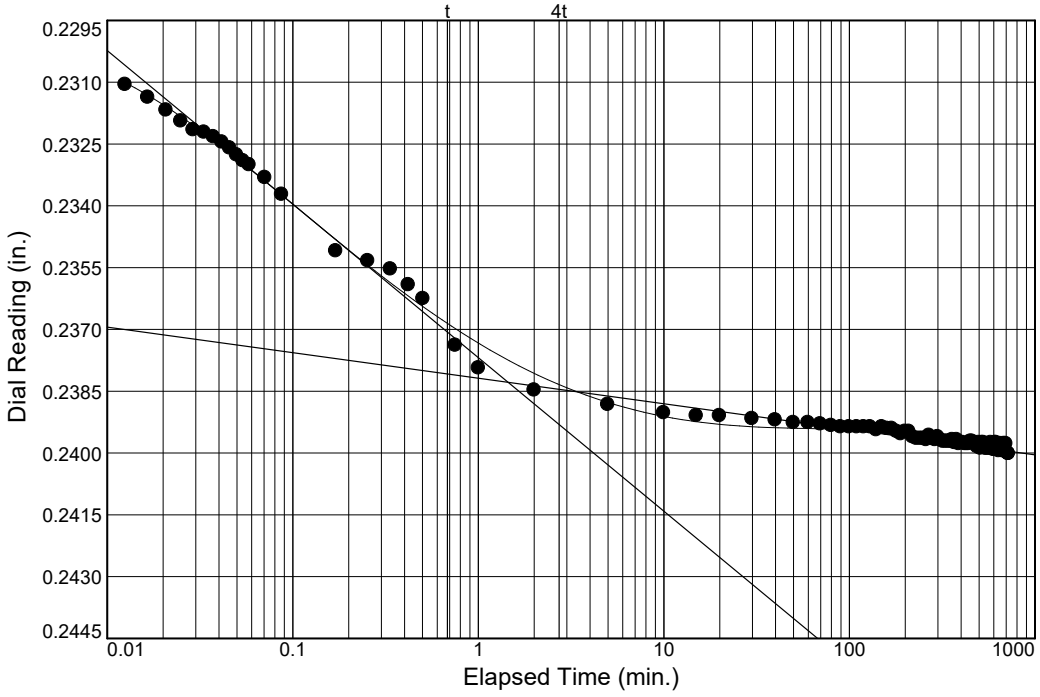
Source of Sample: NE-30vw-19 Depth: 31.5 to 31.9 Sample Number: S-12



Load No.= 9
Load= 500 psf
D_0 = 0.2302
D_{50} = 0.2305
D_{100} = 0.2308
T_{50} = 1.21 min.

C_v @ T_{50}
0.375 ft.^{2}/day

C_α = 0.000



Load No.= 10
Load= 2000 psf
D_0 = 0.2354
D_{50} = 0.2368
D_{100} = 0.2383
T_{50} = 0.67 min.

C_v @ T_{50}
0.671 ft.^{2}/day

C_α = 0.001

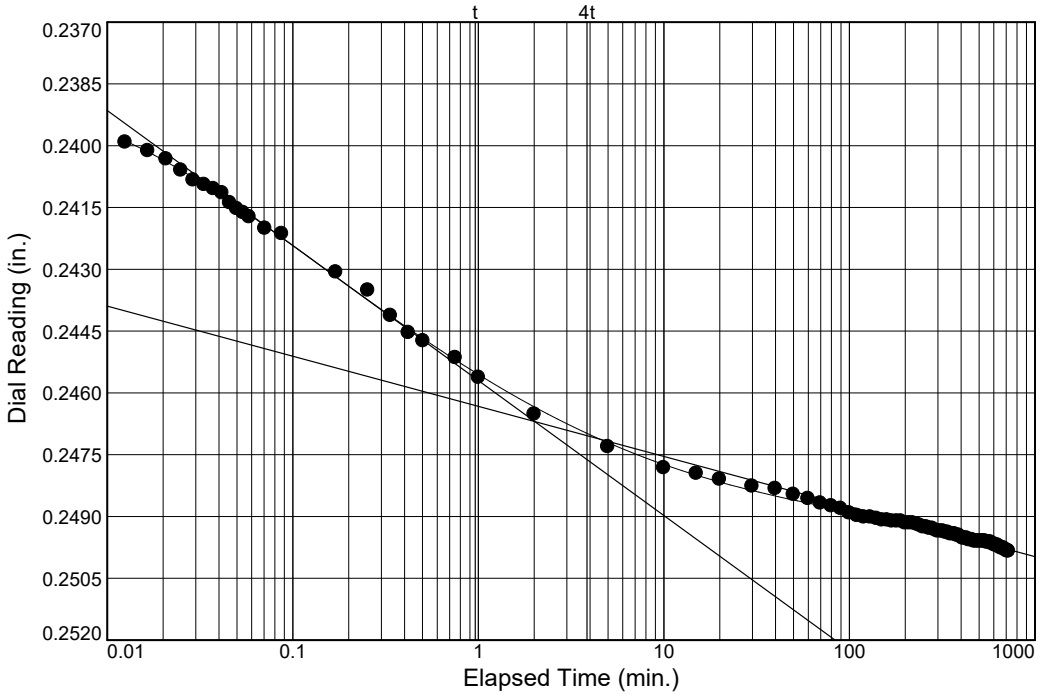
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

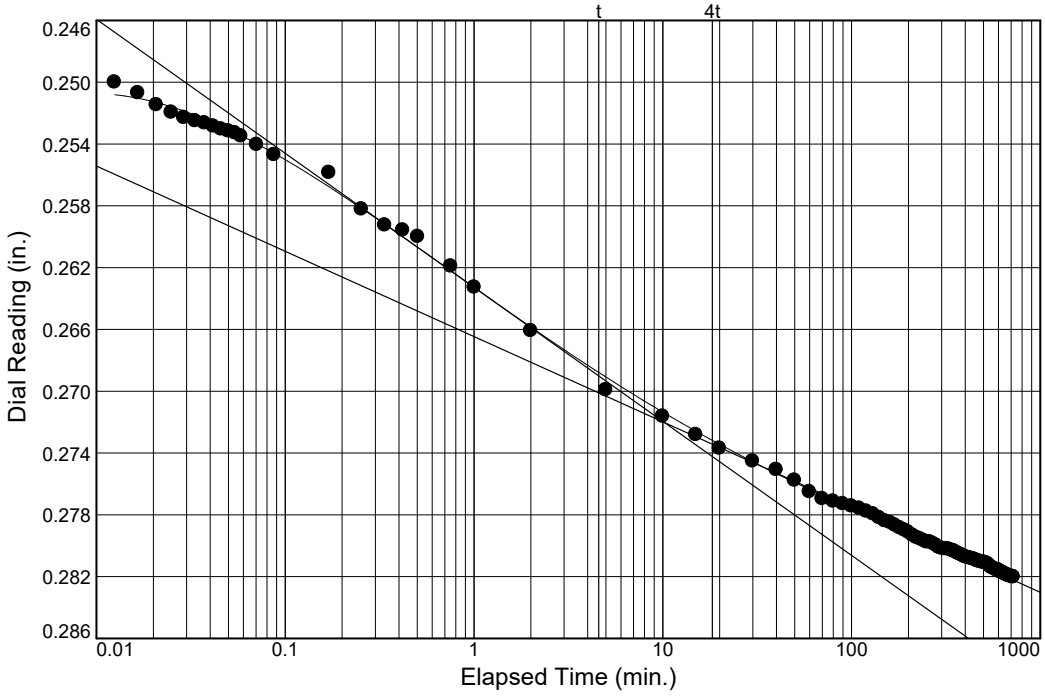
Source of Sample: NE-30vw-19 Depth: 31.5 to 31.9 Sample Number: S-12



Load No.= 11
Load= 4000 psf
D_0 = 0.2440
D_{50} = 0.2454
D_{100} = 0.2467
T_{50} = 0.86 min.

C_v @ T_{50}
0.512 ft.^{2}/day

C_α = 0.002



Load No.= 12
Load= 8000 psf
D_0 = 0.2644
D_{50} = 0.2682
D_{100} = 0.2720
T_{50} = 3.87 min.

C_v @ T_{50}
0.108 ft.^{2}/day

C_α = 0.011

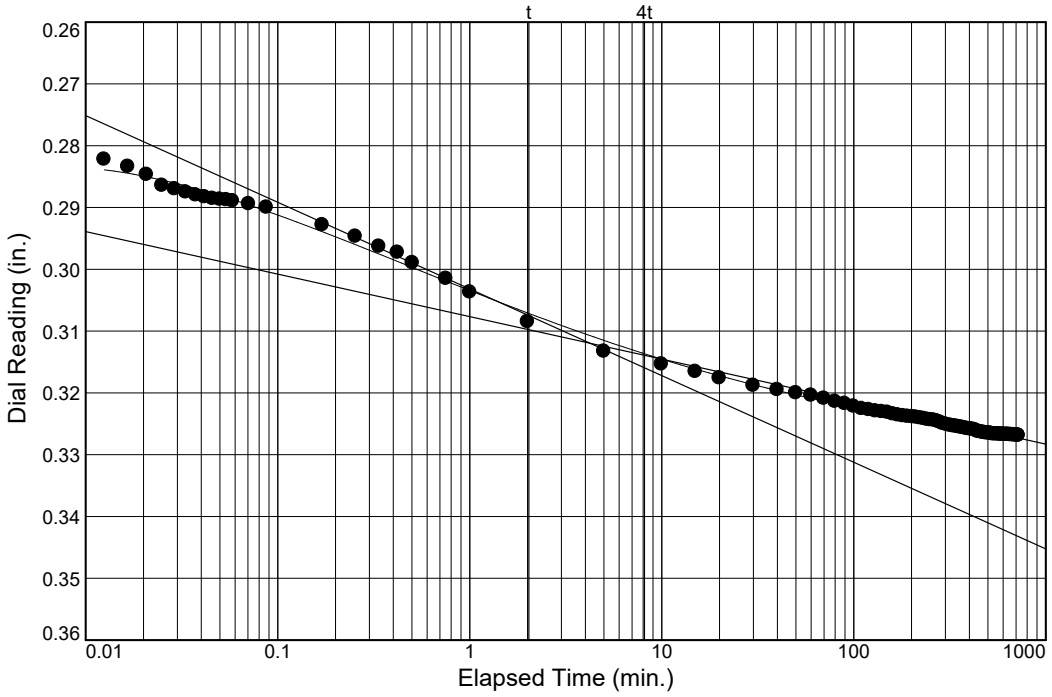
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

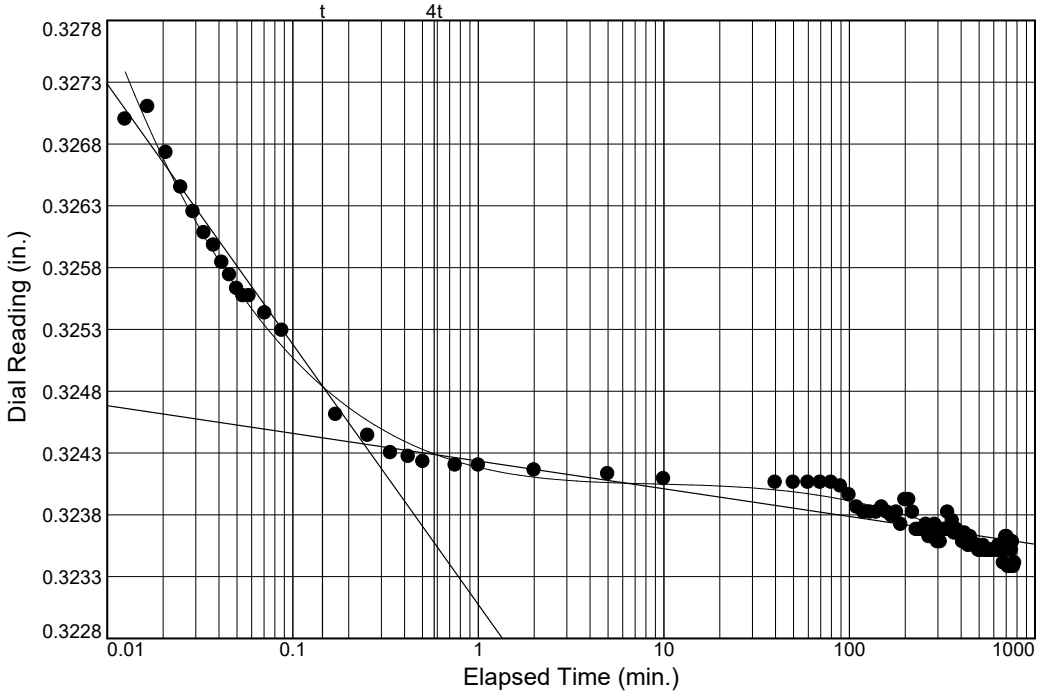
Source of Sample: NE-30vw-19 Depth: 31.5 to 31.9 Sample Number: S-12



Load No.= 13
Load= 16000 psf
D_0 = 0.3006
D_{50} = 0.3063
D_{100} = 0.3120
T_{50} = 1.72 min.

C_v @ T_{50}
0.224 ft.^{2}/day

C_α = 0.014



Load No.= 14
Load= 8000 psf
D_0 = 0.3254
D_{50} = 0.3249
D_{100} = 0.3244
T_{50} = 0.13 min.

C_v @ T_{50}
2.722 ft.^{2}/day

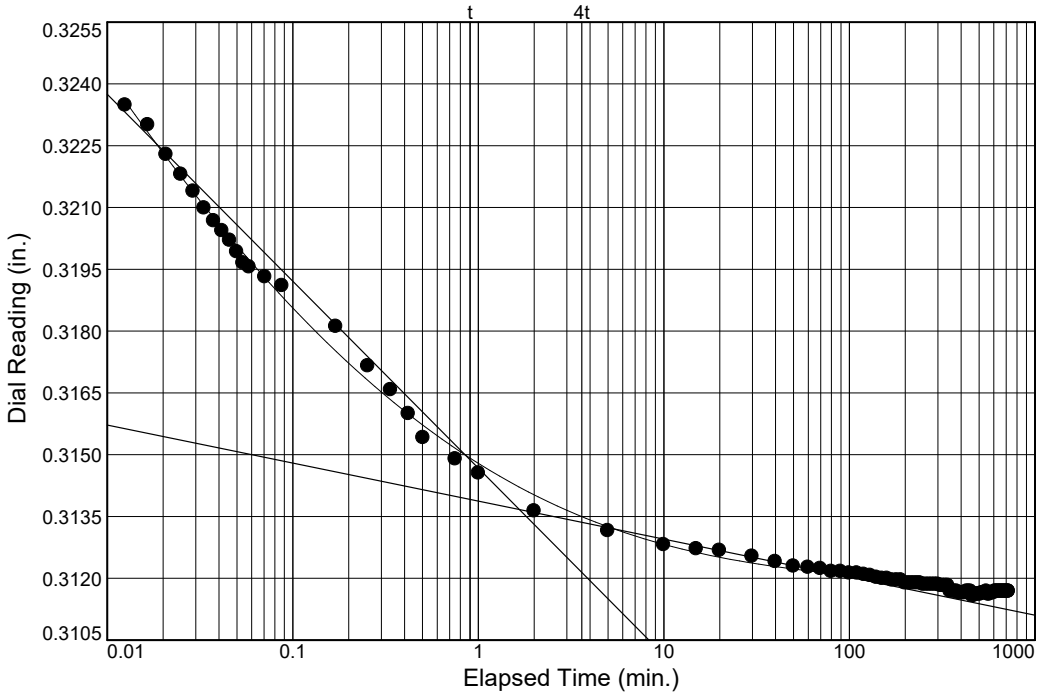
Figure

Washington State Department of Transportation

Dial Reading vs. Time

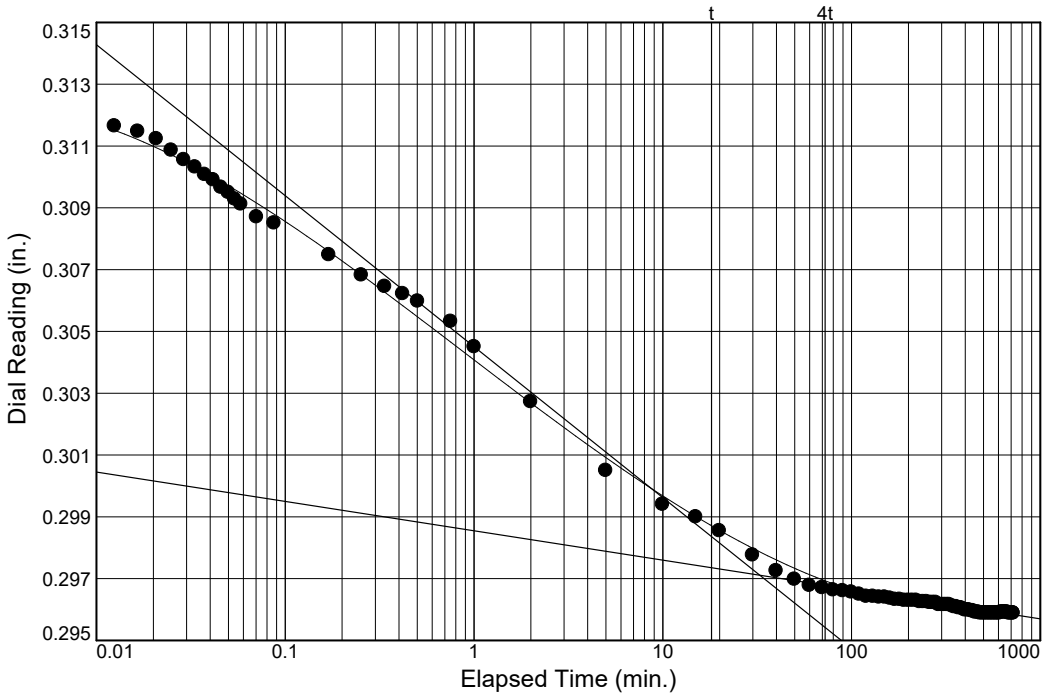
Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-30vw-19 Depth: 31.5 to 31.9 Sample Number: S-12



Load No.= 15
Load= 2000 psf
D_0 = 0.3163
D_{50} = 0.3150
D_{100} = 0.3137
T_{50} = 0.84 min.

C_v @ T_{50}
0.443 ft.^{2}/day



Load No.= 16
Load= 500 psf
D_0 = 0.3005
D_{50} = 0.2988
D_{100} = 0.2971
T_{50} = 17.09 min.

C_v @ T_{50}
0.023 ft.^{2}/day

Figure

Washington State Department of Transportation

CONSOLIDATION TEST DATA

6/27/2019

Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project Number: XL-5446
Location: NE-30vw-19
Depth: 31.5 to 31.9 **Sample Number:** S-12
Material Description: CL-ML - SILTY CLAY
Liquid Limit: 24 **Plasticity Index:** 6
USCS: CL-ML **AASHTO:** T216
Tested by: DH **Checked by:** DH

Test Specimen Data

NATURAL MOISTURE
Wet w+t = 167.15 g.
Dry w+t = 143.29 g.
Tare Wt. = 81.78 g.
Moisture = 38.8 %

VOID RATIO
Spec. Gr. = 2.76
Est. Ht. Solids = 0.488 in.
Init. V.R. = 1.047
Init. Sat. = 102.2 %

AFTER TEST
Wet w+t = 226.60 g.
Dry w+t = 191.69 g.
Tare Wt. = 81.63 g.
Moisture = 31.7 %

UNIT WEIGHT
Height = 1.000 in.
Diameter = 2.500 in.
Weight = 150.50 g.
Dry Dens. = 84.2 pcf

TEST START
Height = 1.000 in.
Diameter = 2.500 in.

Dry Wt. = 110.06 g.

End-Of-Load Summary

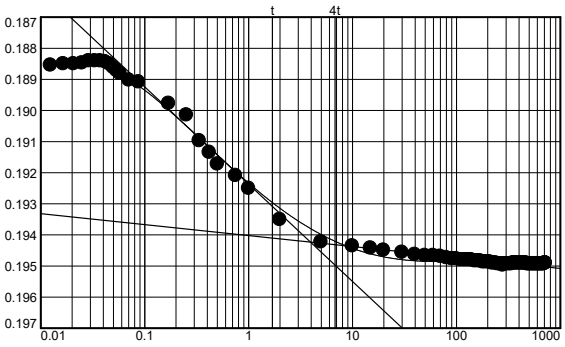
Pressure (psf)	Final Dial (in.)	Deformation (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Strain
start	0.18862	0.00000			1.047	
250	0.19491	0.00629	0.286	0.001	1.035	0.6 Comprs.
500	0.20120	0.01258	0.403	0.001	1.022	1.3 Comprs.
1000	0.20986	0.02124	0.189	0.002	1.004	2.1 Comprs.
2000	0.22265	0.03403	0.145	0.002	0.978	3.4 Comprs.
4000	0.24515	0.05653	0.362	0.008	0.932	5.7 Comprs.
2000	0.24139	0.05277	1.678		0.939	5.3 Comprs.
500	0.23294	0.04432	0.935		0.957	4.4 Comprs.
300	0.22942	0.04080	0.024		0.964	4.1 Comprs.
500	0.23096	0.04234	0.375	0.000	0.961	4.2 Comprs.
2000	0.24002	0.05140	0.671	0.001	0.942	5.1 Comprs.
4000	0.24984	0.06122	0.512	0.002	0.922	6.1 Comprs.
8000	0.28202	0.09340	0.108	0.011	0.856	9.3 Comprs.
16000	0.32687	0.13825	0.224	0.014	0.764	13.8 Comprs.
8000	0.32341	0.13479	2.722		0.771	13.5 Comprs.
2000	0.31168	0.12306	0.443		0.795	12.3 Comprs.
500	0.29588	0.10726	0.023		0.828	10.7 Comprs.

Compression index (C_c), psf = 0.31 **Preconsolidation pressure (P_p), psf =** 3783 **Void ratio at P_p (e_m) =** 0.936
Overburden (σ_{vo}), psf = 1060 **Void ratio at σ_{vo} (e_o) =** 1.002 **Recompression index (C_r) =** 0.04

Washington State Department of Transportation

Pressure: 250 psf **TEST READINGS** **Load No. 1**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.18862	39	140.0021	0.19481
2	0.0125	0.18855	40	150.0019	0.19484
3	0.0166	0.18851	41	160.0018	0.19484
4	0.0208	0.18851	42	170.0016	0.19484
5	0.0250	0.18848	43	180.0015	0.19488
6	0.0291	0.18841	44	190.0013	0.19488
7	0.0333	0.18841	45	200.0012	0.19488
8	0.0375	0.18841	46	210.0010	0.19488
9	0.0416	0.18844	47	220.0009	0.19491
10	0.0458	0.18851	48	230.0007	0.19491
11	0.0500	0.18862	49	240.0006	0.19491
12	0.0541	0.18872	50	250.0004	0.19494
13	0.0583	0.18882	51	260.0003	0.19494
14	0.0708	0.18903	52	270.0001	0.19494
15	0.0875	0.18909	53	280.0041	0.19498
16	0.1708	0.18978	54	290.0040	0.19494
17	0.2541	0.19015	55	300.0038	0.19494
18	0.3375	0.19098	56	310.0037	0.19494
19	0.4208	0.19135	57	320.0035	0.19494
20	0.5041	0.19173	58	330.0034	0.19494
21	0.7541	0.1921	59	340.0032	0.19494
22	1.0041	0.19251	60	350.0031	0.19491
23	2.0041	0.19351	61	360.0029	0.19491
24	5.0041	0.19423	62	370.0028	0.19491
25	10.0040	0.19436	63	380.0026	0.19491
26	15.0039	0.19443	64	390.0025	0.19491
27	20.0038	0.1945	65	400.0023	0.19491
28	30.0037	0.19457	66	410.0022	0.19491
29	40.0036	0.19464	67	420.0020	0.19491
30	50.0034	0.19467	68	430.0019	0.19491
31	60.0033	0.19467	69	440.0017	0.19491
32	70.0031	0.1947	70	450.0016	0.19491
33	80.0030	0.19474	71	460.0014	0.19491
34	90.0028	0.19477	72	470.0013	0.19491
35	100.0027	0.19477	73	480.0012	0.19494
36	110.0025	0.19481	74	490.0010	0.19494
37	120.0024	0.19481	75	500.0009	0.19494
38	130.0022	0.19481	76	510.0007	0.19494



Pressure: 250 psf — **TEST READINGS (continued)** — **Load No. 1**

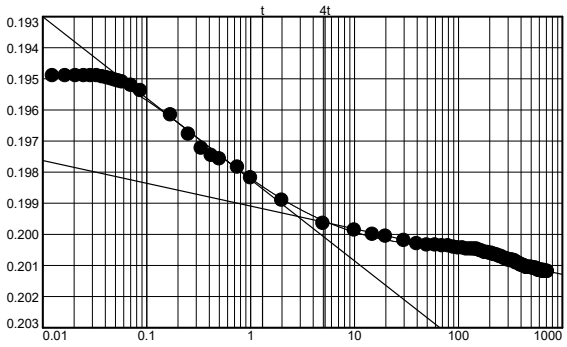
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0006	0.19494	87	620.0034	0.19494	97	720.0019	0.19491
78	530.0004	0.19494	88	630.0032	0.19494	98	720.1022	0.19491
79	540.0003	0.19494	89	640.0031	0.19494			
80	550.0002	0.19494	90	650.0029	0.19494			
81	560.0000	0.19494	91	660.0028	0.19494			
82	570.0041	0.19494	92	670.0026	0.19494			
83	580.0039	0.19494	93	680.0025	0.19494			
84	590.0038	0.19494	94	690.0024	0.19494			
85	600.0036	0.19494	95	700.0022	0.19494			
86	610.0035	0.19494	96	710.0021	0.19491			

Void Ratio = 1.035 **Compression =** 0.6%

D_0 = 0.1917 **D_{50} =** 0.1930 **D_{100} =** 0.1942 **C_v at 1.71 min. =** 0.286 ft.^{2}/day **C_α =** 0.001

Pressure: 500 psf — **TEST READINGS** — **Load No. 2**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.19491	23	2.0041	0.19891
2	0.0125	0.19491	24	5.0041	0.19966
3	0.0166	0.19491	25	10.0040	0.19987
4	0.0208	0.19491	26	15.0039	0.20001
5	0.0250	0.19491	27	20.0038	0.20007
6	0.0291	0.19491	28	30.0037	0.20021
7	0.0333	0.19491	29	40.0036	0.20031
8	0.0375	0.19494	30	50.0034	0.20035
9	0.0416	0.19498	31	60.0033	0.20035
10	0.0458	0.19501	32	70.0031	0.20038
11	0.0500	0.19505	33	80.0030	0.20038
12	0.0541	0.19508	34	90.0029	0.20042
13	0.0583	0.19511	35	100.0027	0.20045
14	0.0708	0.19522	36	110.0026	0.20045
15	0.0875	0.19539	37	120.0024	0.20048
16	0.1708	0.19617	38	130.0023	0.20048
17	0.2541	0.19679	39	140.0022	0.20048
18	0.3375	0.19724	40	150.0020	0.20048
19	0.4208	0.19747	41	160.0019	0.20052
20	0.5041	0.19758	42	170.0017	0.20055
21	0.7541	0.19785	43	180.0016	0.20059
22	1.0041	0.19819	44	190.0014	0.20059



Pressure: 500 psf | **TEST READINGS (continued)** | **Load No. 2**

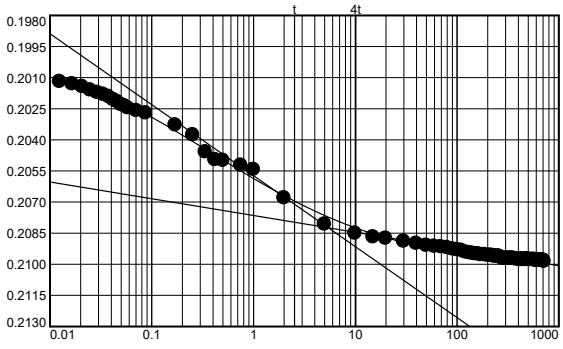
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0013	0.20062	63	380.0027	0.20093	81	560.0000	0.2011
46	210.0011	0.20062	64	390.0026	0.20096	82	570.0041	0.20113
47	220.0010	0.20066	65	400.0024	0.201	83	580.0039	0.20113
48	230.0008	0.20066	66	410.0023	0.201	84	590.0037	0.20117
49	240.0007	0.20069	67	420.0021	0.201	85	600.0036	0.20117
50	250.0005	0.20072	68	430.0020	0.20103	86	610.0035	0.20117
51	260.0004	0.20072	69	440.0019	0.20103	87	620.0033	0.20117
52	270.0002	0.20076	70	450.0017	0.20107	88	630.0031	0.20117
53	280.0001	0.20079	71	460.0016	0.20107	89	640.0030	0.20117
54	290.0041	0.20079	72	470.0014	0.20107	90	650.0029	0.2012
55	300.0039	0.20083	73	480.0013	0.20107	91	660.0027	0.20117
56	310.0038	0.20083	74	490.0011	0.20107	92	670.0025	0.2012
57	320.0036	0.20086	75	500.0010	0.20107	93	680.0024	0.2012
58	330.0035	0.20083	76	510.0008	0.20107	94	690.0022	0.2012
59	340.0033	0.20086	77	520.0007	0.2011	95	700.0021	0.2012
60	350.0032	0.20086	78	530.0005	0.2011	96	710.0019	0.2012
61	360.0030	0.20093	79	540.0003	0.2011	97	720.0018	0.2012
62	370.0029	0.20093	80	550.0002	0.2011	98	720.0520	0.2012

Void Ratio = 1.022 **Compression =** 1.3%

D_0 = 0.1973 **D_{50} =** 0.1984 **D_{100} =** 0.1994 **C_v at 1.20 min. =** 0.403 ft.^{2}/day **C_α =** 0.001

Pressure: 1000 psf | **TEST READINGS** | **Load No. 3**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.2012	15	0.0875	0.20271
2	0.0125	0.2012	16	0.1708	0.20329
3	0.0166	0.20131	17	0.2541	0.20377
4	0.0208	0.20144	18	0.3375	0.20459
5	0.0250	0.20161	19	0.4208	0.20496
6	0.0291	0.20172	20	0.5041	0.205
7	0.0333	0.20182	21	0.7541	0.20524
8	0.0375	0.20192	22	1.0041	0.20544
9	0.0416	0.20206	23	2.0041	0.20681
10	0.0458	0.20216	24	5.0040	0.20808
11	0.0500	0.2023	25	10.0040	0.20852
12	0.0541	0.20237	26	15.0039	0.20869
13	0.0583	0.20247	27	20.0038	0.20876
14	0.0708	0.2026	28	30.0037	0.2089



Pressure: 1000 psf | **TEST READINGS (continued)** | **Load No. 3**

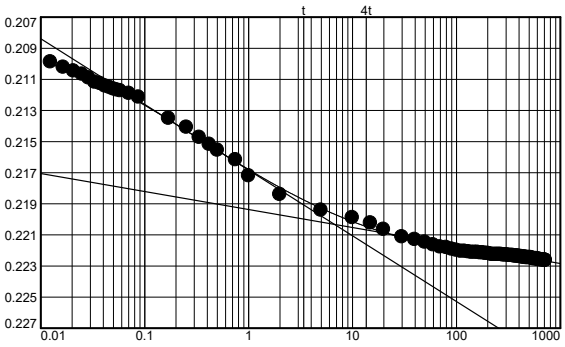
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0035	0.209	53	280.0040	0.20972	77	520.0006	0.20979
30	50.0034	0.2091	54	290.0039	0.20972	78	530.0004	0.20979
31	60.0032	0.20914	55	300.0037	0.20972	79	540.0003	0.20979
32	70.0031	0.20917	56	310.0036	0.20972	80	550.0002	0.20979
33	80.0029	0.20921	57	320.0034	0.20972	81	560.0000	0.20979
34	90.0028	0.20927	58	330.0033	0.20972	82	570.0041	0.20979
35	100.0026	0.20931	59	340.0031	0.20972	83	580.0039	0.20979
36	110.0025	0.20934	60	350.0030	0.20972	84	590.0038	0.20982
37	120.0023	0.20941	61	360.0028	0.20972	85	600.0037	0.20982
38	130.0022	0.20945	62	370.0027	0.20975	86	610.0035	0.20979
39	140.0020	0.20948	63	380.0025	0.20975	87	620.0034	0.20982
40	150.0019	0.20951	64	390.0024	0.20975	88	630.0032	0.20982
41	160.0017	0.20951	65	400.0022	0.20975	89	640.0031	0.20982
42	170.0016	0.20955	66	410.0021	0.20979	90	650.0030	0.20982
43	180.0014	0.20955	67	420.0019	0.20979	91	660.0028	0.20982
44	190.0012	0.20955	68	430.0018	0.20975	92	670.0027	0.20982
45	200.0011	0.20958	69	440.0017	0.20979	93	680.0026	0.20982
46	210.0009	0.20958	70	450.0016	0.20979	94	690.0024	0.20982
47	220.0008	0.20958	71	460.0014	0.20979	95	700.0023	0.20982
48	230.0006	0.20962	72	470.0013	0.20979	96	710.0022	0.20982
49	240.0005	0.20962	73	480.0011	0.20979	97	720.0020	0.20986
50	250.0003	0.20962	74	490.0010	0.20975	98	720.0814	0.20986
51	260.0002	0.20962	75	500.0009	0.20979			
52	270.0000	0.20968	76	510.0007	0.20979			

Void Ratio = 1.004 **Compression =** 2.1%

D_0 = 0.2057 D_{50} = 0.2070 D_{100} = 0.2082 C_v **at 2.52 min. =** 0.189 $ft.^2/day$ C_α = 0.002

Pressure: 2000 psf **TEST READINGS** **Load No. 4**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.20986	39	140.0022	0.22213
2	0.0125	0.20989	40	150.0021	0.22213
3	0.0166	0.21023	41	160.0020	0.22213
4	0.0208	0.21047	42	170.0018	0.22217
5	0.0250	0.21068	43	180.0017	0.22217
6	0.0291	0.21092	44	190.0015	0.2222
7	0.0333	0.21119	45	200.0014	0.2222
8	0.0375	0.21129	46	210.0013	0.22224
9	0.0416	0.21143	47	220.0011	0.22227
10	0.0458	0.21153	48	230.0010	0.22227
11	0.0500	0.21163	49	240.0008	0.22227
12	0.0541	0.2117	50	250.0007	0.22227
13	0.0583	0.21174	51	260.0006	0.22227
14	0.0708	0.21191	52	270.0004	0.22227
15	0.0875	0.21215	53	280.0003	0.22231
16	0.1708	0.21352	54	290.0001	0.22231
17	0.2541	0.2141	55	300.0042	0.22231
18	0.3375	0.21475	56	310.0040	0.22231
19	0.4208	0.21519	57	320.0039	0.22234
20	0.5041	0.21557	58	330.0037	0.22234
21	0.7541	0.21618	59	340.0036	0.22234
22	1.0041	0.21721	60	350.0034	0.22234
23	2.0041	0.21841	61	360.0033	0.22237
24	5.0041	0.21943	62	370.0031	0.22237
25	10.0040	0.21991	63	380.0030	0.22237
26	15.0039	0.22025	64	390.0029	0.22237
27	20.0039	0.22066	65	400.0027	0.22241
28	30.0037	0.22114	66	410.0026	0.22241
29	40.0036	0.22131	67	420.0024	0.22241
30	50.0034	0.22149	68	430.0023	0.22244
31	60.0033	0.22166	69	440.0021	0.22244
32	70.0032	0.22179	70	450.0020	0.22244
33	80.0030	0.22183	71	460.0018	0.22244
34	90.0029	0.22193	72	470.0016	0.22248
35	100.0028	0.222	73	480.0015	0.22248
36	110.0026	0.22207	74	490.0013	0.22248
37	120.0025	0.22207	75	500.0012	0.22248
38	130.0023	0.2221	76	510.0011	0.22248



Pressure: 2000 psf **TEST READINGS (continued)** **Load No. 4**

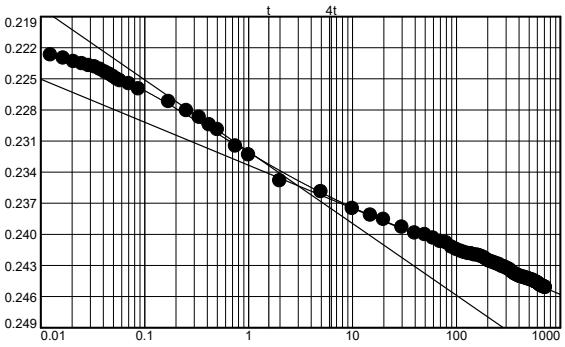
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0009	0.22248	87	620.0036	0.22258	97	720.0020	0.22265
78	530.0008	0.22251	88	630.0034	0.22258	98	720.1190	0.22265
79	540.0006	0.22251	89	640.0033	0.22261			
80	550.0005	0.22255	90	650.0031	0.22261			
81	560.0003	0.22255	91	660.0030	0.22261			
82	570.0002	0.22255	92	670.0028	0.22261			
83	580.0042	0.22255	93	680.0027	0.22261			
84	590.0040	0.22255	94	690.0025	0.22261			
85	600.0039	0.22258	95	700.0024	0.22265			
86	610.0037	0.22258	96	710.0022	0.22265			

Void Ratio = 0.978 **Compression =** 3.4%

D_0 = 0.2170 **D_{50} =** 0.2187 **D_{100} =** 0.2203 **C_v at 3.22 min. =** 0.145 ft.^{2}/day **C_α =** 0.002

Pressure: 4000 psf **TEST READINGS** **Load No. 5**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.22265	23	2.0041	0.23486
2	0.0125	0.22272	24	5.0040	0.23592
3	0.0166	0.22302	25	10.0040	0.23753
4	0.0208	0.22337	26	15.0039	0.23818
5	0.0250	0.22357	27	20.0038	0.23859
6	0.0291	0.22374	28	30.0037	0.23934
7	0.0333	0.22388	29	40.0035	0.23989
8	0.0375	0.22412	30	50.0034	0.24006
9	0.0416	0.22436	31	60.0032	0.2404
10	0.0458	0.22456	32	70.0031	0.24071
11	0.0500	0.2248	33	80.0029	0.24084
12	0.0541	0.22504	34	90.0028	0.24125
13	0.0583	0.22521	35	100.0026	0.24146
14	0.0708	0.22549	36	110.0025	0.24166
15	0.0875	0.226	37	120.0023	0.24177
16	0.1708	0.22723	38	130.0022	0.24187
17	0.2541	0.22809	39	140.0020	0.2419
18	0.3374	0.22874	40	150.0019	0.24201
19	0.4208	0.22945	41	160.0017	0.24204
20	0.5041	0.22993	42	170.0016	0.24211
21	0.7541	0.23151	43	180.0014	0.24221
22	1.0041	0.23236	44	190.0012	0.24235



Pressure: 4000 psf | **TEST READINGS (continued)** | **Load No. 5**

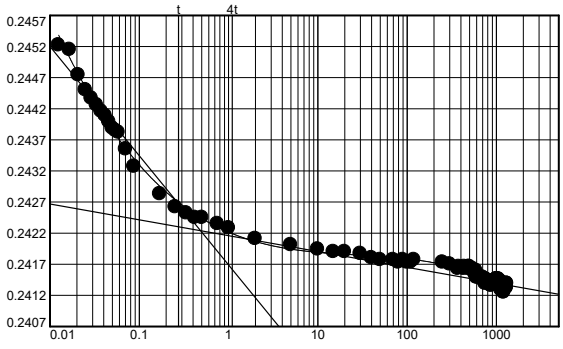
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0011	0.24252	63	380.0025	0.24392	81	560.0042	0.2445
46	210.0009	0.24262	64	390.0024	0.24396	82	570.0040	0.24457
47	220.0008	0.24269	65	400.0023	0.24403	83	580.0039	0.24461
48	230.0006	0.24276	66	410.0021	0.24406	84	590.0037	0.24464
49	240.0005	0.24283	67	420.0020	0.24409	85	600.0036	0.24467
50	250.0003	0.2429	68	430.0018	0.24413	86	610.0035	0.24471
51	260.0002	0.24293	69	440.0017	0.24416	87	620.0033	0.24478
52	270.0041	0.24307	70	450.0016	0.2442	88	630.0032	0.24481
53	280.0040	0.24314	71	460.0014	0.2442	89	640.0030	0.24491
54	290.0038	0.24317	72	470.0013	0.24426	90	650.0029	0.24495
55	300.0037	0.24324	73	480.0011	0.2443	91	660.0027	0.24498
56	310.0035	0.24331	74	490.0010	0.2443	92	670.0026	0.24502
57	320.0034	0.24338	75	500.0008	0.24433	93	680.0024	0.24505
58	330.0033	0.24344	76	510.0007	0.24437	94	690.0023	0.24505
59	340.0031	0.24361	77	520.0005	0.2444	95	700.0022	0.24509
60	350.0030	0.24368	78	530.0004	0.24444	96	710.0020	0.24512
61	360.0028	0.24379	79	540.0003	0.24444	97	720.0019	0.24515
62	370.0027	0.24385	80	550.0001	0.24447	98	720.1397	0.24515

Void Ratio = 0.932 **Compression =** 5.7%

D_0 = 0.2300 D_{50} = 0.2327 D_{100} = 0.2353 C_v **at 1.24 min. =** 0.362 ft.^{2}/day C_α = 0.008

Pressure: 2000 psf | **TEST READINGS** | **Load No. 6**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.24515	15	0.0875	0.24327
2	0.0125	0.24522	16	0.1708	0.24283
3	0.0166	0.24515	17	0.2541	0.24262
4	0.0208	0.24474	18	0.3375	0.24252
5	0.0250	0.2445	19	0.4208	0.24245
6	0.0291	0.24437	20	0.5041	0.24245
7	0.0333	0.24426	21	0.7541	0.24235
8	0.0375	0.24416	22	1.0041	0.24228
9	0.0416	0.24409	23	2.0041	0.24211
10	0.0458	0.24399	24	5.0041	0.24201
11	0.0500	0.24389	25	10.0040	0.24194
12	0.0541	0.24385	26	15.0039	0.2419
13	0.0583	0.24382	27	20.0038	0.2419
14	0.0708	0.24355	28	30.0037	0.24187



Pressure: 2000 psf | **TEST READINGS (continued)** | **Load No. 6**

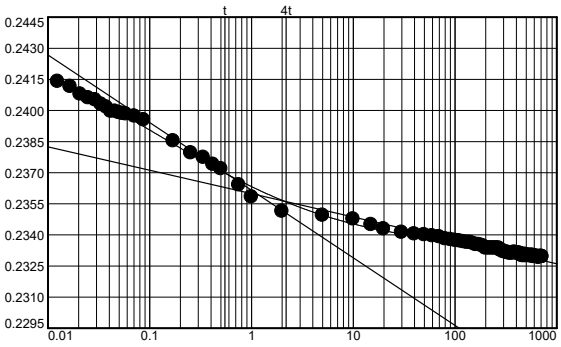
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0036	0.2418	53	610.0035	0.24149	77	1010.0016	0.24146
30	50.0034	0.24177	54	620.0034	0.24153	78	1020.0014	0.24143
31	70.0032	0.24177	55	630.0032	0.24149	79	1030.0013	0.24143
32	80.0030	0.24173	56	650.0029	0.24149	80	1040.0011	0.24146
33	90.0029	0.24177	57	690.0023	0.24146	81	1060.0008	0.24146
34	100.0027	0.24173	58	700.0022	0.24149	82	1070.0007	0.24143
35	110.0026	0.24173	59	740.0015	0.24146	83	1080.0005	0.24139
36	120.0024	0.24177	60	750.0014	0.24139	84	1090.0004	0.24143
37	250.0005	0.24173	61	760.0012	0.24146	85	1100.0002	0.24139
38	300.0039	0.2417	62	810.0005	0.24139	86	1110.0001	0.24143
39	370.0029	0.24163	63	820.0003	0.24143	87	1120.0041	0.24136
40	380.0028	0.24166	64	830.0002	0.24143	88	1130.0040	0.24129
41	430.0020	0.24163	65	840.0000	0.24139	89	1170.0034	0.24136
42	440.0019	0.24166	66	850.0040	0.24143	90	1180.0033	0.24129
43	480.0013	0.24163	67	860.0039	0.24143	91	1190.0031	0.24129
44	490.0011	0.24166	68	870.0037	0.24136	92	1200.0030	0.24125
45	500.0010	0.24166	69	880.0036	0.24136	93	1220.0027	0.24125
46	540.0004	0.24163	70	940.0026	0.24143	94	1230.0026	0.24132
47	550.0002	0.2416	71	950.0025	0.24139	95	1240.0024	0.24129
48	560.0000	0.2416	72	960.0023	0.24143	96	1280.0019	0.24136
49	570.0041	0.24156	73	970.0022	0.24143	97	1290.0017	0.24132
50	580.0039	0.24156	74	980.0020	0.24139	98	1300.0016	0.24132
51	590.0038	0.2416	75	990.0019	0.24139	99	1310.0014	0.24139
52	600.0036	0.24149	76	1000.0017	0.24146	100	1312.1017	0.24139

Void Ratio = 0.939 **Compression =** 5.3%

D_0 = 0.2432 **D_{50} =** 0.2427 **D_{100} =** 0.2422 **C_V at 0.26 min. =** 1.678 $ft.^2/day$

Pressure: 500 psf	TEST READINGS	Load No. 7

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.24139	39	140.0021	0.23363
2	0.0125	0.24139	40	150.0020	0.23359
3	0.0166	0.24115	41	160.0019	0.23352
4	0.0208	0.24078	42	170.0017	0.23352
5	0.0250	0.2406	43	180.0016	0.23349
6	0.0291	0.2405	44	190.0014	0.23346
7	0.0333	0.2403	45	200.0013	0.23335
8	0.0375	0.24016	46	210.0011	0.23335
9	0.0417	0.23995	47	220.0010	0.23335
10	0.0458	0.23995	48	230.0008	0.23335
11	0.0500	0.23989	49	240.0007	0.23335
12	0.0541	0.23985	50	250.0006	0.23335
13	0.0583	0.23982	51	260.0004	0.23335
14	0.0708	0.23972	52	270.0003	0.23335
15	0.0874	0.23954	53	280.0001	0.23325
16	0.1708	0.23852	54	290.0041	0.23325
17	0.2541	0.23794	55	300.0040	0.23318
18	0.3374	0.23773	56	310.0039	0.23318
19	0.4208	0.23739	57	320.0037	0.23315
20	0.5041	0.23718	58	330.0036	0.23315
21	0.7541	0.2364	59	340.0034	0.23311
22	1.0041	0.23582	60	350.0033	0.23311
23	2.0041	0.23513	61	360.0031	0.23311
24	5.0040	0.23493	62	370.0030	0.23311
25	10.0040	0.23476	63	380.0028	0.23315
26	15.0039	0.23448	64	390.0027	0.23315
27	20.0038	0.23428	65	400.0025	0.23311
28	30.0037	0.23411	66	410.0024	0.23311
29	40.0036	0.23404	67	420.0022	0.23311
30	50.0034	0.234	68	430.0021	0.23311
31	60.0033	0.23394	69	440.0019	0.23308
32	70.0031	0.2339	70	450.0018	0.23301
33	80.0030	0.2338	71	460.0016	0.23301
34	90.0029	0.23376	72	470.0015	0.23298
35	100.0027	0.23373	73	480.0013	0.23305
36	110.0026	0.2337	74	490.0012	0.23305
37	120.0024	0.23366	75	500.0010	0.23298
38	130.0023	0.23363	76	510.0009	0.23301



Pressure: 500 psf — **TEST READINGS (continued)** — **Load No. 7**

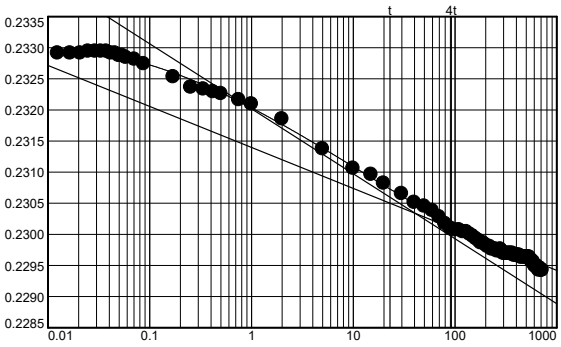
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0007	0.23301	87	620.0034	0.23294	97	720.0018	0.23294
78	530.0006	0.23301	88	630.0032	0.23294	98	720.0896	0.23294
79	540.0004	0.23298	89	640.0031	0.23294			
80	550.0003	0.23298	90	650.0029	0.23294			
81	560.0001	0.23301	91	660.0028	0.23291			
82	570.0042	0.23298	92	670.0026	0.23291			
83	580.0040	0.23301	93	680.0024	0.23294			
84	590.0038	0.23294	94	690.0023	0.23294			
85	600.0037	0.23294	95	700.0022	0.23294			
86	610.0035	0.23298	96	710.0020	0.23294			

Void Ratio = 0.957 **Compression =** 4.4%

D_0 = 0.2384 **D_{50} =** 0.2371 **D_{100} =** 0.2359 **C_v at 0.48 min. =** 0.935 ft.^{2}/day

Pressure: 300 psf — **TEST READINGS** — **Load No. 8**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.23294	23	2.0041	0.23185
2	0.0125	0.23291	24	5.0040	0.23137
3	0.0166	0.23291	25	10.0040	0.23106
4	0.0208	0.23291	26	15.0039	0.23096
5	0.0250	0.23294	27	20.0038	0.23082
6	0.0291	0.23294	28	30.0037	0.23065
7	0.0333	0.23294	29	40.0035	0.23051
8	0.0375	0.23294	30	50.0034	0.23045
9	0.0416	0.23291	31	60.0032	0.23038
10	0.0458	0.23291	32	70.0030	0.23028
11	0.0500	0.23287	33	80.0029	0.23017
12	0.0541	0.23287	34	90.0027	0.2301
13	0.0583	0.23284	35	100.0026	0.23007
14	0.0708	0.23281	36	110.0024	0.23007
15	0.0875	0.23274	37	120.0023	0.23004
16	0.1708	0.23253	38	130.0021	0.23004
17	0.2541	0.23236	39	140.0020	0.23
18	0.3374	0.23233	40	150.0018	0.22997
19	0.4208	0.23229	41	160.0017	0.22993
20	0.5041	0.23226	42	170.0015	0.2299
21	0.7541	0.23216	43	180.0014	0.22986
22	1.0041	0.23209	44	190.0012	0.22986



Pressure: 300 psf | **TEST READINGS (continued)** | **Load No. 8**

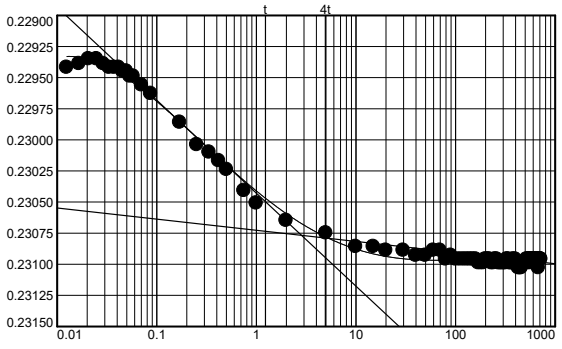
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0010	0.22983	63	380.0024	0.22966	81	560.0039	0.22959
46	210.0009	0.2298	64	390.0022	0.22966	82	570.0037	0.22956
47	220.0007	0.2298	65	400.0021	0.22966	83	580.0036	0.22956
48	230.0006	0.22976	66	410.0019	0.22966	84	590.0035	0.22956
49	240.0004	0.22976	67	420.0018	0.22966	85	600.0033	0.22952
50	250.0002	0.22976	68	430.0016	0.22966	86	610.0032	0.22949
51	260.0001	0.22973	69	440.0015	0.22963	87	620.0030	0.22949
52	270.0041	0.22973	70	450.0013	0.22963	88	630.0029	0.22949
53	280.0040	0.22976	71	460.0012	0.22963	89	640.0028	0.22949
54	290.0038	0.22973	72	470.0010	0.22963	90	650.0026	0.22945
55	300.0036	0.22969	73	480.0009	0.22963	91	660.0025	0.22945
56	310.0035	0.22969	74	490.0007	0.22963	92	670.0023	0.22942
57	320.0033	0.22969	75	500.0006	0.22963	93	680.0022	0.22945
58	330.0032	0.22969	76	510.0004	0.22963	94	690.0020	0.22945
59	340.0030	0.22969	77	520.0003	0.22963	95	700.0019	0.22942
60	350.0029	0.22969	78	530.0001	0.22963	96	710.0018	0.22942
61	360.0027	0.22969	79	540.0000	0.22963	97	720.0016	0.22942
62	370.0025	0.22969	80	550.0040	0.22959	98	720.0352	0.22942

Void Ratio = 0.964 **Compression =** 4.1%

D_0 = 0.2313 **D_{50} =** 0.2308 **D_{100} =** 0.2303 **C_v at 18.64 min. =** 0.024 ft.^{2}/day

Pressure: 500 psf | **TEST READINGS** | **Load No. 9**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.22942	15	0.0874	0.22963
2	0.0125	0.22942	16	0.1708	0.22986
3	0.0166	0.22939	17	0.2541	0.23004
4	0.0208	0.22935	18	0.3374	0.2301
5	0.0250	0.22935	19	0.4208	0.23017
6	0.0291	0.22939	20	0.5041	0.23024
7	0.0333	0.22942	21	0.7541	0.23041
8	0.0374	0.22942	22	1.0041	0.23051
9	0.0416	0.22942	23	2.0041	0.23065
10	0.0458	0.22945	24	5.0040	0.23075
11	0.0499	0.22945	25	10.0040	0.23086
12	0.0541	0.22949	26	15.0039	0.23086
13	0.0583	0.22949	27	20.0038	0.23089
14	0.0708	0.22956	28	30.0037	0.23089



Pressure: 500 psf | **TEST READINGS (continued)** | **Load No. 9**

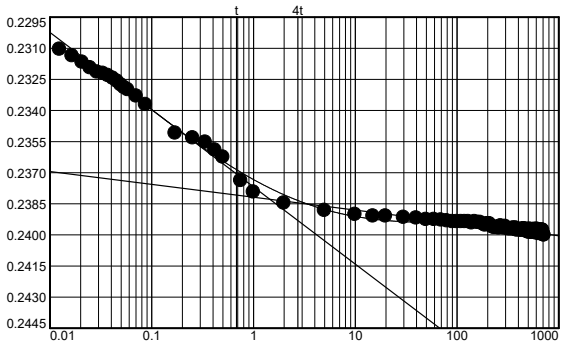
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0036	0.23093	53	280.0001	0.23099	77	520.0008	0.23096
30	50.0034	0.23093	54	290.0041	0.23099	78	530.0006	0.23099
31	60.0033	0.23089	55	300.0039	0.23099	79	540.0005	0.23096
32	70.0031	0.23089	56	310.0038	0.23099	80	550.0003	0.23096
33	80.0030	0.23096	57	320.0036	0.23099	81	560.0002	0.23099
34	90.0028	0.23093	58	330.0035	0.23096	82	570.0000	0.23096
35	100.0027	0.23096	59	340.0033	0.23096	83	580.0041	0.23096
36	110.0025	0.23096	60	350.0032	0.23099	84	590.0039	0.23096
37	120.0024	0.23096	61	360.0030	0.23099	85	600.0038	0.23096
38	130.0022	0.23096	62	370.0029	0.23099	86	610.0036	0.23096
39	140.0021	0.23096	63	380.0028	0.23096	87	620.0035	0.23096
40	150.0020	0.23096	64	390.0026	0.23099	88	630.0034	0.23096
41	160.0018	0.23096	65	400.0025	0.23096	89	640.0032	0.23096
42	170.0017	0.23099	66	410.0023	0.23099	90	650.0031	0.23096
43	180.0015	0.23099	67	420.0022	0.23099	91	660.0029	0.23096
44	190.0014	0.23099	68	430.0020	0.23103	92	670.0028	0.23096
45	200.0012	0.23096	69	440.0019	0.23103	93	680.0026	0.23103
46	210.0011	0.23096	70	450.0017	0.23103	94	690.0025	0.23096
47	220.0009	0.23096	71	460.0016	0.23103	95	700.0024	0.23096
48	230.0008	0.23099	72	470.0015	0.23099	96	710.0022	0.23096
49	240.0006	0.23099	73	480.0013	0.23099	97	720.0021	0.23096
50	250.0005	0.23096	74	490.0012	0.23099	98	720.0399	0.23096
51	260.0003	0.23096	75	500.0010	0.23099			
52	270.0002	0.23099	76	510.0009	0.23099			

Void Ratio = 0.961 **Compression =** 4.2%

D_0 = 0.2302 **D_{50} =** 0.2305 **D_{100} =** 0.2308 **C_v at 1.21 min. =** 0.375 ft.^{2}/day **C_α =** 0.000

Pressure: 2000 psf **TEST READINGS** **Load No. 10**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.23096	39	140.0020	0.23944
2	0.0125	0.23106	40	150.0019	0.23937
3	0.0166	0.23137	41	160.0017	0.23941
4	0.0208	0.23168	42	170.0016	0.23941
5	0.0250	0.23195	43	180.0014	0.23948
6	0.0291	0.23216	44	190.0013	0.23954
7	0.0333	0.23222	45	200.0011	0.23948
8	0.0374	0.23233	46	210.0010	0.23948
9	0.0416	0.23246	47	220.0008	0.23961
10	0.0458	0.2326	48	230.0007	0.23965
11	0.0499	0.23277	49	240.0005	0.23965
12	0.0541	0.23291	50	250.0004	0.23965
13	0.0583	0.23301	51	260.0002	0.23968
14	0.0708	0.23332	52	270.0001	0.23958
15	0.0874	0.23373	53	280.0041	0.23965
16	0.1708	0.2351	54	290.0039	0.23968
17	0.2541	0.23534	55	300.0038	0.23961
18	0.3374	0.23554	56	310.0036	0.23968
19	0.4208	0.23592	57	320.0035	0.23972
20	0.5041	0.23626	58	330.0033	0.23972
21	0.7541	0.23739	59	340.0032	0.23972
22	1.0041	0.23794	60	350.0030	0.23972
23	2.0041	0.23848	61	360.0029	0.23968
24	5.0040	0.23883	62	370.0027	0.23975
25	10.0040	0.23903	63	380.0025	0.23968
26	15.0039	0.2391	64	390.0024	0.23978
27	20.0038	0.2391	65	400.0022	0.23975
28	30.0037	0.23917	66	410.0021	0.23975
29	40.0036	0.2392	67	420.0019	0.23978
30	50.0034	0.23927	68	430.0018	0.23978
31	60.0033	0.23927	69	440.0016	0.23978
32	70.0031	0.2393	70	450.0015	0.23972
33	80.0029	0.23934	71	460.0013	0.23972
34	90.0028	0.23937	72	470.0012	0.23975
35	100.0026	0.23937	73	480.0010	0.23978
36	110.0025	0.23937	74	490.0009	0.23985
37	120.0023	0.23937	75	500.0007	0.23975
38	130.0022	0.23937	76	510.0006	0.23989



Pressure: 2000 psf | **TEST READINGS (continued)** | **Load No. 10**

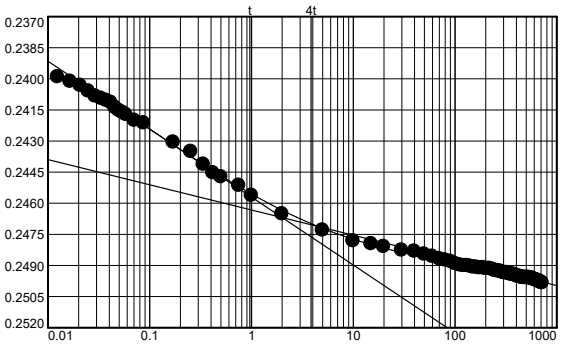
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0004	0.23975	87	620.0031	0.23975	97	720.0016	0.24002
78	530.0003	0.23975	88	630.0029	0.23992	98	720.1101	0.24002
79	540.0001	0.23989	89	640.0028	0.23995			
80	550.0041	0.23989	90	650.0026	0.23978			
81	560.0040	0.23989	91	660.0025	0.23989			
82	570.0038	0.23989	92	670.0023	0.23995			
83	580.0037	0.23975	93	680.0022	0.23978			
84	590.0035	0.23989	94	690.0020	0.23978			
85	600.0034	0.23992	95	700.0019	0.23978			
86	610.0032	0.23975	96	710.0017	0.23999			

Void Ratio = 0.942 **Compression =** 5.1%

D_0 = 0.2354 **D_{50} =** 0.2368 **D_{100} =** 0.2383 **C_v at 0.67 min. =** 0.671 ft.^{2}/day **C_α =** 0.001

Pressure: 4000 psf | **TEST READINGS** | **Load No. 11**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.24002	23	2.0041	0.24652
2	0.0125	0.23992	24	5.0040	0.24731
3	0.0166	0.24013	25	10.0040	0.24782
4	0.0208	0.24033	26	15.0039	0.24796
5	0.0250	0.2406	27	20.0038	0.2481
6	0.0291	0.24084	28	30.0037	0.24827
7	0.0333	0.24095	29	40.0035	0.24833
8	0.0374	0.24105	30	50.0034	0.24847
9	0.0416	0.24115	31	60.0032	0.24857
10	0.0458	0.24139	32	70.0031	0.24868
11	0.0499	0.24153	33	80.0029	0.24875
12	0.0541	0.24163	34	90.0028	0.24881
13	0.0583	0.24173	35	100.0026	0.24892
14	0.0708	0.24201	36	110.0025	0.24898
15	0.0874	0.24214	37	120.0023	0.24902
16	0.1708	0.24307	38	130.0022	0.24902
17	0.2541	0.24351	39	140.0020	0.24905
18	0.3374	0.24413	40	150.0019	0.24909
19	0.4208	0.24454	41	160.0017	0.24909
20	0.5041	0.24474	42	170.0016	0.24912
21	0.7541	0.24515	43	180.0014	0.24912
22	1.0041	0.24563	44	190.0013	0.24912



Pressure: 4000 psf | **TEST READINGS (continued)** | **Load No. 11**

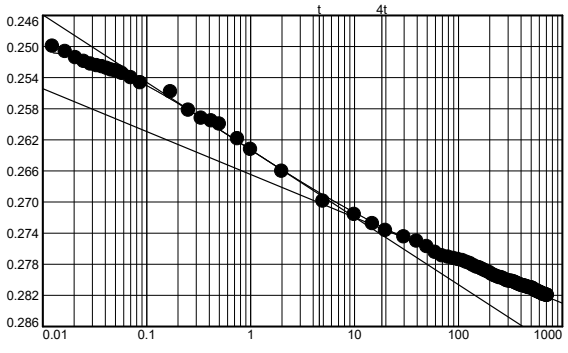
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0011	0.24916	63	380.0026	0.24946	81	560.0000	0.24963
46	210.0010	0.24916	64	390.0025	0.24946	82	570.0041	0.24963
47	220.0008	0.24916	65	400.0023	0.2495	83	580.0039	0.24963
48	230.0007	0.24919	66	410.0022	0.24953	84	590.0037	0.24967
49	240.0005	0.24922	67	420.0020	0.24953	85	600.0036	0.24967
50	250.0004	0.24926	68	430.0019	0.24953	86	610.0035	0.2497
51	260.0002	0.24926	69	440.0018	0.24957	87	620.0033	0.2497
52	270.0001	0.24929	70	450.0016	0.24957	88	630.0031	0.2497
53	280.0041	0.24929	71	460.0015	0.24957	89	640.0030	0.24974
54	290.0040	0.24933	72	470.0013	0.2496	90	650.0029	0.24974
55	300.0038	0.24936	73	480.0012	0.2496	91	660.0027	0.24977
56	310.0037	0.24936	74	490.0010	0.2496	92	670.0025	0.24977
57	320.0035	0.24936	75	500.0009	0.2496	93	680.0024	0.24977
58	330.0034	0.24939	76	510.0008	0.2496	94	690.0022	0.24981
59	340.0032	0.24939	77	520.0006	0.2496	95	700.0021	0.24981
60	350.0031	0.24943	78	530.0005	0.2496	96	710.0019	0.24984
61	360.0029	0.24943	79	540.0003	0.2496	97	720.0018	0.24984
62	370.0028	0.24943	80	550.0002	0.24963	98	720.0854	0.24984

Void Ratio = 0.922 **Compression =** 6.1%

D_0 = 0.2440 **D_{50} =** 0.2454 **D_{100} =** 0.2467 **C_V at 0.86 min. =** 0.512 ft.^{2}/day **C_α =** 0.002

Pressure: 8000 psf | **TEST READINGS** | **Load No. 12**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.24984	15	0.0874	0.2547
2	0.0125	0.25001	16	0.1708	0.25586
3	0.0166	0.25069	17	0.2541	0.25822
4	0.0208	0.25148	18	0.3374	0.25925
5	0.0250	0.25196	19	0.4208	0.25959
6	0.0291	0.2523	20	0.5041	0.26
7	0.0333	0.25251	21	0.7541	0.26191
8	0.0374	0.25264	22	1.0041	0.26328
9	0.0416	0.25285	23	2.0041	0.26609
10	0.0458	0.25305	24	5.0040	0.26992
11	0.0499	0.25316	25	10.0040	0.27163
12	0.0541	0.25329	26	15.0039	0.27282
13	0.0583	0.2535	27	20.0038	0.27371
14	0.0708	0.25405	28	30.0037	0.27453



Pressure: 8000 psf	TEST READINGS (continued)	Load No. 12

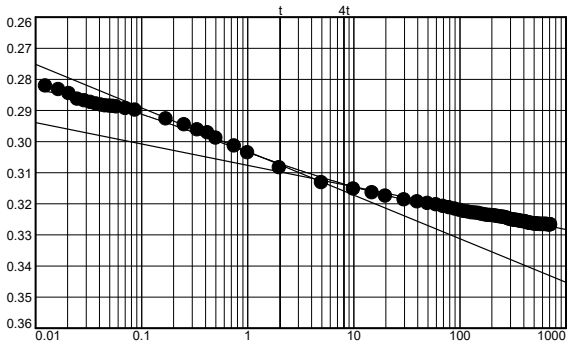
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0035	0.27508	53	280.0040	0.27997	77	520.0004	0.28114
30	50.0034	0.27577	54	290.0039	0.28011	78	530.0003	0.2812
31	60.0032	0.27652	55	300.0037	0.28018	79	540.0001	0.28131
32	70.0030	0.27696	56	310.0036	0.28021	80	550.0000	0.28141
33	80.0029	0.27713	57	320.0034	0.28021	81	560.0040	0.28144
34	90.0027	0.2773	58	330.0033	0.28025	82	570.0039	0.28148
35	100.0026	0.27744	59	340.0031	0.28031	83	580.0037	0.28155
36	110.0024	0.27758	60	350.0030	0.28035	84	590.0036	0.28158
37	120.0023	0.27778	61	360.0028	0.28045	85	600.0034	0.28158
38	130.0021	0.27795	62	370.0027	0.28052	86	610.0033	0.28168
39	140.0020	0.27819	63	380.0025	0.28059	87	620.0031	0.28172
40	150.0019	0.2784	64	390.0024	0.28066	88	630.0030	0.28172
41	160.0017	0.2785	65	400.0022	0.28073	89	640.0028	0.28179
42	170.0016	0.27867	66	410.0021	0.28076	90	650.0027	0.28185
43	180.0014	0.27884	67	420.0019	0.28079	91	660.0025	0.28185
44	190.0013	0.27898	68	430.0018	0.28083	92	670.0024	0.28192
45	200.0011	0.27912	69	440.0016	0.28086	93	680.0023	0.28196
46	210.0009	0.27932	70	450.0015	0.2809	94	690.0021	0.28196
47	220.0008	0.27946	71	460.0013	0.28096	95	700.0019	0.28199
48	230.0006	0.27956	72	470.0012	0.281	96	710.0018	0.28202
49	240.0005	0.27966	73	480.0010	0.28103	97	720.0017	0.28202
50	250.0003	0.27977	74	490.0009	0.28107	98	720.1519	0.28202
51	260.0002	0.27977	75	500.0007	0.28107			
52	270.0000	0.27987	76	510.0006	0.2811			

Void Ratio = 0.856 **Compression =** 9.3%

D_0 = 0.2644 **D_{50} =** 0.2682 **D_{100} =** 0.2720 **C_v at 3.87 min. =** 0.108 ft.^{2}/day **C_α =** 0.011

Pressure: 16000 psf | **TEST READINGS** | **Load No. 13**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.28202	39	140.0021	0.32307
2	0.0125	0.28223	40	150.0020	0.32317
3	0.0166	0.28339	41	160.0018	0.32344
4	0.0208	0.28469	42	170.0017	0.32362
5	0.0250	0.28644	43	180.0015	0.32375
6	0.0291	0.28702	44	190.0014	0.32382
7	0.0333	0.28753	45	200.0012	0.32389
8	0.0375	0.28801	46	210.0011	0.32396
9	0.0416	0.28832	47	220.0010	0.32406
10	0.0458	0.28859	48	230.0008	0.32416
11	0.0500	0.28869	49	240.0007	0.3243
12	0.0541	0.2888	50	250.0005	0.32437
13	0.0583	0.28897	51	260.0004	0.32444
14	0.0708	0.28945	52	270.0002	0.32457
15	0.0875	0.28999	53	280.0001	0.32474
16	0.1708	0.29283	54	290.0041	0.32495
17	0.2541	0.29471	55	300.0040	0.32509
18	0.3374	0.29632	56	310.0038	0.32519
19	0.4208	0.29728	57	320.0037	0.32529
20	0.5041	0.29896	58	330.0035	0.32536
21	0.7541	0.30152	59	340.0033	0.32543
22	1.0041	0.30371	60	350.0032	0.3255
23	2.0041	0.3085	61	360.0030	0.32557
24	5.0040	0.31329	62	370.0029	0.32563
25	10.0040	0.31537	63	380.0027	0.32574
26	15.0039	0.31657	64	390.0026	0.3258
27	20.0038	0.31763	65	400.0024	0.32584
28	30.0037	0.31883	66	410.0023	0.32591
29	40.0036	0.31951	67	420.0021	0.32594
30	50.0034	0.32002	68	430.0020	0.32604
31	60.0033	0.32043	69	440.0018	0.32625
32	70.0031	0.32091	70	450.0017	0.32628
33	80.0030	0.32139	71	460.0015	0.32635
34	90.0028	0.32177	72	470.0014	0.32642
35	100.0027	0.32218	73	480.0012	0.32645
36	110.0025	0.32256	74	490.0010	0.32652
37	120.0024	0.32273	75	500.0009	0.32652
38	130.0022	0.32297	76	510.0007	0.32656



Pressure: 16000 psf — **TEST READINGS (continued)** — **Load No. 13**

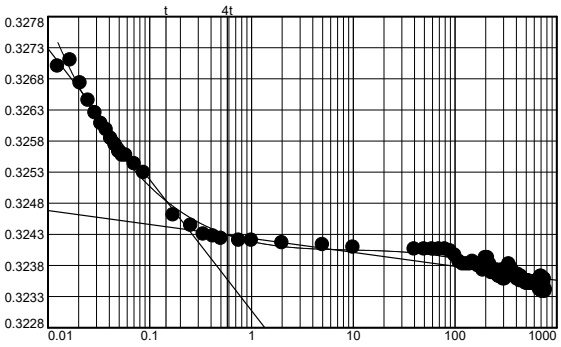
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0006	0.32659	87	620.0032	0.32676	97	720.0017	0.32687
78	530.0004	0.32666	88	630.0031	0.32676	98	720.1728	0.32687
79	540.0003	0.32666	89	640.0029	0.32676			
80	550.0001	0.32669	90	650.0028	0.3268			
81	560.0042	0.32669	91	660.0026	0.3268			
82	570.0040	0.32673	92	670.0025	0.3268			
83	580.0038	0.32673	93	680.0023	0.32683			
84	590.0037	0.32673	94	690.0022	0.32683			
85	600.0035	0.32676	95	700.0020	0.32683			
86	610.0034	0.32676	96	710.0018	0.32687			

Void Ratio = 0.764 **Compression =** 13.8%

D_0 = 0.3006 **D_{50} =** 0.3063 **D_{100} =** 0.3120 **C_v at 1.72 min. =** 0.224 ft.^{2}/day **C_α =** 0.014

Pressure: 8000 psf — **TEST READINGS** — **Load No. 14**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.32687	23	2.0041	0.32416
2	0.0125	0.327	24	5.0041	0.32413
3	0.0166	0.3271	25	10.0040	0.32409
4	0.0208	0.32673	26	40.0035	0.32406
5	0.0250	0.32645	27	50.0034	0.32406
6	0.0291	0.32625	28	60.0032	0.32406
7	0.0333	0.32608	29	70.0031	0.32406
8	0.0375	0.32598	30	80.0029	0.32406
9	0.0416	0.32584	31	90.0028	0.32403
10	0.0458	0.32574	32	100.0026	0.32396
11	0.0500	0.32563	33	110.0025	0.32386
12	0.0541	0.32557	34	120.0023	0.32382
13	0.0583	0.32557	35	130.0022	0.32382
14	0.0708	0.32543	36	140.0020	0.32382
15	0.0875	0.32529	37	150.0019	0.32386
16	0.1708	0.32461	38	160.0017	0.32382
17	0.2541	0.32444	39	170.0016	0.32379
18	0.3375	0.3243	40	180.0014	0.32382
19	0.4208	0.32427	41	190.0013	0.32372
20	0.5041	0.32423	42	200.0011	0.32392
21	0.7541	0.3242	43	210.0010	0.32392
22	1.0041	0.3242	44	220.0008	0.32382



Pressure: 8000 psf | **TEST READINGS (continued)** | **Load No. 14**

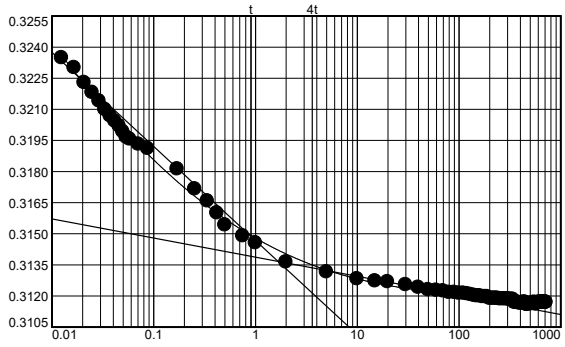
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	230.0007	0.32368	64	420.0020	0.32365	83	610.0034	0.32351
46	240.0005	0.32368	65	430.0018	0.32358	84	620.0032	0.32351
47	250.0004	0.32368	66	440.0017	0.32355	85	630.0033	0.32351
48	260.0002	0.32372	67	450.0016	0.32362	86	640.0032	0.32355
49	270.0001	0.32362	68	460.0014	0.32358	87	650.0030	0.32355
50	280.0041	0.32362	69	470.0013	0.32355	88	660.0029	0.32355
51	290.0040	0.32372	70	480.0011	0.32355	89	670.0027	0.32351
52	300.0038	0.32358	71	490.0010	0.32355	90	680.0026	0.32341
53	310.0037	0.32358	72	500.0008	0.32351	91	690.0024	0.32358
54	320.0035	0.32368	73	510.0007	0.32351	92	700.0023	0.32362
55	330.0033	0.32368	74	520.0005	0.32351	93	710.0021	0.32362
56	340.0032	0.32382	75	530.0004	0.32355	94	720.0020	0.32338
57	350.0030	0.32368	76	540.0002	0.32351	95	730.0018	0.32358
58	360.0029	0.32375	77	550.0001	0.32351	96	740.0017	0.32338
59	370.0027	0.32365	78	560.0041	0.32351	97	750.0016	0.32351
60	380.0026	0.32368	79	570.0039	0.32351	98	760.0014	0.32358
61	390.0024	0.32365	80	580.0038	0.32351	99	770.0013	0.32338
62	400.0023	0.32365	81	590.0036	0.32351	100	779.4972	0.32341
63	410.0021	0.32358	82	600.0035	0.32351			

Void Ratio = 0.771 **Compression =** 13.5%

D_0 = 0.3254 D_{50} = 0.3249 D_{100} = 0.3244 C_v **at 0.13 min. =** 2.722 ft.^{2}/day

Pressure: 2000 psf | **TEST READINGS** | **Load No. 15**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.32341	14	0.0708	0.31931
2	0.0125	0.32348	15	0.0875	0.3191
3	0.0166	0.323	16	0.1708	0.31811
4	0.0208	0.32228	17	0.2541	0.31715
5	0.0250	0.3218	18	0.3375	0.31657
6	0.0291	0.32139	19	0.4208	0.31599
7	0.0333	0.32098	20	0.5041	0.31541
8	0.0375	0.32067	21	0.7541	0.31489
9	0.0416	0.32043	22	1.0041	0.31455
10	0.0458	0.3202	23	2.0041	0.31363
11	0.0500	0.31992	24	5.0041	0.31315
12	0.0541	0.31965	25	10.0040	0.31281
13	0.0583	0.31955	26	15.0039	0.31271



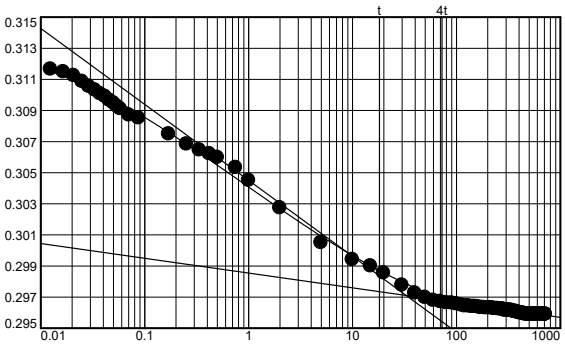
Pressure: 2000 psf	TEST READINGS (continued)	Load No. 15

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	20.0038	0.31267	51	260.0005	0.31185	75	500.0011	0.31161
28	30.0037	0.31253	52	270.0003	0.31185	76	510.0009	0.31161
29	40.0036	0.3124	53	280.0001	0.31185	77	520.0008	0.31164
30	50.0034	0.31229	54	290.0042	0.31185	78	530.0006	0.31164
31	60.0033	0.31226	55	300.0040	0.31185	79	540.0005	0.31164
32	70.0032	0.31223	56	310.0039	0.31182	80	550.0003	0.31168
33	80.0030	0.31216	57	320.0037	0.31182	81	560.0002	0.31161
34	90.0029	0.31216	58	330.0036	0.31182	82	570.0000	0.31161
35	100.0027	0.31212	59	340.0034	0.31182	83	580.0040	0.31164
36	110.0026	0.31212	60	350.0033	0.31168	84	590.0039	0.31164
37	120.0024	0.31209	61	360.0031	0.31168	85	600.0037	0.31164
38	130.0023	0.31206	62	370.0030	0.31168	86	610.0036	0.31168
39	140.0022	0.31202	63	380.0028	0.31168	87	620.0034	0.31168
40	150.0020	0.31199	64	390.0027	0.31164	88	630.0033	0.31168
41	160.0019	0.31199	65	400.0026	0.31164	89	640.0031	0.31168
42	170.0017	0.31195	66	410.0024	0.31164	90	650.0030	0.31168
43	180.0016	0.31195	67	420.0023	0.31164	91	660.0028	0.31168
44	190.0015	0.31195	68	430.0021	0.31168	92	670.0027	0.31168
45	200.0013	0.31188	69	440.0020	0.31168	93	680.0025	0.31168
46	210.0012	0.31188	70	450.0018	0.31168	94	690.0024	0.31168
47	220.0010	0.31188	71	460.0017	0.31158	95	700.0022	0.31168
48	230.0009	0.31188	72	470.0015	0.31158	96	710.0021	0.31168
49	240.0007	0.31188	73	480.0014	0.31161	97	720.0019	0.31168
50	250.0006	0.31185	74	490.0012	0.31161	98	720.0897	0.31168

Void Ratio = 0.795 **Compression =** 12.3%

D_0 = 0.3163 **D_{50} =** 0.3150 **D_{100} =** 0.3137 **C_V at 0.84 min. =** 0.443 ft.^{2}/day

Pressure: 500 psf			TEST READINGS			Load No. 16
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	
1	0.0000	0.31168	39	140.0020	0.29639	
2	0.0125	0.31164	40	150.0019	0.29639	
3	0.0166	0.31147	41	160.0017	0.29636	
4	0.0208	0.31123	42	170.0016	0.29632	
5	0.0250	0.31086	43	180.0014	0.29632	
6	0.0291	0.31055	44	190.0013	0.29629	
7	0.0333	0.31031	45	200.0011	0.29629	
8	0.0375	0.31007	46	210.0010	0.29629	
9	0.0416	0.3099	47	220.0008	0.29629	
10	0.0458	0.30966	48	230.0007	0.29625	
11	0.0500	0.30949	49	240.0005	0.29625	
12	0.0541	0.30928	50	250.0004	0.29625	
13	0.0583	0.30911	51	260.0002	0.29622	
14	0.0708	0.3087	52	270.0001	0.29622	
15	0.0875	0.3085	53	280.0041	0.29622	
16	0.1708	0.30747	54	290.0039	0.29615	
17	0.2541	0.30682	55	300.0038	0.29615	
18	0.3374	0.30645	56	310.0036	0.29615	
19	0.4208	0.30621	57	320.0035	0.29615	
20	0.5041	0.30597	58	330.0033	0.29615	
21	0.7541	0.30532	59	340.0032	0.29612	
22	1.0041	0.3045	60	350.0030	0.29608	
23	2.0041	0.30272	61	360.0029	0.29608	
24	5.0040	0.30049	62	370.0027	0.29605	
25	10.0040	0.2994	63	380.0026	0.29605	
26	15.0039	0.29899	64	390.0027	0.29601	
27	20.0038	0.29854	65	400.0025	0.29598	
28	30.0037	0.29776	66	410.0024	0.29598	
29	40.0035	0.29725	67	420.0022	0.29598	
30	50.0034	0.29697	68	430.0021	0.29595	
31	60.0032	0.29677	69	440.0019	0.29595	
32	70.0031	0.2967	70	450.0018	0.29591	
33	80.0029	0.29663	71	460.0016	0.29591	
34	90.0028	0.2966	72	470.0015	0.29591	
35	100.0026	0.29656	73	480.0013	0.29588	
36	110.0025	0.29649	74	490.0012	0.29588	
37	120.0023	0.29642	75	500.0010	0.29588	
38	130.0022	0.29642	76	510.0009	0.29588	



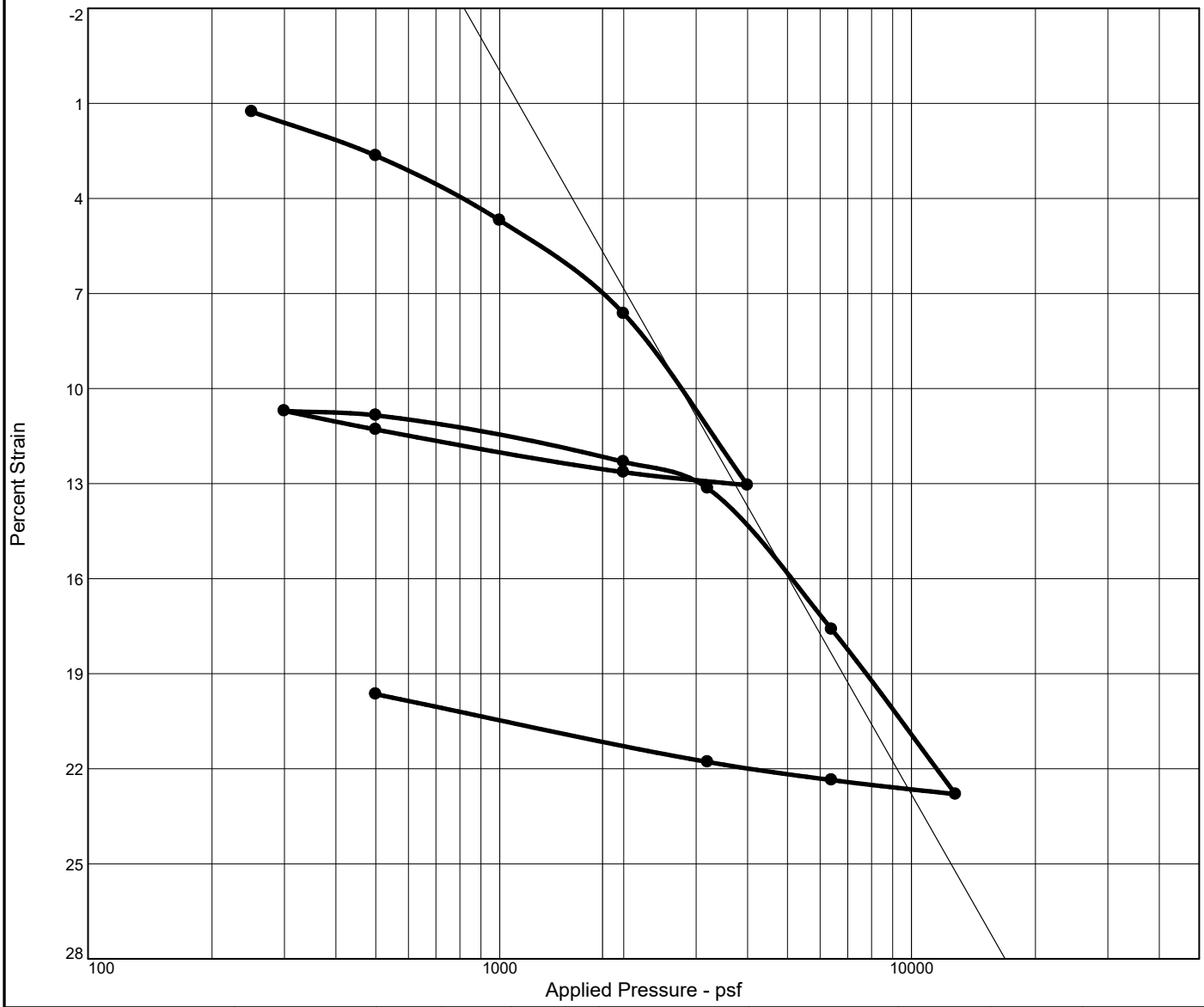
Pressure: 500 psf | **TEST READINGS (continued)** | **Load No. 16**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0007	0.29588	87	620.0034	0.29591	97	720.0020	0.29588
78	530.0006	0.29588	88	630.0033	0.29591	98	720.0814	0.29588
79	540.0004	0.29588	89	640.0031	0.29591			
80	550.0003	0.29588	90	650.0030	0.29591			
81	560.0001	0.29588	91	660.0028	0.29591			
82	570.0000	0.29588	92	670.0027	0.29591			
83	580.0040	0.29588	93	680.0025	0.29588			
84	590.0039	0.29588	94	690.0024	0.29588			
85	600.0037	0.29588	95	700.0023	0.29588			
86	610.0036	0.29588	96	710.0021	0.29588			

Void Ratio = 0.828 **Compression =** 10.7%

D_0 = 0.3005 D_{50} = 0.2988 D_{100} = 0.2971 C_V **at 17.09 min. =** 0.023 $ft.^2/day$

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
94.1 %	46.9 %	72.5	27	10	2.76	1065	2123	0.54	0.06	1.377

MATERIAL DESCRIPTION	USCS	AASHTO
CL - LEAN CLAY	CL	T216

Project No. XL-5446 **Client:** Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-32p-19 **Depth:** 25.7 **Sample Number:** S-10

Remarks:

WSDOT

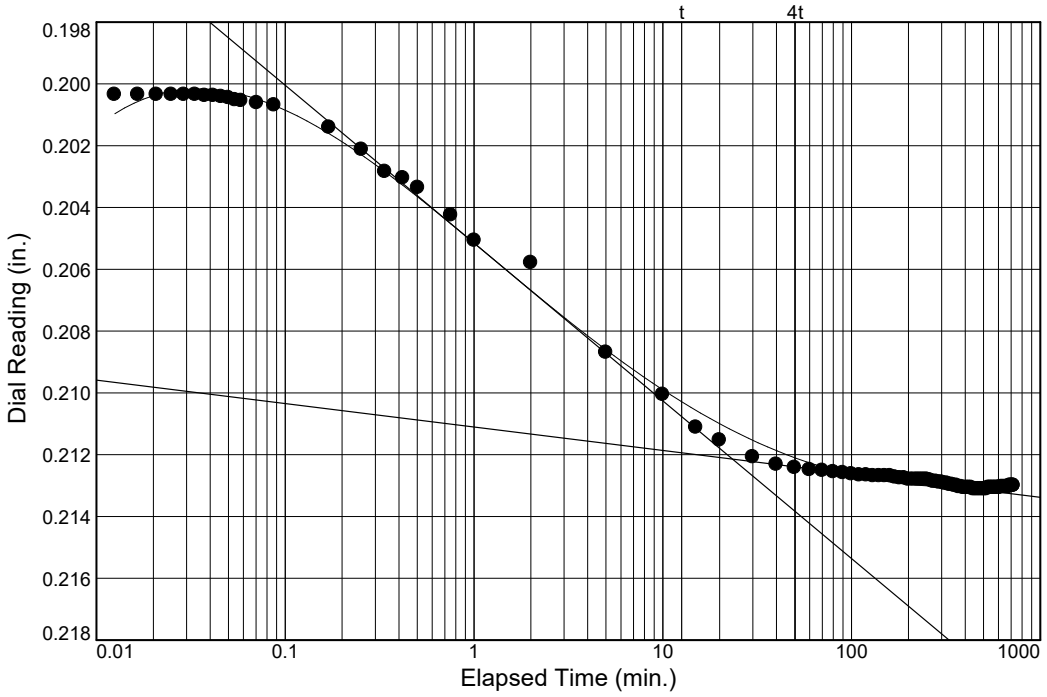
Figure

Tested By: DH **Checked By:** DH

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

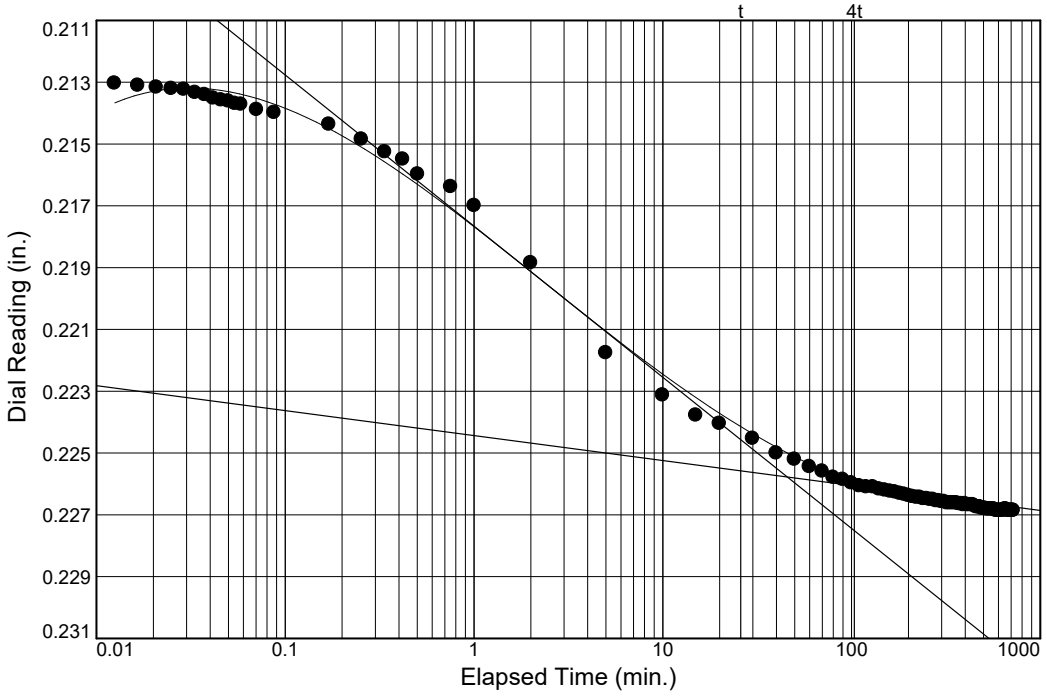
Source of Sample: NE-32p-19 Depth: 25.7 Sample Number: S-10



Load No.= 1
Load= 250 psf
D_0 = 0.2085
D_{50} = 0.2103
D_{100} = 0.2121
T_{50} = 12.73 min.

C_v @ T_{50}
0.038 ft.^{2}/day

C_α = 0.002



Load No.= 2
Load= 500 psf
D_0 = 0.2223
D_{50} = 0.2241
D_{100} = 0.2258
T_{50} = 24.42 min.

C_v @ T_{50}
0.019 ft.^{2}/day

C_α = 0.002

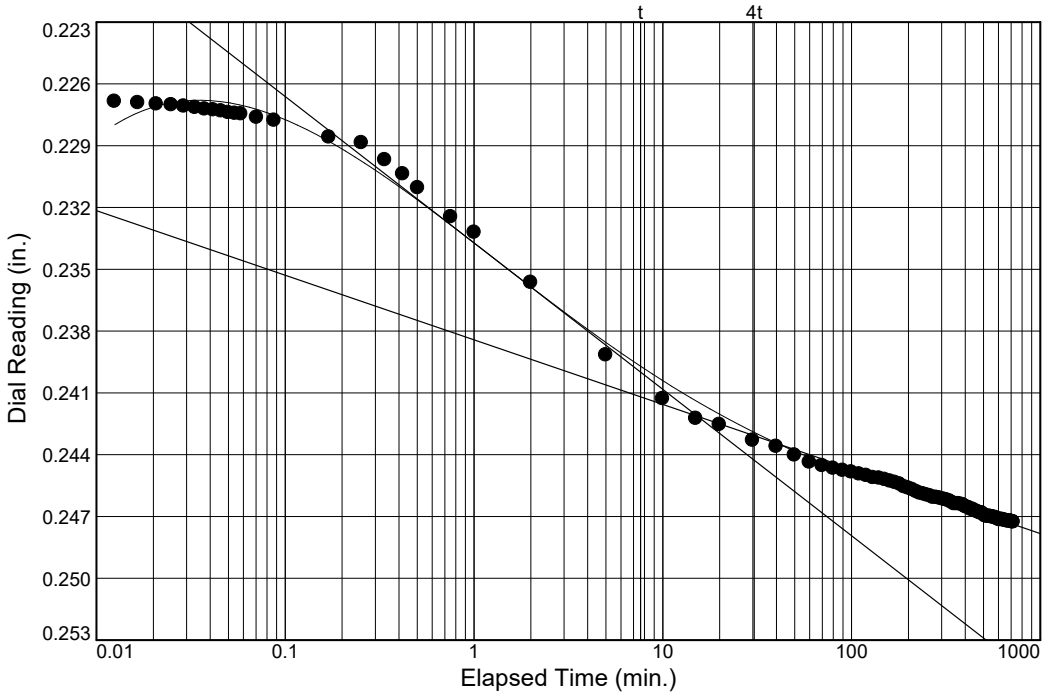
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

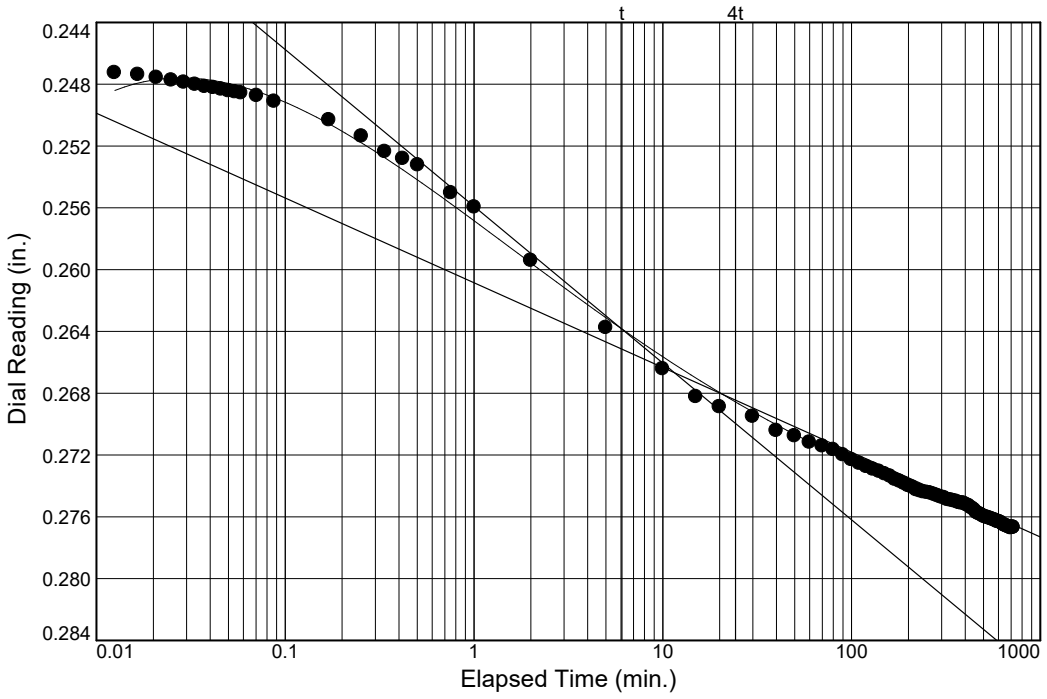
Source of Sample: NE-32p-19 Depth: 25.7 Sample Number: S-10



Load No.= 3
Load= 1000 psf
D_0 = 0.2365
D_{50} = 0.2393
D_{100} = 0.2421
T_{50} = 6.59 min.

C_v @ T_{50}
0.069 ft.^{2}/day

C_α = 0.007



Load No.= 4
Load= 2000 psf
D_0 = 0.2591
D_{50} = 0.2629
D_{100} = 0.2667
T_{50} = 4.71 min.

C_v @ T_{50}
0.092 ft.^{2}/day

C_α = 0.013

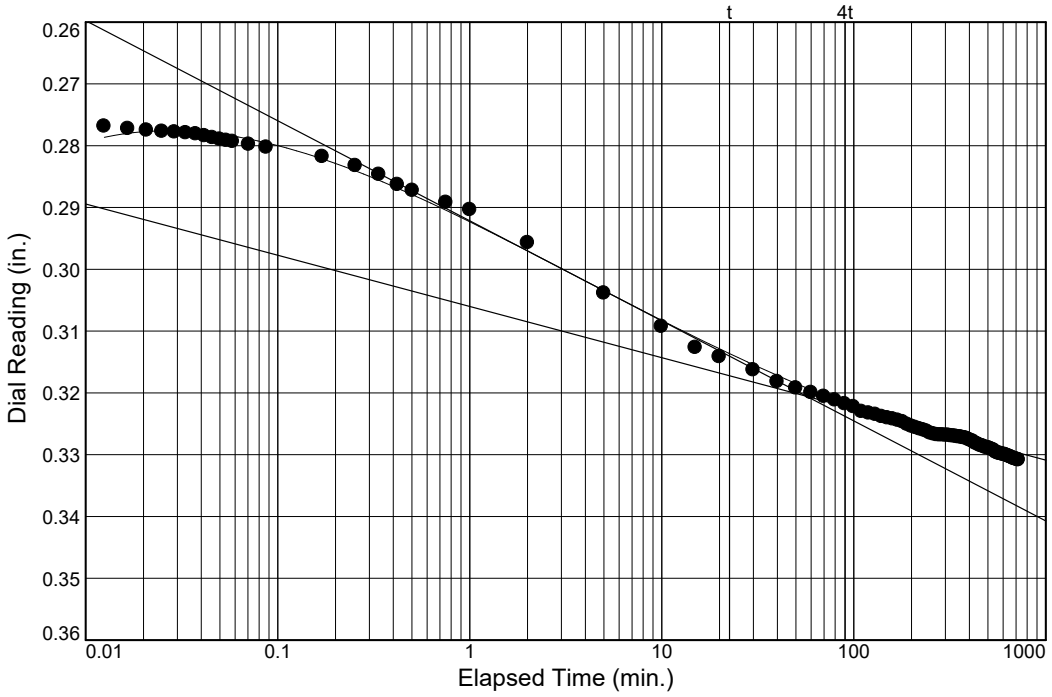
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

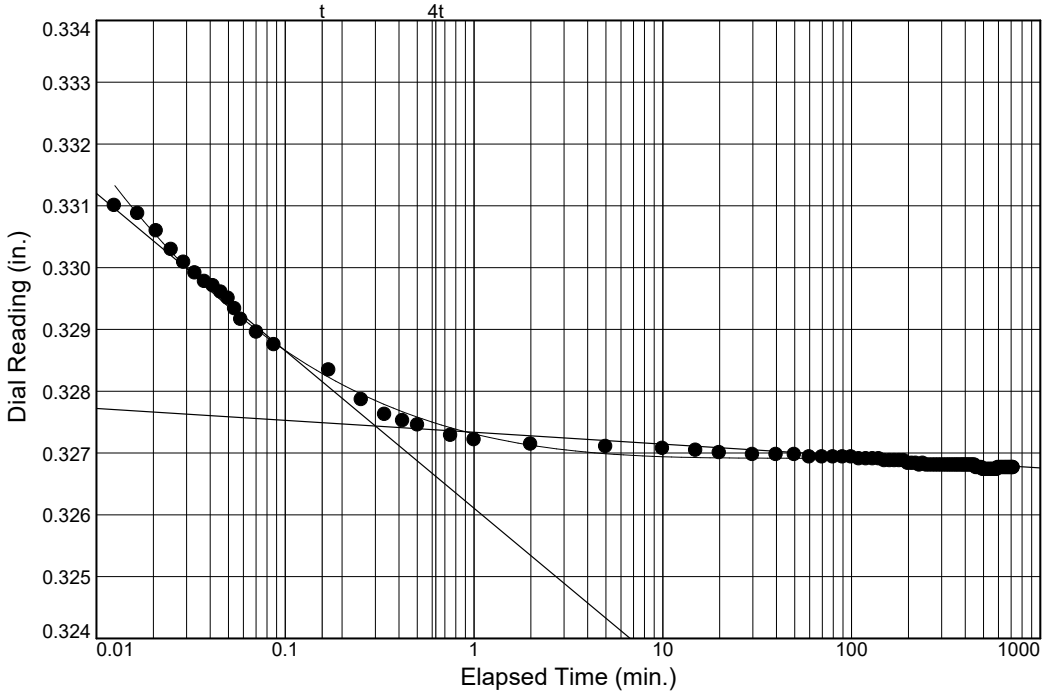
Source of Sample: NE-32p-19 Depth: 25.7 Sample Number: S-10



Load No.= 5
Load= 4000 psf
D_0 = 0.3056
D_{50} = 0.3131
D_{100} = 0.3205
T_{50} = 20.59 min.

C_v @ T_{50}
0.019 ft.^{2}/day

C_α = 0.020



Load No.= 6
Load= 2000 psf
D_0 = 0.3291
D_{50} = 0.3283
D_{100} = 0.3274
T_{50} = 0.16 min.

C_v @ T_{50}
2.316 ft.^{2}/day

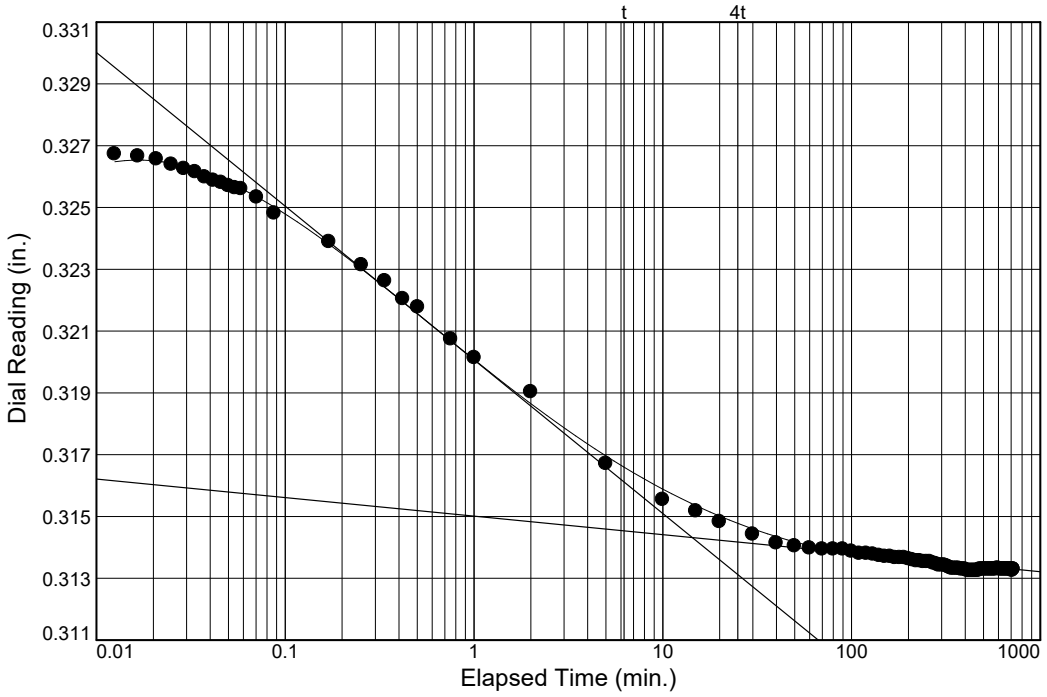
Figure

Washington State Department of Transportation

Dial Reading vs. Time

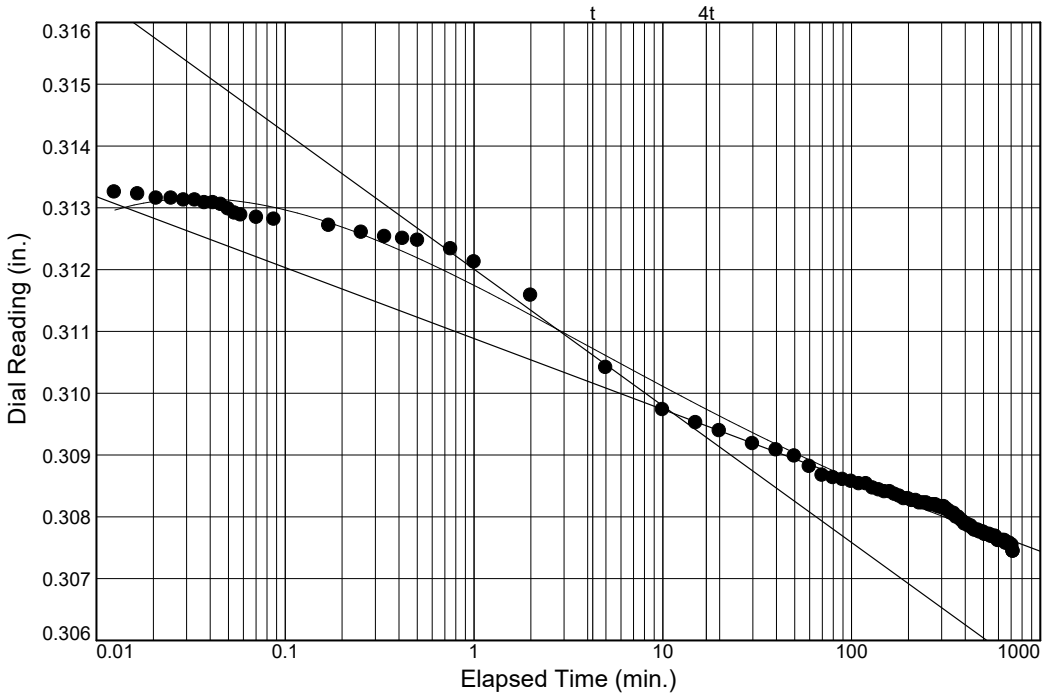
Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-32p-19 Depth: 25.7 Sample Number: S-10



Load No.= 7
Load= 500 psf
D_0 = 0.3184
D_{50} = 0.3164
D_{100} = 0.3143
T_{50} = 7.22 min.

C_v @ T_{50}
0.053 ft.^{2}/day



Load No.= 8
Load= 300 psf
D_0 = 0.3117
D_{50} = 0.3107
D_{100} = 0.3097
T_{50} = 4.45 min.

C_v @ T_{50}
0.088 ft.^{2}/day

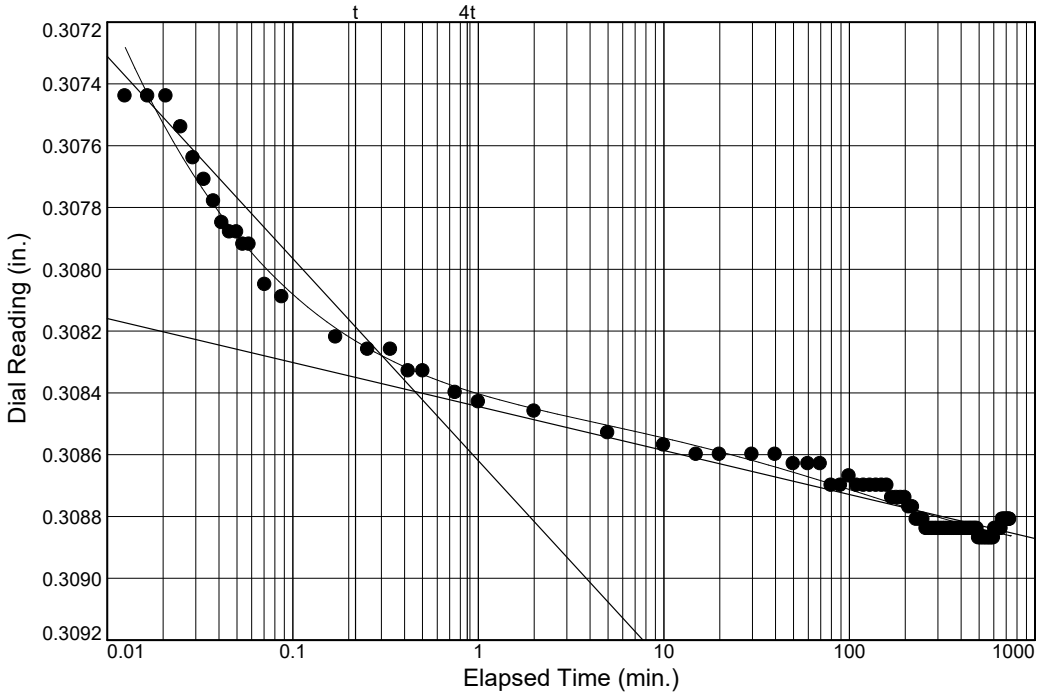
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

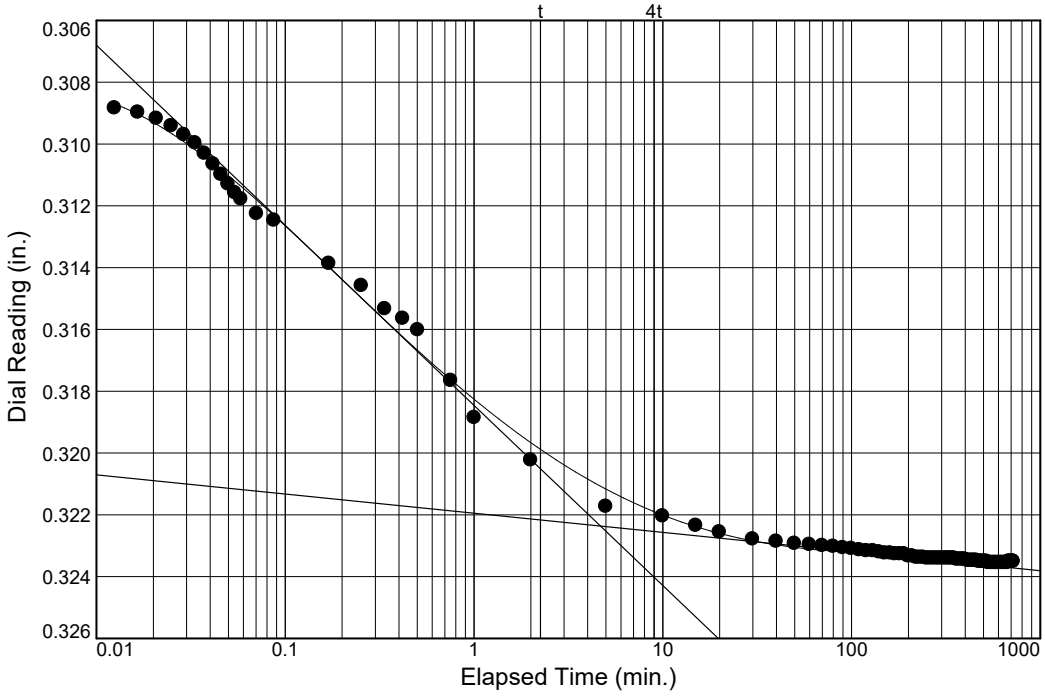
Source of Sample: NE-32p-19 Depth: 25.7 Sample Number: S-10



Load No.= 9
Load= 500 psf
D_0 = 0.3081
D_{50} = 0.3082
D_{100} = 0.3084
T_{50} = 0.22 min.

C_v @ T_{50}
1.781 ft.^{2}/day

C_α = 0.000



Load No.= 10
Load= 2000 psf
D_0 = 0.3179
D_{50} = 0.3201
D_{100} = 0.3224
T_{50} = 2.56 min.

C_v @ T_{50}
0.150 ft.^{2}/day

C_α = 0.001

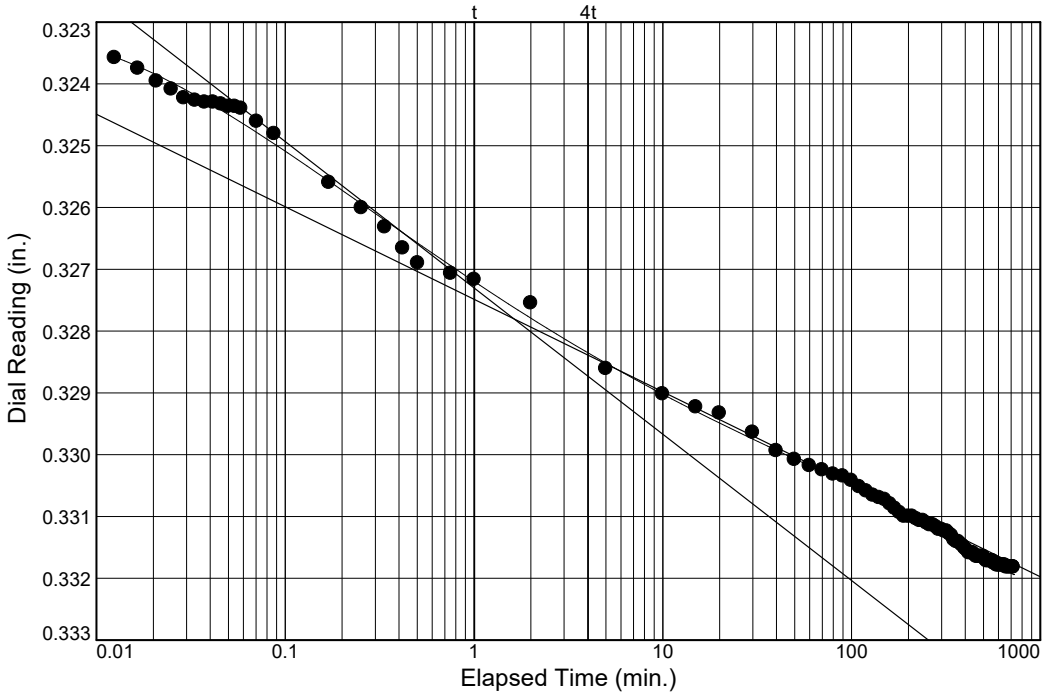
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

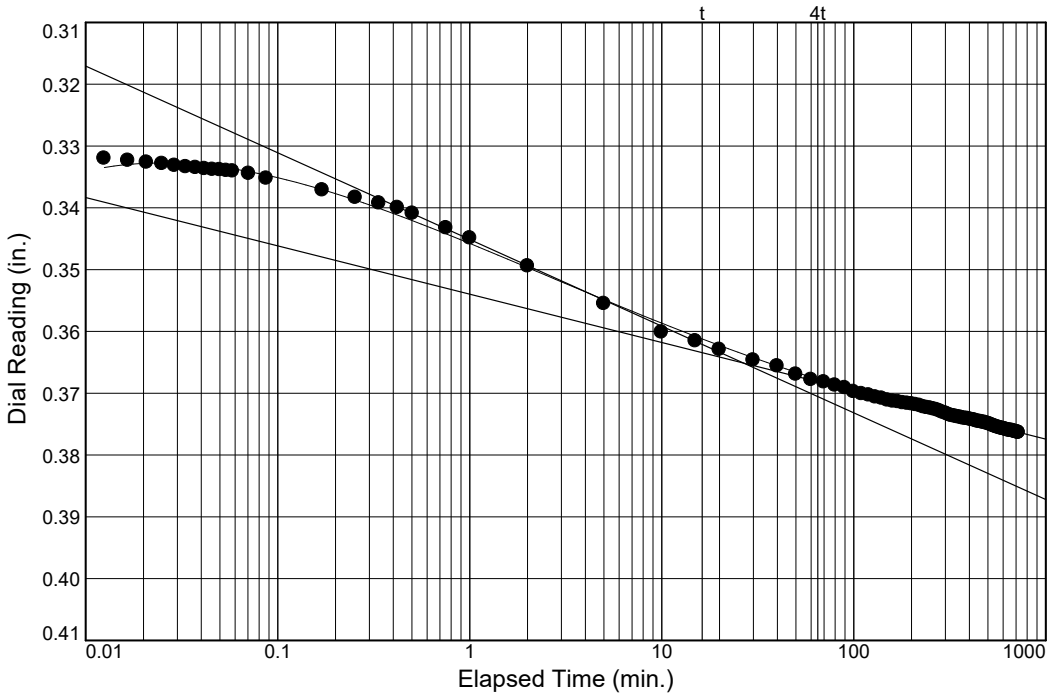
Source of Sample: NE-32p-19 Depth: 25.7 Sample Number: S-10



Load No.= 11
Load= 3200 psf
D_0 = 0.3261
D_{50} = 0.3269
D_{100} = 0.3278
T_{50} = 0.74 min.

C_v @ T_{50}
0.507 ft.^{2}/day

C_α = 0.004



Load No.= 12
Load= 6400 psf
D_0 = 0.3547
D_{50} = 0.3599
D_{100} = 0.3651
T_{50} = 12.61 min.

C_v @ T_{50}
0.028 ft.^{2}/day

C_α = 0.019

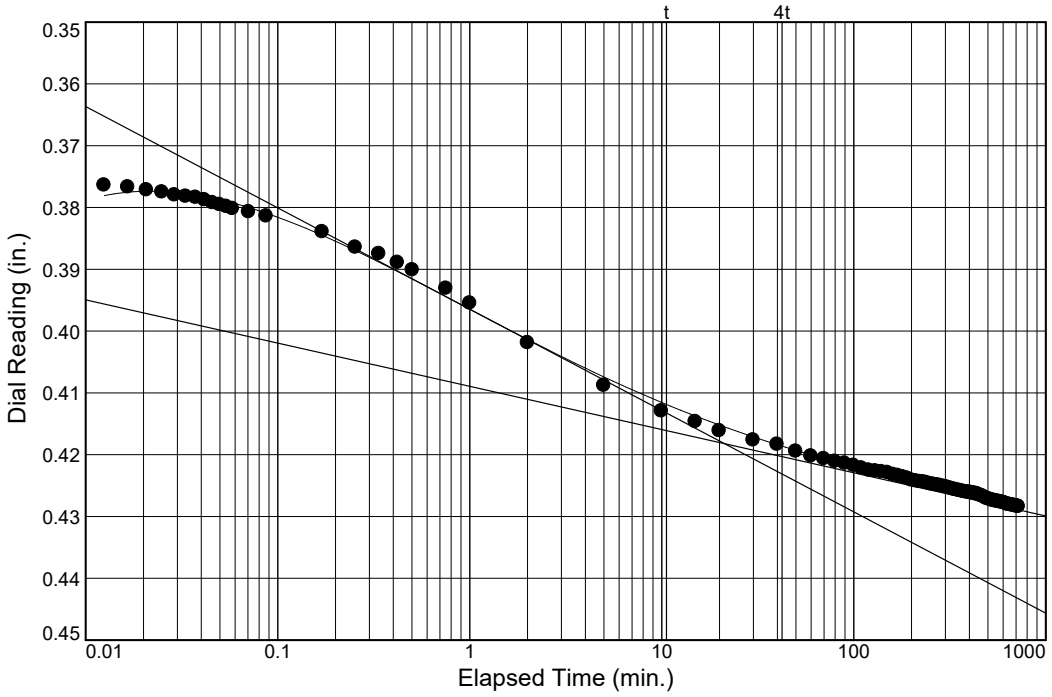
Figure

Washington State Department of Transportation

Dial Reading vs. Time

Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

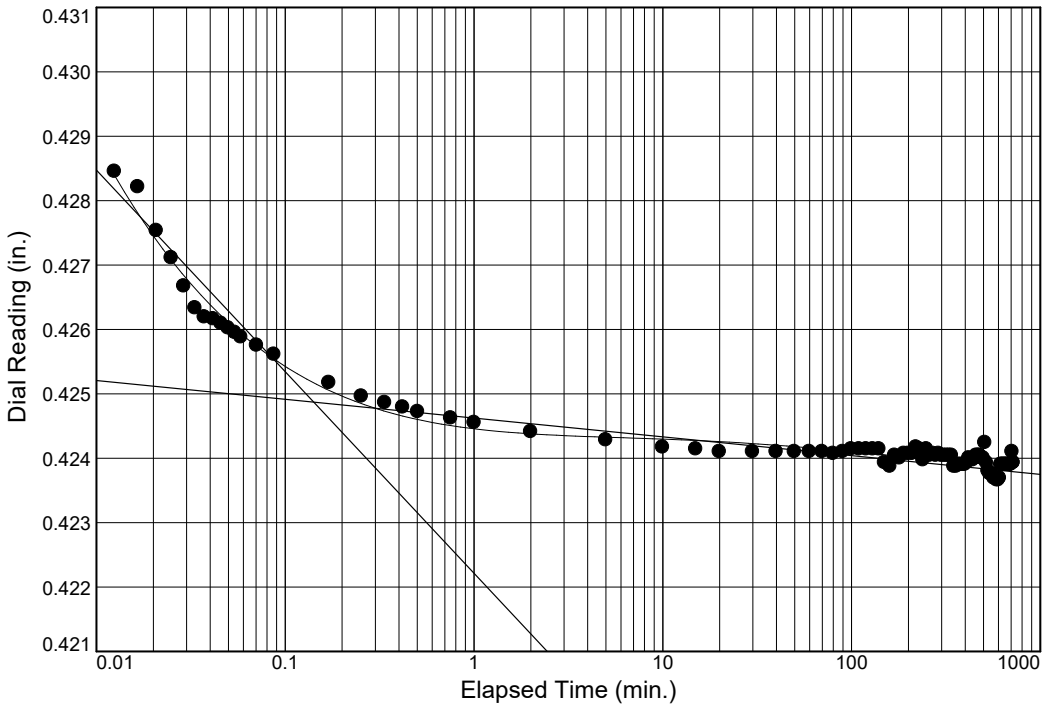
Source of Sample: NE-32p-19 Depth: 25.7 Sample Number: S-10



Load No.= 13
Load= 12800 psf
D_0 = 0.4051
D_{50} = 0.4117
D_{100} = 0.4182
T_{50} = 10.20 min.

C_v @ T_{50}
0.031 ft.^{2}/day

C_α = 0.017



Load No.= 14
Load= 6400 psf
D_0 = 0.4284
D_{50} = 0.4266
D_{100} = 0.4249
T_{50} = 0.03 min.

C_v @ T_{50}
8.913 ft.^{2}/day

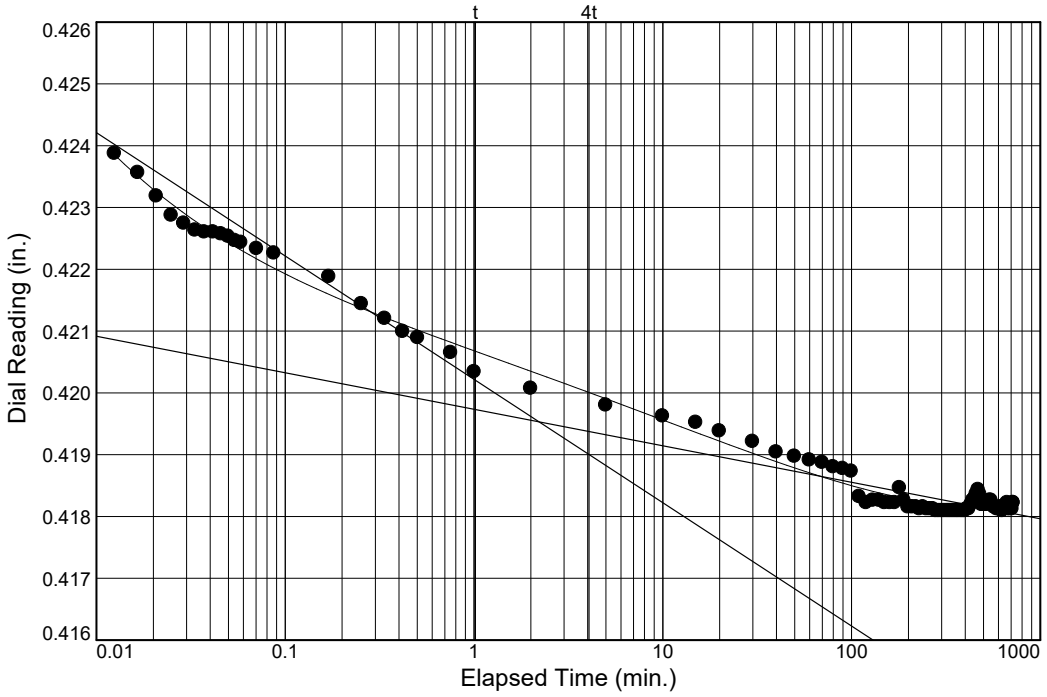
Figure

Washington State Department of Transportation

Dial Reading vs. Time

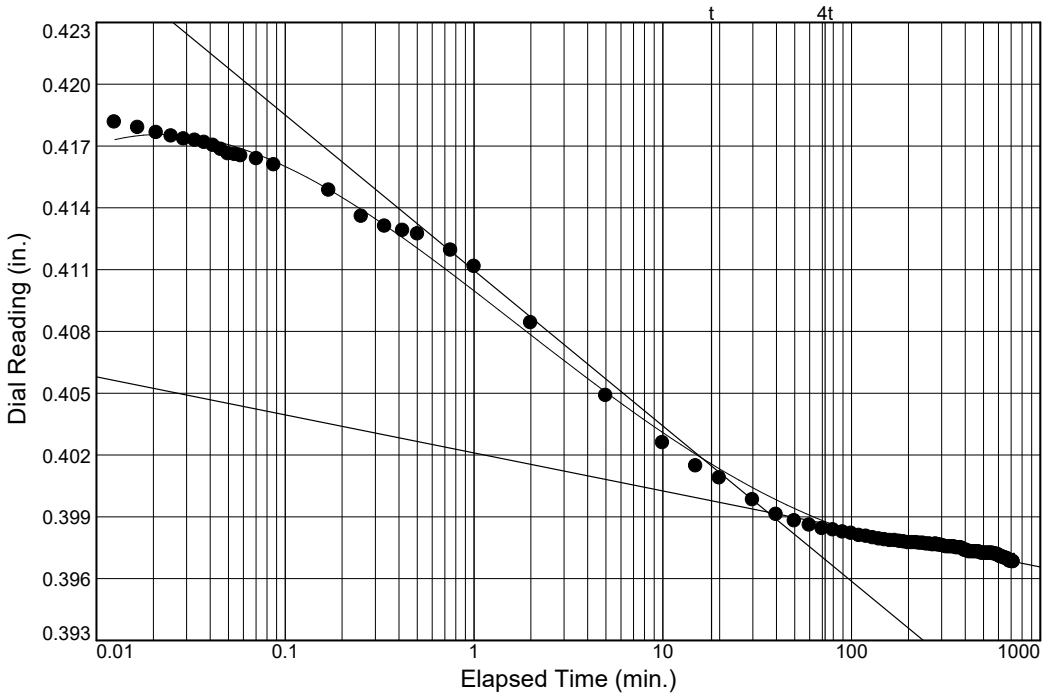
Project No.: XL-5446
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-32p-19 Depth: 25.7 Sample Number: S-10



Load No.= 15
Load= 3200 psf
D_0 = 0.4213
D_{50} = 0.4204
D_{100} = 0.4195
T_{50} = 1.67 min.

C_v @ T_{50}
0.179 ft.^{2}/day



Load No.= 16
Load= 500 psf
D_0 = 0.4044
D_{50} = 0.4018
D_{100} = 0.3992
T_{50} = 16.47 min.

C_v @ T_{50}
0.019 ft.^{2}/day

Figure

Washington State Department of Transportation

CONSOLIDATION TEST DATA

7/29/2019

Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project Number: XL-5446
Location: NE-32p-19
Depth: 25.7 **Sample Number:** S-10
Material Description: CL - LEAN CLAY
Liquid Limit: 27 **Plasticity Index:** 10
USCS: CL **AASHTO:** T216
Tested by: DH **Checked by:** DH

Test Specimen Data

NATURAL MOISTURE
Wet w+t = 51.02 g.
Dry w+t = 41.05 g.
Tare Wt. = 19.81 g.
Moisture = 46.9 %

VOID RATIO
Spec. Gr. = 2.76
Est. Ht. Solids = 0.421 in.
Init. V.R. = 1.377
Init. Sat. = 94.1 %

AFTER TEST
Wet w+t = 209.27 g.
Dry w+t = 176.52 g.
Tare Wt. = 87.92 g.
Moisture = 37.0 %

UNIT WEIGHT
Height = 1.000 in.
Diameter = 2.500 in.
Weight = 137.23 g.
Dry Dens. = 72.5 pcf

TEST START
Height = 1.000 in.
Diameter = 2.500 in.

Dry Wt. = 88.60 g.

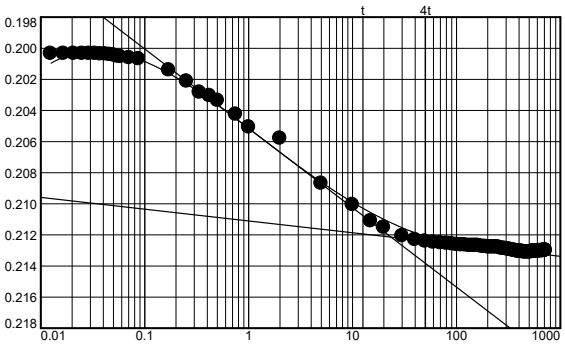
End-Of-Load Summary

Pressure (psf)	Final Dial (in.)	Deformation (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Strain
start	0.20035	0.00000			1.377	
250	0.21300	0.01265	0.038	0.002	1.347	1.3 Comprs.
500	0.22686	0.02651	0.019	0.002	1.314	2.7 Comprs.
1000	0.24727	0.04692	0.069	0.007	1.266	4.7 Comprs.
2000	0.27669	0.07634	0.092	0.013	1.196	7.6 Comprs.
4000	0.33087	0.13052	0.019	0.020	1.067	13.1 Comprs.
2000	0.32676	0.12641	2.316		1.077	12.6 Comprs.
500	0.31329	0.11294	0.053		1.109	11.3 Comprs.
300	0.30744	0.10709	0.088		1.123	10.7 Comprs.
500	0.30881	0.10846	1.781	0.000	1.119	10.8 Comprs.
2000	0.32351	0.12316	0.150	0.001	1.084	12.3 Comprs.
3200	0.33182	0.13147	0.507	0.004	1.065	13.1 Comprs.
6400	0.37636	0.17601	0.028	0.019	0.959	17.6 Comprs.
12800	0.42841	0.22806	0.031	0.017	0.835	22.8 Comprs.
6400	0.42393	0.22358	8.913		0.846	22.4 Comprs.
3200	0.41822	0.21787	0.179		0.859	21.8 Comprs.
500	0.39681	0.19646	0.019		0.910	19.6 Comprs.

Compression index (C_c), psf = 0.54 **Preconsolidation pressure (P_p), psf =** 2123 **Void ratio at P_p (e_m) =** 1.187
Overburden (σ_{vo}), psf = 1065 **Void ratio at σ_{vo} (e_o) =** 1.261 **Recompression index (C_r) =** 0.06

Pressure: 250 psf	TEST READINGS	Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.20035	39	140.0021	0.21269
2	0.0125	0.20035	40	150.0020	0.21269
3	0.0166	0.20035	41	160.0018	0.21269
4	0.0208	0.20035	42	170.0017	0.21273
5	0.0250	0.20035	43	180.0015	0.21276
6	0.0291	0.20035	44	190.0014	0.21276
7	0.0333	0.20035	45	200.0012	0.2128
8	0.0375	0.20038	46	210.0011	0.2128
9	0.0416	0.20038	47	220.0009	0.2128
10	0.0458	0.20042	48	230.0008	0.2128
11	0.0500	0.20045	49	240.0007	0.2128
12	0.0541	0.20052	50	250.0005	0.2128
13	0.0583	0.20055	51	260.0004	0.21283
14	0.0708	0.20062	52	270.0002	0.21287
15	0.0874	0.20069	53	280.0001	0.21287
16	0.1708	0.20141	54	290.0041	0.2129
17	0.2541	0.20213	55	300.0040	0.2129
18	0.3374	0.20284	56	310.0038	0.21293
19	0.4208	0.20305	57	320.0037	0.21293
20	0.5041	0.20336	58	330.0035	0.21297
21	0.7541	0.20425	59	340.0034	0.21297
22	1.0041	0.20507	60	350.0033	0.213
23	2.0041	0.20579	61	360.0031	0.213
24	5.0040	0.20869	62	370.0030	0.21304
25	10.0040	0.21006	63	380.0029	0.21304
26	15.0039	0.21112	64	390.0027	0.21307
27	20.0038	0.21153	65	400.0026	0.21307
28	30.0037	0.21208	66	410.0025	0.21307
29	40.0036	0.21232	67	420.0023	0.21307
30	50.0034	0.21242	68	430.0022	0.21307
31	60.0033	0.21249	69	440.0020	0.21311
32	70.0032	0.21252	70	450.0019	0.21311
33	80.0030	0.21256	71	460.0018	0.21311
34	90.0029	0.21259	72	470.0016	0.21311
35	100.0027	0.21263	73	480.0015	0.21311
36	110.0026	0.21266	74	490.0014	0.21311
37	120.0024	0.21266	75	500.0013	0.21311
38	130.0023	0.21269	76	510.0011	0.21311



Pressure: 250 psf | **TEST READINGS (continued)** | **Load No. 1**

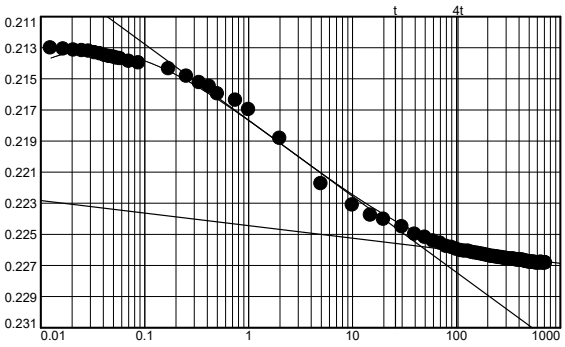
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0010	0.21311	87	620.0038	0.21304	97	720.0025	0.213
78	530.0008	0.21307	88	630.0037	0.21304	98	720.0278	0.213
79	540.0007	0.21307	89	640.0036	0.21304			
80	550.0006	0.21307	90	650.0035	0.21304			
81	560.0005	0.21307	91	660.0033	0.21304			
82	570.0003	0.21307	92	670.0032	0.21304			
83	580.0002	0.21307	93	680.0031	0.21304			
84	590.0001	0.21307	94	690.0029	0.213			
85	600.0041	0.21307	95	700.0028	0.213			
86	610.0040	0.21307	96	710.0027	0.213			

Void Ratio = 1.347 **Compression =** 1.3%

D_0 = 0.2085 **D_{50} =** 0.2103 **D_{100} =** 0.2121 **C_v at 12.73 min. =** 0.038 ft.^{2}/day **C_α =** 0.002

Pressure: 500 psf | **TEST READINGS** | **Load No. 2**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.213	23	2.0041	0.21885
2	0.0125	0.21304	24	5.0041	0.22176
3	0.0166	0.21311	25	10.0040	0.22313
4	0.0208	0.21317	26	15.0039	0.22378
5	0.0250	0.21321	27	20.0039	0.22405
6	0.0291	0.21324	28	30.0037	0.22453
7	0.0333	0.21334	29	40.0036	0.22501
8	0.0375	0.21341	30	50.0035	0.22521
9	0.0416	0.21352	31	60.0033	0.22545
10	0.0458	0.21358	32	70.0032	0.22559
11	0.0500	0.21362	33	80.0031	0.22579
12	0.0541	0.21369	34	90.0029	0.22586
13	0.0583	0.21372	35	100.0028	0.22597
14	0.0708	0.21389	36	110.0026	0.22607
15	0.0875	0.21399	37	120.0025	0.2261
16	0.1708	0.21437	38	130.0023	0.2261
17	0.2541	0.21485	39	140.0022	0.22617
18	0.3374	0.21526	40	150.0020	0.22621
19	0.4208	0.2155	41	160.0019	0.22624
20	0.5041	0.21598	42	170.0018	0.22627
21	0.7541	0.21639	43	180.0016	0.22631
22	1.0041	0.217	44	190.0015	0.22634



Pressure: 500 psf | **TEST READINGS (continued)** | **Load No. 2**

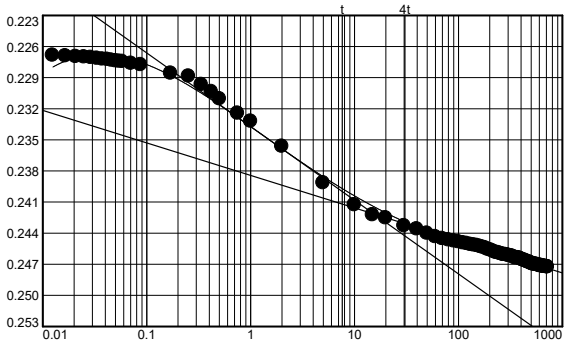
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0013	0.22638	63	380.0029	0.22665	81	560.0002	0.22682
46	210.0012	0.22641	64	390.0027	0.22668	82	570.0000	0.22682
47	220.0010	0.22644	65	400.0026	0.22665	83	580.0041	0.22686
48	230.0009	0.22644	66	410.0024	0.22668	84	590.0039	0.22686
49	240.0008	0.22648	67	420.0023	0.22668	85	600.0038	0.22686
50	250.0006	0.22648	68	430.0021	0.22668	86	610.0036	0.22686
51	260.0005	0.22651	69	440.0020	0.22668	87	620.0035	0.22686
52	270.0003	0.22651	70	450.0018	0.22672	88	630.0033	0.22686
53	280.0002	0.22655	71	460.0017	0.22675	89	640.0032	0.22686
54	290.0000	0.22655	72	470.0015	0.22675	90	650.0030	0.22682
55	300.0040	0.22658	73	480.0014	0.22675	91	660.0029	0.22682
56	310.0039	0.22658	74	490.0012	0.22679	92	670.0028	0.22686
57	320.0037	0.22662	75	500.0011	0.22679	93	680.0026	0.22686
58	330.0036	0.22662	76	510.0009	0.22679	94	690.0025	0.22686
59	340.0034	0.22662	77	520.0008	0.22682	95	700.0023	0.22686
60	350.0033	0.22662	78	530.0006	0.22682	96	710.0022	0.22686
61	360.0031	0.22662	79	540.0005	0.22682	97	720.0020	0.22686
62	370.0030	0.22665	80	550.0003	0.22682	98	720.0398	0.22686

Void Ratio = 1.314 **Compression =** 2.7%

D_0 = 0.2223 **D_{50} =** 0.2241 **D_{100} =** 0.2258 **C_v at 24.42 min. =** 0.019 ft.^{2}/day **C_α =** 0.002

Pressure: 1000 psf | **TEST READINGS** | **Load No. 3**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.22686	15	0.0875	0.22778
2	0.0125	0.22686	16	0.1708	0.2286
3	0.0166	0.22692	17	0.2541	0.22887
4	0.0208	0.22699	18	0.3375	0.22969
5	0.0250	0.22703	19	0.4208	0.23038
6	0.0291	0.22709	20	0.5041	0.23106
7	0.0333	0.22716	21	0.7541	0.23246
8	0.0375	0.22723	22	1.0041	0.23322
9	0.0416	0.22727	23	2.0041	0.23565
10	0.0458	0.22733	24	5.0041	0.23917
11	0.0500	0.2274	25	10.0040	0.24129
12	0.0541	0.22744	26	15.0039	0.24225
13	0.0583	0.22747	27	20.0038	0.24255
14	0.0708	0.22764	28	30.0037	0.24331



Pressure: 1000 psf	TEST READINGS (continued)	Load No. 3

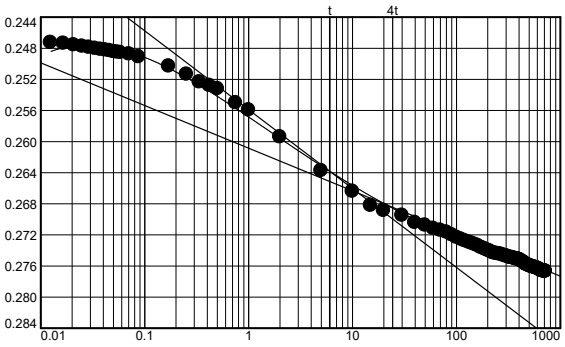
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0036	0.24361	53	280.0041	0.24608	77	520.0008	0.247
30	50.0034	0.24403	54	290.0040	0.24611	78	530.0007	0.247
31	60.0033	0.24437	55	300.0039	0.24615	79	540.0006	0.247
32	70.0031	0.24454	56	310.0037	0.24618	80	550.0004	0.24703
33	80.0030	0.24467	57	320.0036	0.24621	81	560.0003	0.24703
34	90.0028	0.24478	58	330.0034	0.24625	82	570.0002	0.24707
35	100.0027	0.24485	59	340.0033	0.24632	83	580.0000	0.24707
36	110.0025	0.24495	60	350.0031	0.24639	84	590.0041	0.2471
37	120.0024	0.24502	61	360.0030	0.24639	85	600.0039	0.24714
38	130.0022	0.24512	62	370.0029	0.24639	86	610.0038	0.24717
39	140.0021	0.24515	63	380.0027	0.24642	87	620.0036	0.24714
40	150.0019	0.24522	64	390.0026	0.24645	88	630.0035	0.24717
41	160.0018	0.24529	65	400.0025	0.24652	89	640.0034	0.24717
42	170.0016	0.24536	66	410.0023	0.24656	90	650.0032	0.24721
43	180.0015	0.24543	67	420.0022	0.24659	91	660.0034	0.24721
44	190.0013	0.24556	68	430.0021	0.24666	92	670.0032	0.24724
45	200.0012	0.24563	69	440.0019	0.24666	93	680.0031	0.24724
46	210.0010	0.2457	70	450.0018	0.24673	94	690.0030	0.24724
47	220.0009	0.2458	71	460.0016	0.24676	95	700.0028	0.24724
48	230.0007	0.24587	72	470.0015	0.2468	96	710.0027	0.24727
49	240.0006	0.24591	73	480.0014	0.24683	97	720.0025	0.24727
50	250.0004	0.24597	74	490.0013	0.24683	98	720.1195	0.24727
51	260.0003	0.24601	75	500.0011	0.2469			
52	270.0001	0.24608	76	510.0010	0.24697			

Void Ratio = 1.266 **Compression =** 4.7%

D_0 = 0.2365 **D_{50} =** 0.2393 **D_{100} =** 0.2421 **C_v at 6.59 min. =** 0.069 ft.^{2}/day **C_α =** 0.007

Pressure: 2000 psf | **TEST READINGS** | **Load No. 4**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.24727	39	140.0022	0.27306
2	0.0125	0.24727	40	150.0020	0.27323
3	0.0166	0.24738	41	160.0019	0.27337
4	0.0208	0.24758	42	170.0017	0.27358
5	0.0250	0.24775	43	180.0016	0.27371
6	0.0291	0.24789	44	190.0014	0.27385
7	0.0333	0.24803	45	200.0013	0.27399
8	0.0375	0.24816	46	210.0011	0.27409
9	0.0416	0.24823	47	220.0010	0.27426
10	0.0458	0.24833	48	230.0008	0.27433
11	0.0500	0.24844	49	240.0007	0.2744
12	0.0541	0.24851	50	250.0005	0.27443
13	0.0583	0.24857	51	260.0004	0.27447
14	0.0708	0.24875	52	270.0002	0.27453
15	0.0875	0.24912	53	280.0001	0.2746
16	0.1708	0.25032	54	290.0041	0.27467
17	0.2541	0.25138	55	300.0040	0.27474
18	0.3375	0.25237	56	310.0038	0.27477
19	0.4208	0.25282	57	320.0037	0.27488
20	0.5041	0.25323	58	330.0035	0.27491
21	0.7541	0.25504	59	340.0034	0.27494
22	1.0041	0.25596	60	350.0032	0.27498
23	2.0041	0.25942	61	360.0031	0.27501
24	5.0041	0.26376	62	370.0030	0.27508
25	10.0040	0.26643	63	380.0028	0.27512
26	15.0039	0.26824	64	390.0027	0.27512
27	20.0039	0.26889	65	400.0025	0.27518
28	30.0037	0.26951	66	410.0024	0.27525
29	40.0036	0.27043	67	420.0022	0.27529
30	50.0034	0.27077	68	430.0021	0.27542
31	60.0033	0.27118	69	440.0019	0.27549
32	70.0032	0.27142	70	450.0018	0.27559
33	80.0030	0.27166	71	460.0016	0.27573
34	90.0029	0.272	72	470.0015	0.2758
35	100.0027	0.27231	73	480.0013	0.27583
36	110.0026	0.27255	74	490.0012	0.2759
37	120.0024	0.27276	75	500.0010	0.27597
38	130.0023	0.27293	76	510.0009	0.27601



Pressure: 2000 psf	TEST READINGS (continued)	Load No. 4

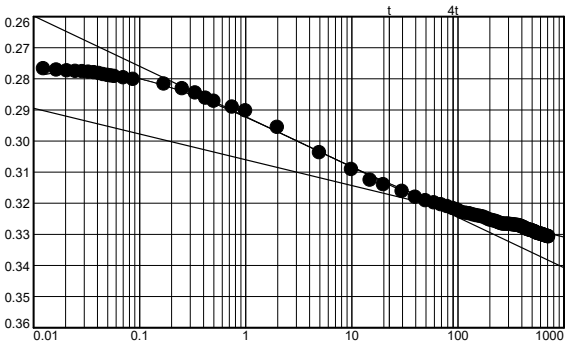
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0007	0.27604	87	620.0034	0.27638	97	720.0019	0.27669
78	530.0006	0.27607	88	630.0033	0.27645	98	720.1564	0.27669
79	540.0004	0.27611	89	640.0031	0.27652			
80	550.0003	0.27614	90	650.0030	0.27655			
81	560.0001	0.27618	91	660.0028	0.27659			
82	570.0042	0.27621	92	670.0027	0.27662			
83	580.0040	0.27624	93	680.0025	0.27665			
84	590.0038	0.27631	94	690.0024	0.27669			
85	600.0037	0.27631	95	700.0022	0.27672			
86	610.0036	0.27635	96	710.0021	0.27669			

Void Ratio = 1.196 **Compression =** 7.6%

D_0 = 0.2591 **D_{50} =** 0.2629 **D_{100} =** 0.2667 **C_v at 4.71 min. =** 0.092 ft.^{2}/day **C_α =** 0.013

Pressure: 4000 psf	TEST READINGS	Load No. 5

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.27669	23	2.0041	0.29574
2	0.0125	0.27689	24	5.0040	0.30388
3	0.0166	0.27727	25	10.0040	0.30928
4	0.0208	0.27751	26	15.0039	0.31271
5	0.0250	0.27772	27	20.0038	0.31418
6	0.0291	0.27782	28	30.0037	0.3163
7	0.0333	0.27795	29	40.0035	0.31821
8	0.0375	0.27813	30	50.0034	0.31927
9	0.0416	0.27843	31	60.0032	0.31999
10	0.0458	0.27874	32	70.0031	0.32061
11	0.0500	0.27898	33	80.0029	0.32119
12	0.0541	0.27919	34	90.0028	0.3218
13	0.0583	0.27936	35	100.0026	0.32228
14	0.0708	0.2798	36	110.0025	0.32303
15	0.0874	0.28028	37	120.0024	0.32331
16	0.1708	0.28179	38	130.0022	0.32351
17	0.2541	0.28326	39	140.0021	0.32386
18	0.3374	0.28469	40	150.0019	0.32409
19	0.4208	0.28633	41	160.0018	0.32427
20	0.5041	0.28729	42	170.0017	0.32447
21	0.7541	0.28921	43	180.0015	0.32471
22	1.0041	0.2904	44	190.0014	0.32512



Pressure: 4000 psf | **TEST READINGS (continued)** | **Load No. 5**

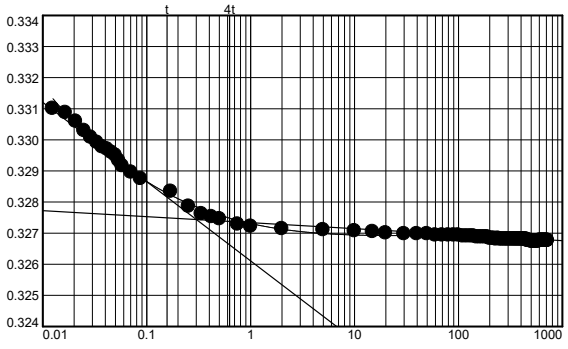
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0012	0.32543	63	380.0028	0.32731	81	560.0003	0.3297
46	210.0011	0.32563	64	390.0027	0.32745	82	570.0002	0.32981
47	220.0009	0.32584	65	400.0025	0.32762	83	580.0000	0.32984
48	230.0008	0.32601	66	410.0024	0.32775	84	590.0041	0.32991
49	240.0006	0.32622	67	420.0022	0.32789	85	600.0040	0.32998
50	250.0005	0.32652	68	430.0021	0.32813	86	610.0038	0.33001
51	260.0004	0.32666	69	440.0020	0.32827	87	620.0037	0.33008
52	270.0002	0.3268	70	450.0018	0.32844	88	630.0036	0.33015
53	280.0001	0.32683	71	460.0017	0.32858	89	640.0034	0.33025
54	290.0041	0.32683	72	470.0016	0.32861	90	650.0033	0.33035
55	300.0039	0.32687	73	480.0014	0.32878	91	660.0031	0.33042
56	310.0038	0.3269	74	490.0013	0.32885	92	670.0030	0.33049
57	320.0037	0.32697	75	500.0011	0.32892	93	680.0029	0.33063
58	330.0035	0.327	76	510.0010	0.32902	94	690.0027	0.3307
59	340.0034	0.32707	77	520.0009	0.32912	95	700.0026	0.33073
60	350.0032	0.32714	78	530.0007	0.32923	96	710.0025	0.3308
61	360.0031	0.32717	79	540.0006	0.32933	97	720.0023	0.33087
62	370.0029	0.32728	80	550.0005	0.3296	98	720.1859	0.33087

Void Ratio = 1.067 **Compression =** 13.1%

D_0 = 0.3056 **D_{50} =** 0.3131 **D_{100} =** 0.3205 **C_V at 20.59 min. =** 0.019 ft.^{2}/day **C_α =** 0.020

Pressure: 2000 psf | **TEST READINGS** | **Load No. 6**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.33087	15	0.0875	0.32875
2	0.0125	0.331	16	0.1708	0.32834
3	0.0166	0.33087	17	0.2541	0.32786
4	0.0208	0.33059	18	0.3375	0.32762
5	0.0250	0.33029	19	0.4208	0.32752
6	0.0291	0.33008	20	0.5041	0.32745
7	0.0333	0.32991	21	0.7541	0.32728
8	0.0375	0.32977	22	1.0041	0.32721
9	0.0416	0.3297	23	2.0041	0.32714
10	0.0458	0.3296	24	5.0041	0.3271
11	0.0500	0.3295	25	10.0040	0.32707
12	0.0541	0.32933	26	15.0039	0.32704
13	0.0583	0.32916	27	20.0039	0.327
14	0.0708	0.32895	28	30.0037	0.32697



Pressure: 2000 psf | **TEST READINGS (continued)** | **Load No. 6**

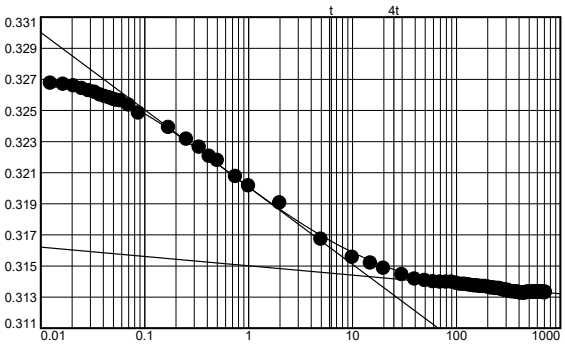
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0036	0.32697	53	280.0004	0.3268	77	520.0016	0.32673
30	50.0035	0.32697	54	290.0003	0.3268	78	530.0014	0.32673
31	60.0033	0.32693	55	300.0001	0.3268	79	540.0013	0.32673
32	70.0032	0.32693	56	310.0000	0.3268	80	550.0012	0.32673
33	80.0031	0.32693	57	320.0041	0.3268	81	560.0011	0.32673
34	90.0029	0.32693	58	330.0039	0.3268	82	570.0009	0.32673
35	100.0028	0.32693	59	340.0038	0.3268	83	580.0008	0.32673
36	110.0027	0.3269	60	350.0037	0.3268	84	590.0006	0.32673
37	120.0025	0.3269	61	360.0035	0.3268	85	600.0005	0.32676
38	130.0024	0.3269	62	370.0034	0.3268	86	610.0004	0.32676
39	140.0023	0.3269	63	380.0033	0.3268	87	620.0002	0.32676
40	150.0021	0.32687	64	390.0032	0.3268	88	630.0001	0.32676
41	160.0020	0.32687	65	400.0030	0.3268	89	640.0041	0.32676
42	170.0019	0.32687	66	410.0029	0.3268	90	650.0040	0.32676
43	180.0017	0.32687	67	420.0028	0.3268	91	660.0038	0.32676
44	190.0016	0.32687	68	430.0027	0.3268	92	670.0037	0.32676
45	200.0015	0.32683	69	440.0025	0.3268	93	680.0036	0.32676
46	210.0013	0.32683	70	450.0024	0.3268	94	690.0034	0.32676
47	220.0012	0.32683	71	460.0023	0.32676	95	700.0033	0.32676
48	230.0011	0.3268	72	470.0022	0.32676	96	710.0031	0.32676
49	240.0009	0.32683	73	480.0020	0.32676	97	720.0030	0.32676
50	250.0008	0.3268	74	490.0019	0.32676	98	720.0616	0.32676
51	260.0007	0.3268	75	500.0018	0.32673			
52	270.0005	0.3268	76	510.0017	0.32673			

Void Ratio = 1.077 **Compression =** 12.6%

D_0 = 0.3291 **D_{50} =** 0.3283 **D_{100} =** 0.3274 **C_V at 0.16 min. =** 2.316 $ft.^2/day$

Pressure: 500 psf | **TEST READINGS** | **Load No. 7**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.32676	39	140.0021	0.31373
2	0.0125	0.32673	40	150.0020	0.3137
3	0.0166	0.32666	41	160.0019	0.3137
4	0.0208	0.32656	42	170.0017	0.31366
5	0.0250	0.32639	43	180.0016	0.31366
6	0.0291	0.32625	44	190.0014	0.31366
7	0.0333	0.32615	45	200.0013	0.31363
8	0.0375	0.32598	46	210.0011	0.31359
9	0.0416	0.32587	47	220.0010	0.31356
10	0.0458	0.3258	48	230.0008	0.31356
11	0.0500	0.3257	49	240.0007	0.31353
12	0.0541	0.32563	50	250.0005	0.31353
13	0.0583	0.3256	51	260.0004	0.31353
14	0.0708	0.32533	52	270.0003	0.31349
15	0.0875	0.32481	53	280.0001	0.31346
16	0.1708	0.32389	54	290.0041	0.31342
17	0.2541	0.32314	55	300.0040	0.31342
18	0.3375	0.32262	56	310.0039	0.31342
19	0.4208	0.32204	57	320.0037	0.31339
20	0.5041	0.32177	58	330.0036	0.31335
21	0.7541	0.32074	59	340.0034	0.31332
22	1.0041	0.32013	60	350.0033	0.31332
23	2.0041	0.31903	61	360.0031	0.31332
24	5.0041	0.31671	62	370.0030	0.31332
25	10.0040	0.31554	63	380.0028	0.31329
26	15.0039	0.31517	64	390.0027	0.31329
27	20.0038	0.31483	65	400.0026	0.31329
28	30.0037	0.31442	66	410.0024	0.31325
29	40.0036	0.31414	67	420.0023	0.31325
30	50.0034	0.31404	68	430.0021	0.31325
31	60.0033	0.31397	69	440.0020	0.31325
32	70.0031	0.31394	70	450.0018	0.31325
33	80.0030	0.31394	71	460.0017	0.31325
34	90.0029	0.31394	72	470.0016	0.31325
35	100.0027	0.31387	73	480.0014	0.31329
36	110.0026	0.3138	74	490.0013	0.31329
37	120.0024	0.3138	75	500.0011	0.31329
38	130.0023	0.31377	76	510.0010	0.31329



Pressure: 500 psf **TEST READINGS (continued)** **Load No. 7**

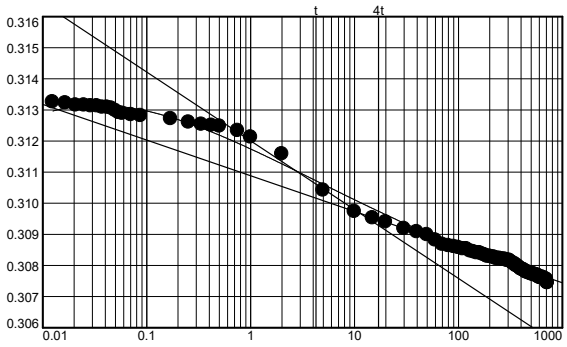
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0009	0.31329	87	620.0037	0.31329	97	720.0023	0.31329
78	530.0007	0.31329	88	630.0036	0.31329	98	720.0942	0.31329
79	540.0006	0.31329	89	640.0034	0.31329			
80	550.0005	0.31329	90	650.0033	0.31329			
81	560.0003	0.31329	91	660.0031	0.31329			
82	570.0002	0.31329	92	670.0030	0.31329			
83	580.0000	0.31329	93	680.0029	0.31329			
84	590.0041	0.31332	94	690.0027	0.31329			
85	600.0040	0.31332	95	700.0026	0.31329			
86	610.0038	0.31329	96	710.0024	0.31325			

Void Ratio = 1.109 **Compression =** 11.3%

D_0 = 0.3184 **D_{50} =** 0.3164 **D_{100} =** 0.3143 **C_V at 7.22 min. =** 0.053 ft.^{2}/day

Pressure: 300 psf **TEST READINGS** **Load No. 8**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.31329	23	2.0041	0.31158
2	0.0125	0.31325	24	5.0041	0.31041
3	0.0166	0.31322	25	10.0040	0.30973
4	0.0208	0.31315	26	15.0039	0.30952
5	0.0250	0.31315	27	20.0039	0.30939
6	0.0291	0.31312	28	30.0037	0.30918
7	0.0333	0.31312	29	40.0036	0.30908
8	0.0375	0.31308	30	50.0034	0.30898
9	0.0416	0.31308	31	60.0033	0.30881
10	0.0458	0.31305	32	70.0032	0.30867
11	0.0500	0.31298	33	80.0030	0.30863
12	0.0541	0.31291	34	90.0029	0.3086
13	0.0583	0.31288	35	100.0027	0.30857
14	0.0708	0.31284	36	110.0026	0.30853
15	0.0875	0.31281	37	120.0025	0.30853
16	0.1708	0.31271	38	130.0023	0.30846
17	0.2541	0.3126	39	140.0022	0.30843
18	0.3375	0.31253	40	150.0021	0.3084
19	0.4208	0.3125	41	160.0020	0.3084
20	0.5041	0.31247	42	170.0018	0.30836
21	0.7541	0.31233	43	180.0017	0.30833
22	1.0041	0.31212	44	190.0015	0.30829



Pressure: 300 psf | **TEST READINGS (continued)** | **Load No. 8**

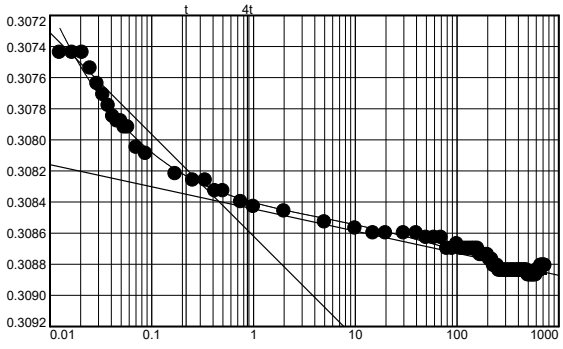
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0014	0.30829	63	380.0032	0.30795	81	560.0006	0.30768
46	210.0013	0.30826	64	390.0031	0.30792	82	570.0005	0.30768
47	220.0011	0.30826	65	400.0029	0.30788	83	580.0004	0.30768
48	230.0010	0.30822	66	410.0028	0.30788	84	590.0002	0.30764
49	240.0009	0.30822	67	420.0026	0.30785	85	600.0001	0.30761
50	250.0007	0.30822	68	430.0025	0.30785	86	610.0041	0.30761
51	260.0006	0.30819	69	440.0023	0.30781	87	620.0040	0.30761
52	270.0005	0.30819	70	450.0022	0.30778	88	630.0038	0.30761
53	280.0004	0.30819	71	460.0021	0.30778	89	640.0037	0.30761
54	290.0002	0.30816	72	470.0019	0.30778	90	650.0035	0.30761
55	300.0001	0.30816	73	480.0018	0.30775	91	660.0034	0.30757
56	310.0041	0.30816	74	490.0016	0.30775	92	670.0032	0.30757
57	320.0040	0.30812	75	500.0015	0.30775	93	680.0031	0.30757
58	330.0039	0.30809	76	510.0013	0.30771	94	690.0030	0.30757
59	340.0037	0.30805	77	520.0012	0.30771	95	700.0028	0.30754
60	350.0036	0.30805	78	530.0011	0.30771	96	710.0027	0.30754
61	360.0035	0.30799	79	540.0009	0.30771	97	720.0025	0.30744
62	370.0033	0.30799	80	550.0008	0.30768	98	720.0195	0.30744

Void Ratio = 1.123 **Compression =** 10.7%

D_0 = 0.3117 **D_{50} =** 0.3107 **D_{100} =** 0.3097 **C_V at 4.45 min. =** 0.088 ft.^{2}/day

Pressure: 500 psf | **TEST READINGS** | **Load No. 9**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.30744	15	0.0875	0.30809
2	0.0125	0.30744	16	0.1708	0.30822
3	0.0166	0.30744	17	0.2541	0.30826
4	0.0208	0.30744	18	0.3375	0.30826
5	0.0250	0.30754	19	0.4208	0.30833
6	0.0291	0.30764	20	0.5041	0.30833
7	0.0333	0.30771	21	0.7541	0.3084
8	0.0375	0.30778	22	1.0041	0.30843
9	0.0416	0.30785	23	2.0041	0.30846
10	0.0458	0.30788	24	5.0041	0.30853
11	0.0500	0.30788	25	10.0040	0.30857
12	0.0541	0.30792	26	15.0039	0.3086
13	0.0583	0.30792	27	20.0038	0.3086
14	0.0708	0.30805	28	30.0037	0.3086



Pressure: 500 psf	TEST READINGS (continued)	Load No. 9

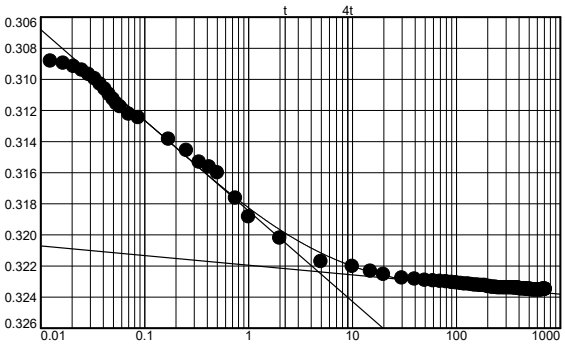
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0036	0.3086	53	280.0002	0.30884	77	520.0010	0.30887
30	50.0034	0.30863	54	290.0001	0.30884	78	530.0009	0.30887
31	60.0033	0.30863	55	300.0041	0.30884	79	540.0008	0.30887
32	70.0032	0.30863	56	310.0040	0.30884	80	550.0006	0.30887
33	80.0030	0.3087	57	320.0038	0.30884	81	560.0005	0.30887
34	90.0029	0.3087	58	330.0037	0.30884	82	570.0004	0.30887
35	100.0027	0.30867	59	340.0036	0.30884	83	580.0002	0.30887
36	110.0026	0.3087	60	350.0034	0.30884	84	590.0001	0.30887
37	120.0024	0.3087	61	360.0033	0.30884	85	600.0042	0.30887
38	130.0023	0.3087	62	370.0031	0.30884	86	610.0040	0.30884
39	140.0022	0.3087	63	380.0030	0.30884	87	620.0039	0.30884
40	150.0020	0.3087	64	390.0029	0.30884	88	630.0038	0.30884
41	160.0019	0.3087	65	400.0027	0.30884	89	640.0036	0.30884
42	170.0018	0.30874	66	410.0026	0.30884	90	650.0035	0.30884
43	180.0016	0.30874	67	420.0025	0.30884	91	660.0034	0.30884
44	190.0015	0.30874	68	430.0023	0.30884	92	670.0032	0.30881
45	200.0014	0.30874	69	440.0022	0.30884	93	680.0031	0.30881
46	210.0012	0.30877	70	450.0020	0.30884	94	690.0030	0.30881
47	220.0011	0.30877	71	460.0019	0.30884	95	700.0028	0.30881
48	230.0009	0.30881	72	470.0017	0.30884	96	710.0027	0.30881
49	240.0008	0.30881	73	480.0016	0.30884	97	720.0026	0.30881
50	250.0007	0.30881	74	490.0015	0.30884	98	730.0024	0.30881
51	260.0005	0.30884	75	500.0013	0.30887	99	734.3401	0.30881
52	270.0004	0.30884	76	510.0012	0.30887			

Void Ratio = 1.119 **Compression =** 10.8%

D_0 = 0.3081 **D_{50} =** 0.3082 **D_{100} =** 0.3084 **C_v at 0.22 min. =** 1.781 ft.^{2}/day **C_α =** 0.000

Pressure: 2000 psf	TEST READINGS	Load No. 10

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.30881	39	140.0022	0.32321
2	0.0125	0.30884	40	150.0020	0.32324
3	0.0166	0.30898	41	160.0019	0.32324
4	0.0208	0.30918	42	170.0017	0.32327
5	0.0250	0.30942	43	180.0016	0.32327
6	0.0291	0.3097	44	190.0015	0.32327
7	0.0333	0.30997	45	200.0013	0.32334
8	0.0374	0.31031	46	210.0012	0.32334
9	0.0416	0.31065	47	220.0011	0.32338
10	0.0458	0.31099	48	230.0009	0.32338
11	0.0499	0.3113	49	240.0008	0.32338
12	0.0541	0.31158	50	250.0006	0.32341
13	0.0583	0.31178	51	260.0005	0.32341
14	0.0708	0.31226	52	270.0003	0.32341
15	0.0874	0.31247	53	280.0002	0.32341
16	0.1708	0.31387	54	290.0000	0.32341
17	0.2541	0.31459	55	300.0040	0.32341
18	0.3374	0.31534	56	310.0039	0.32341
19	0.4208	0.31565	57	320.0037	0.32341
20	0.5041	0.31602	58	330.0036	0.32341
21	0.7541	0.31766	59	340.0035	0.32341
22	1.0041	0.31886	60	350.0033	0.32341
23	2.0041	0.32023	61	360.0032	0.32344
24	5.0040	0.32173	62	370.0030	0.32344
25	10.0040	0.32204	63	380.0029	0.32344
26	15.0039	0.32235	64	390.0027	0.32344
27	20.0038	0.32256	65	400.0026	0.32344
28	30.0037	0.32279	66	410.0024	0.32348
29	40.0036	0.32286	67	420.0023	0.32348
30	50.0034	0.32293	68	430.0022	0.32348
31	60.0033	0.32297	69	440.0020	0.32348
32	70.0032	0.323	70	450.0019	0.32348
33	80.0030	0.32303	71	460.0017	0.32348
34	90.0029	0.32307	72	470.0016	0.32351
35	100.0027	0.3231	73	480.0014	0.32351
36	110.0026	0.32314	74	490.0013	0.32351
37	120.0025	0.32317	75	500.0011	0.32351
38	130.0023	0.32317	76	510.0010	0.32351



Pressure: 2000 psf | **TEST READINGS (continued)** | **Load No. 10**

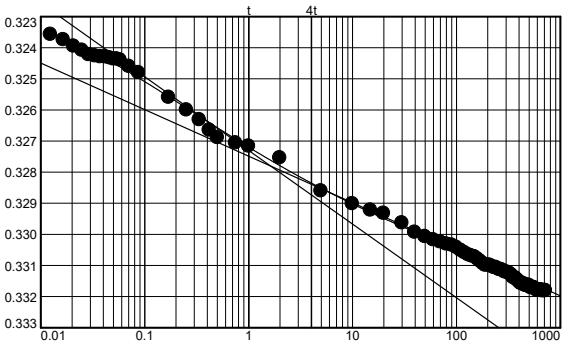
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0009	0.32351	87	620.0036	0.32355	97	720.0022	0.32351
78	530.0007	0.32355	88	630.0035	0.32355	98	720.1233	0.32351
79	540.0006	0.32355	89	640.0033	0.32355			
80	550.0004	0.32355	90	650.0032	0.32355			
81	560.0003	0.32355	91	660.0030	0.32355			
82	570.0001	0.32355	92	670.0029	0.32355			
83	580.0000	0.32355	93	680.0028	0.32351			
84	590.0040	0.32355	94	690.0026	0.32351			
85	600.0039	0.32355	95	700.0025	0.32351			
86	610.0037	0.32355	96	710.0024	0.32351			

Void Ratio = 1.084 **Compression =** 12.3%

D_0 = 0.3179 **D_{50} =** 0.3201 **D_{100} =** 0.3224 **C_v at 2.56 min. =** 0.150 ft.^{2}/day **C_α =** 0.001

Pressure: 3200 psf | **TEST READINGS** | **Load No. 11**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.32351	23	2.0041	0.32755
2	0.0125	0.32358	24	5.0041	0.32861
3	0.0166	0.32375	25	10.0040	0.32902
4	0.0208	0.32396	26	15.0039	0.32923
5	0.0250	0.32409	27	20.0038	0.32933
6	0.0291	0.32423	28	30.0037	0.32964
7	0.0333	0.32427	29	40.0036	0.32994
8	0.0375	0.3243	30	50.0034	0.33008
9	0.0416	0.3243	31	60.0033	0.33018
10	0.0458	0.32433	32	70.0032	0.33025
11	0.0500	0.32437	33	80.0030	0.33032
12	0.0541	0.32437	34	90.0029	0.33035
13	0.0583	0.3244	35	100.0027	0.33042
14	0.0708	0.32461	36	110.0026	0.33052
15	0.0875	0.32481	37	120.0024	0.33059
16	0.1708	0.3256	38	130.0023	0.33066
17	0.2541	0.32601	39	140.0022	0.3307
18	0.3375	0.32632	40	150.0020	0.33073
19	0.4208	0.32666	41	160.0019	0.3308
20	0.5041	0.3269	42	170.0017	0.33087
21	0.7541	0.32707	43	180.0016	0.33094
22	1.0041	0.32717	44	190.0014	0.331



Pressure: 3200 psf | **TEST READINGS (continued)** | **Load No. 11**

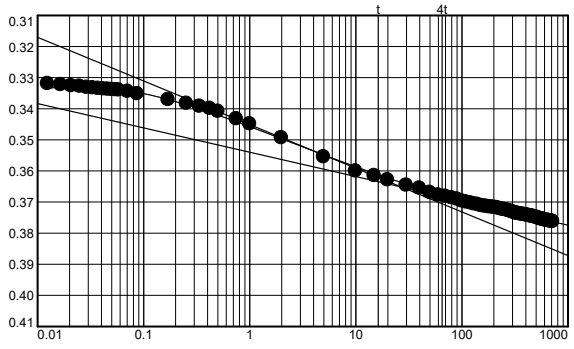
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0013	0.331	63	380.0029	0.33145	81	560.0006	0.33172
46	210.0012	0.331	64	390.0028	0.33148	82	570.0004	0.33176
47	220.0010	0.33104	65	400.0027	0.33152	83	580.0003	0.33176
48	230.0009	0.33107	66	410.0025	0.33155	84	590.0002	0.33179
49	240.0007	0.33107	67	420.0024	0.33159	85	600.0000	0.33179
50	250.0006	0.33111	68	430.0023	0.33159	86	610.0041	0.33179
51	260.0005	0.33114	69	440.0021	0.33159	87	620.0039	0.33179
52	270.0003	0.33114	70	450.0020	0.33162	88	630.0038	0.33179
53	280.0002	0.33117	71	460.0019	0.33165	89	640.0037	0.33179
54	290.0000	0.33121	72	470.0017	0.33165	90	650.0036	0.33179
55	300.0041	0.33121	73	480.0016	0.33165	91	660.0034	0.33182
56	310.0039	0.33124	74	490.0015	0.33165	92	670.0033	0.33182
57	320.0038	0.33124	75	500.0013	0.33165	93	680.0032	0.33182
58	330.0036	0.33128	76	510.0012	0.33169	94	690.0030	0.33182
59	340.0035	0.33131	77	520.0011	0.33172	95	700.0029	0.33182
60	350.0034	0.33138	78	530.0010	0.33172	96	710.0028	0.33182
61	360.0032	0.33141	79	540.0008	0.33172	97	720.0026	0.33182
62	370.0031	0.33141	80	550.0007	0.33172	98	720.0654	0.33182

Void Ratio = 1.065 **Compression =** 13.1%

D_0 = 0.3261 **D_{50} =** 0.3269 **D_{100} =** 0.3278 **C_V at 0.74 min. =** 0.507 ft.^{2}/day **C_α =** 0.004

Pressure: 6400 psf | **TEST READINGS** | **Load No. 12**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.33182	15	0.0874	0.33524
2	0.0125	0.33203	16	0.1708	0.33716
3	0.0166	0.33237	17	0.2541	0.33836
4	0.0208	0.33265	18	0.3374	0.33928
5	0.0250	0.33288	19	0.4208	0.34
6	0.0291	0.33319	20	0.5041	0.34092
7	0.0333	0.3334	21	0.7541	0.34328
8	0.0374	0.33353	22	1.0041	0.34492
9	0.0416	0.33371	23	2.0041	0.34944
10	0.0458	0.33381	24	5.0040	0.35553
11	0.0499	0.33388	25	10.0040	0.36014
12	0.0541	0.33398	26	15.0039	0.36155
13	0.0583	0.33408	27	20.0039	0.36295
14	0.0708	0.33446	28	30.0037	0.36466



Pressure: 6400 psf	TEST READINGS (continued)	Load No. 12

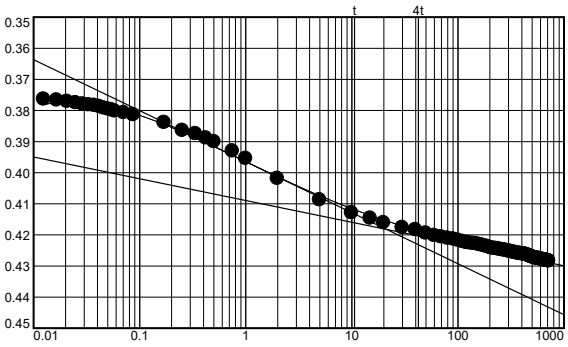
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0036	0.36562	53	280.0004	0.37287	77	520.0011	0.37513
30	50.0037	0.36695	54	290.0003	0.37307	78	530.0010	0.37526
31	60.0036	0.36781	55	300.0001	0.37324	79	540.0008	0.37533
32	70.0035	0.36822	56	310.0041	0.37342	80	550.0007	0.37543
33	80.0033	0.36873	57	320.0040	0.37362	81	560.0005	0.3755
34	90.0032	0.36914	58	330.0038	0.37369	82	570.0004	0.37557
35	100.0030	0.36976	59	340.0037	0.37376	83	580.0002	0.37564
36	110.0029	0.3701	60	350.0035	0.37386	84	590.0001	0.37571
37	120.0027	0.37034	61	360.0034	0.37393	85	600.0041	0.37574
38	130.0026	0.37065	62	370.0033	0.37403	86	610.0040	0.37581
39	140.0025	0.37085	63	380.0031	0.3741	87	620.0039	0.37588
40	150.0023	0.37116	64	390.0030	0.37413	88	630.0037	0.37595
41	160.0022	0.37133	65	400.0028	0.3742	89	640.0036	0.37602
42	170.0020	0.3714	66	410.0027	0.37431	90	650.0034	0.37602
43	180.0019	0.37157	67	420.0025	0.37434	91	660.0033	0.37605
44	190.0017	0.37167	68	430.0024	0.37441	92	670.0031	0.37608
45	200.0016	0.37177	69	440.0022	0.37454	93	680.0030	0.37615
46	210.0014	0.37188	70	450.0021	0.37458	94	690.0029	0.37622
47	220.0013	0.37201	71	460.0020	0.37465	95	700.0027	0.37625
48	230.0011	0.37222	72	470.0018	0.37472	96	710.0026	0.37632
49	240.0010	0.37236	73	480.0017	0.37475	97	720.0024	0.37636
50	250.0008	0.37246	74	490.0015	0.37485	98	720.1527	0.37636
51	260.0007	0.37256	75	500.0014	0.37492			
52	270.0006	0.3727	76	510.0013	0.37502			

Void Ratio = 0.959 **Compression =** 17.6%

D_0 = 0.3547 **D_{50} =** 0.3599 **D_{100} =** 0.3651 **C_v at 12.61 min. =** 0.028 ft.^{2}/day **C_α =** 0.019

Pressure: 12800 psf	TEST READINGS	Load No. 13

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.37636	39	140.0021	0.42281
2	0.0125	0.37643	40	150.0020	0.42294
3	0.0166	0.3767	41	160.0018	0.42322
4	0.0208	0.37718	42	170.0017	0.42339
5	0.0250	0.37755	43	180.0015	0.42363
6	0.0291	0.378	44	190.0014	0.42383
7	0.0333	0.37824	45	200.0012	0.42414
8	0.0374	0.37841	46	210.0011	0.42428
9	0.0416	0.37879	47	220.0009	0.42438
10	0.0458	0.37926	48	230.0008	0.42445
11	0.0499	0.37957	49	240.0006	0.42455
12	0.0541	0.37985	50	250.0005	0.42475
13	0.0583	0.38022	51	260.0004	0.42482
14	0.0708	0.38074	52	270.0002	0.42493
15	0.0874	0.38142	53	280.0001	0.42499
16	0.1708	0.38395	54	290.0041	0.42513
17	0.2541	0.38648	55	300.0039	0.42523
18	0.3374	0.38751	56	310.0038	0.42534
19	0.4208	0.38894	57	320.0037	0.42547
20	0.5041	0.39014	58	330.0035	0.42561
21	0.7541	0.39312	59	340.0034	0.42568
22	1.0041	0.39551	60	350.0032	0.42578
23	2.0041	0.40191	61	360.0031	0.42588
24	5.0040	0.40882	62	370.0030	0.42595
25	10.0040	0.41295	63	380.0028	0.42602
26	15.0039	0.4147	64	390.0027	0.42609
27	20.0038	0.41614	65	400.0026	0.42612
28	30.0037	0.41767	66	410.0025	0.42616
29	40.0036	0.41836	67	420.0023	0.42626
30	50.0034	0.41949	68	430.0022	0.42629
31	60.0033	0.42027	69	440.0020	0.42636
32	70.0031	0.42068	70	450.0019	0.42653
33	80.0030	0.42113	71	460.0018	0.42664
34	90.0029	0.4214	72	470.0016	0.42674
35	100.0027	0.42178	73	480.0015	0.42688
36	110.0026	0.42219	74	490.0014	0.42708
37	120.0024	0.42253	75	500.0013	0.42715
38	130.0023	0.42267	76	510.0011	0.42725



Pressure: 12800 psf | **TEST READINGS (continued)** | **Load No. 13**

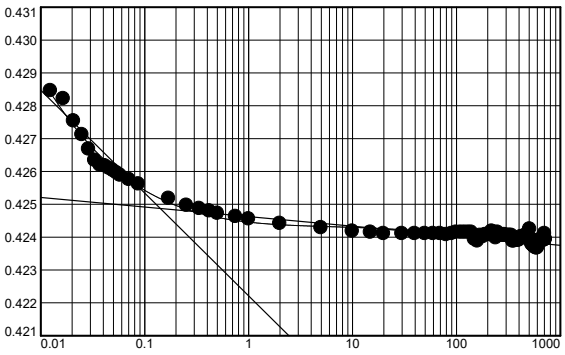
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0010	0.42735	87	620.0038	0.42794	97	720.0025	0.42841
78	530.0009	0.42742	88	630.0037	0.42804	98	720.1736	0.42841
79	540.0007	0.42746	89	640.0036	0.42807			
80	550.0006	0.42753	90	650.0034	0.42811			
81	560.0005	0.42756	91	660.0033	0.42814			
82	570.0003	0.42763	92	670.0032	0.42818			
83	580.0002	0.42766	93	680.0030	0.42824			
84	590.0001	0.42773	94	690.0029	0.42828			
85	600.0041	0.42776	95	700.0028	0.42831			
86	610.0040	0.42783	96	710.0026	0.42838			

Void Ratio = 0.835 **Compression =** 22.8%

D_0 = 0.4051 **D_{50} =** 0.4117 **D_{100} =** 0.4182 **C_v at 10.20 min. =** 0.031 ft.^{2}/day **C_α =** 0.017

Pressure: 6400 psf | **TEST READINGS** | **Load No. 14**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.42841	23	2.0041	0.42441
2	0.0125	0.42845	24	5.0040	0.42428
3	0.0166	0.42821	25	10.0040	0.42417
4	0.0208	0.42753	26	15.0039	0.42414
5	0.0250	0.42711	27	20.0038	0.4241
6	0.0291	0.42667	28	30.0037	0.4241
7	0.0333	0.42633	29	40.0036	0.4241
8	0.0374	0.42619	30	50.0034	0.4241
9	0.0416	0.42616	31	60.0033	0.4241
10	0.0458	0.42609	32	70.0032	0.4241
11	0.0499	0.42602	33	80.0030	0.42407
12	0.0541	0.42595	34	90.0029	0.4241
13	0.0583	0.42588	35	100.0027	0.42414
14	0.0708	0.42575	36	110.0026	0.42414
15	0.0874	0.42561	37	120.0024	0.42414
16	0.1708	0.42517	38	130.0023	0.42414
17	0.2541	0.42496	39	140.0022	0.42414
18	0.3374	0.42486	40	150.0020	0.42393
19	0.4208	0.42479	41	160.0019	0.42387
20	0.5041	0.42472	42	170.0017	0.42404
21	0.7541	0.42462	43	180.0016	0.424
22	1.0041	0.42455	44	190.0014	0.42407



Pressure: 6400 psf | **TEST READINGS (continued)** | **Load No. 14**

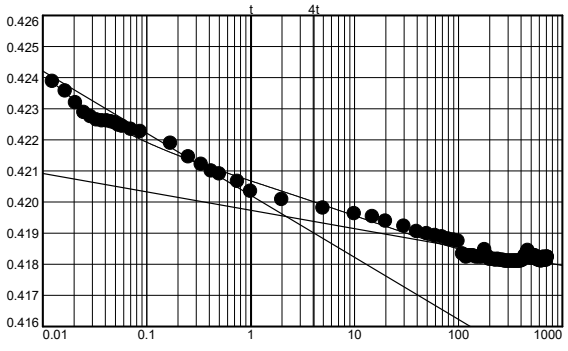
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
45	200.0013	0.42407	63	380.0029	0.4239	81	560.0003	0.42373
46	210.0011	0.42407	64	390.0027	0.4239	82	570.0002	0.42369
47	220.0010	0.42417	65	400.0026	0.4239	83	580.0001	0.42369
48	230.0008	0.42414	66	410.0024	0.42393	84	590.0041	0.42366
49	240.0007	0.42397	67	420.0023	0.424	85	600.0040	0.42366
50	250.0006	0.42414	68	430.0022	0.42397	86	610.0039	0.42369
51	260.0004	0.42404	69	440.0020	0.42397	87	620.0037	0.4239
52	270.0003	0.42407	70	450.0019	0.424	88	630.0036	0.4239
53	280.0001	0.42404	71	460.0017	0.42404	89	640.0035	0.4239
54	290.0041	0.42407	72	470.0016	0.42404	90	650.0033	0.4239
55	300.0040	0.42404	73	480.0014	0.42404	91	660.0032	0.4239
56	310.0039	0.42404	74	490.0013	0.424	92	670.0030	0.4239
57	320.0037	0.42404	75	500.0011	0.424	93	680.0029	0.4239
58	330.0036	0.42404	76	510.0010	0.42424	94	690.0027	0.4239
59	340.0034	0.42404	77	520.0008	0.42393	95	700.0026	0.4239
60	350.0033	0.42387	78	530.0007	0.4238	96	710.0024	0.4241
61	360.0031	0.42387	79	540.0006	0.42376	97	720.0023	0.42393
62	370.0030	0.4239	80	550.0005	0.42376	98	720.0526	0.42393

Void Ratio = 0.846 **Compression =** 22.4%

D_0 = 0.4284 **D_{50} =** 0.4266 **D_{100} =** 0.4249 **C_V at 0.03 min. =** 8.913 ft.^{2}/day

Pressure: 3200 psf | **TEST READINGS** | **Load No. 15**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.42393	15	0.0874	0.42226
2	0.0125	0.42387	16	0.1708	0.42188
3	0.0166	0.42356	17	0.2541	0.42144
4	0.0208	0.42318	18	0.3374	0.4212
5	0.0250	0.42287	19	0.4208	0.42099
6	0.0291	0.42274	20	0.5041	0.42089
7	0.0333	0.42263	21	0.7541	0.42065
8	0.0374	0.4226	22	1.0041	0.42034
9	0.0416	0.4226	23	2.0041	0.42007
10	0.0458	0.42257	24	5.0040	0.4198
11	0.0499	0.42253	25	10.0040	0.41962
12	0.0541	0.42246	26	15.0039	0.41952
13	0.0583	0.42243	27	20.0038	0.41938
14	0.0708	0.42233	28	30.0037	0.41921



Pressure: 3200 psf	TEST READINGS (continued)	Load No. 15

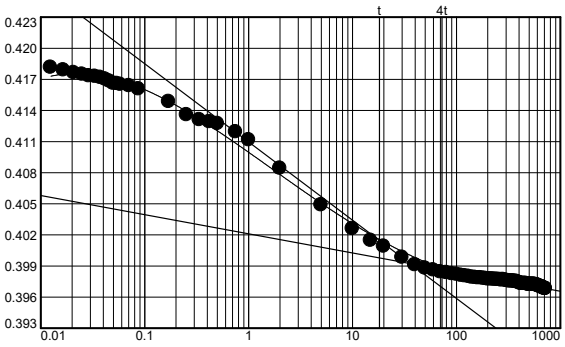
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	40.0036	0.41904	53	280.0002	0.41809	77	520.0010	0.41819
30	50.0034	0.41897	54	290.0000	0.41809	78	530.0009	0.41822
31	60.0033	0.41891	55	300.0040	0.41809	79	540.0008	0.41826
32	70.0031	0.41887	56	310.0039	0.41809	80	550.0006	0.41826
33	80.0030	0.4188	57	320.0038	0.41809	81	560.0005	0.41819
34	90.0029	0.41877	58	330.0036	0.41809	82	570.0004	0.41815
35	100.0027	0.41873	59	340.0035	0.41809	83	580.0002	0.41815
36	110.0026	0.41832	60	350.0034	0.41809	84	590.0001	0.41812
37	120.0024	0.41822	61	360.0032	0.41809	85	600.0042	0.41812
38	130.0023	0.41826	62	370.0031	0.41809	86	610.0040	0.41812
39	140.0022	0.41826	63	380.0029	0.41809	87	620.0039	0.41815
40	150.0020	0.41822	64	390.0028	0.41809	88	630.0037	0.41809
41	160.0019	0.41822	65	400.0026	0.41809	89	640.0036	0.41815
42	170.0017	0.41822	66	410.0025	0.41812	90	650.0035	0.41812
43	180.0016	0.41846	67	420.0024	0.41812	91	660.0033	0.41819
44	190.0014	0.41826	68	430.0022	0.41819	92	670.0032	0.41822
45	200.0013	0.41815	69	440.0021	0.41826	93	680.0031	0.41812
46	210.0011	0.41815	70	450.0020	0.41829	94	690.0029	0.41812
47	220.0010	0.41815	71	460.0018	0.41836	95	700.0028	0.41815
48	230.0009	0.41812	72	470.0017	0.41843	96	710.0027	0.41812
49	240.0007	0.41815	73	480.0016	0.41836	97	720.0025	0.41822
50	250.0006	0.41812	74	490.0014	0.41819	98	720.0570	0.41822
51	260.0005	0.41812	75	500.0013	0.41819			
52	270.0003	0.41812	76	510.0012	0.41819			

Void Ratio = 0.859 **Compression =** 21.8%

D_0 = 0.4213 **D_{50} =** 0.4204 **D_{100} =** 0.4195 **C_v at 1.67 min. =** 0.179 $ft.^2/day$

Pressure: 500 psf | **TEST READINGS** | **Load No. 16**

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.41822	39	140.0022	0.39791
2	0.0125	0.41815	40	150.0020	0.39787
3	0.0166	0.41788	41	160.0019	0.39784
4	0.0208	0.41764	42	170.0017	0.39784
5	0.0250	0.41747	43	180.0016	0.3978
6	0.0291	0.41733	44	190.0015	0.39777
7	0.0333	0.41726	45	200.0013	0.39773
8	0.0374	0.41716	46	210.0012	0.39773
9	0.0416	0.41702	47	220.0010	0.39773
10	0.0458	0.41682	48	230.0009	0.3977
11	0.0499	0.41661	49	240.0008	0.3977
12	0.0541	0.41658	50	250.0006	0.39767
13	0.0583	0.41651	51	260.0005	0.39767
14	0.0708	0.41637	52	270.0003	0.39763
15	0.0874	0.41607	53	280.0002	0.39767
16	0.1708	0.41484	54	290.0001	0.39763
17	0.2541	0.41357	55	300.0041	0.3976
18	0.3374	0.41309	56	310.0039	0.39756
19	0.4208	0.41289	57	320.0038	0.39753
20	0.5041	0.41272	58	330.0036	0.39753
21	0.7541	0.41193	59	340.0035	0.39753
22	1.0041	0.41114	60	350.0034	0.39753
23	2.0041	0.40841	61	360.0032	0.39749
24	5.0040	0.40488	62	370.0031	0.39749
25	10.0040	0.40259	63	380.0029	0.39749
26	15.0039	0.40146	64	390.0028	0.39743
27	20.0038	0.40088	65	400.0026	0.39736
28	30.0037	0.39982	66	410.0033	0.39736
29	40.0036	0.3991	67	420.0031	0.39729
30	50.0034	0.39879	68	430.0030	0.39729
31	60.0033	0.39859	69	440.0028	0.39729
32	70.0032	0.39842	70	450.0027	0.39729
33	80.0030	0.39835	71	460.0025	0.39729
34	90.0029	0.39825	72	470.0024	0.39729
35	100.0027	0.39818	73	480.0022	0.39726
36	110.0026	0.39808	74	490.0021	0.39722
37	120.0025	0.39804	75	500.0020	0.39722
38	130.0023	0.39797	76	510.0018	0.39722



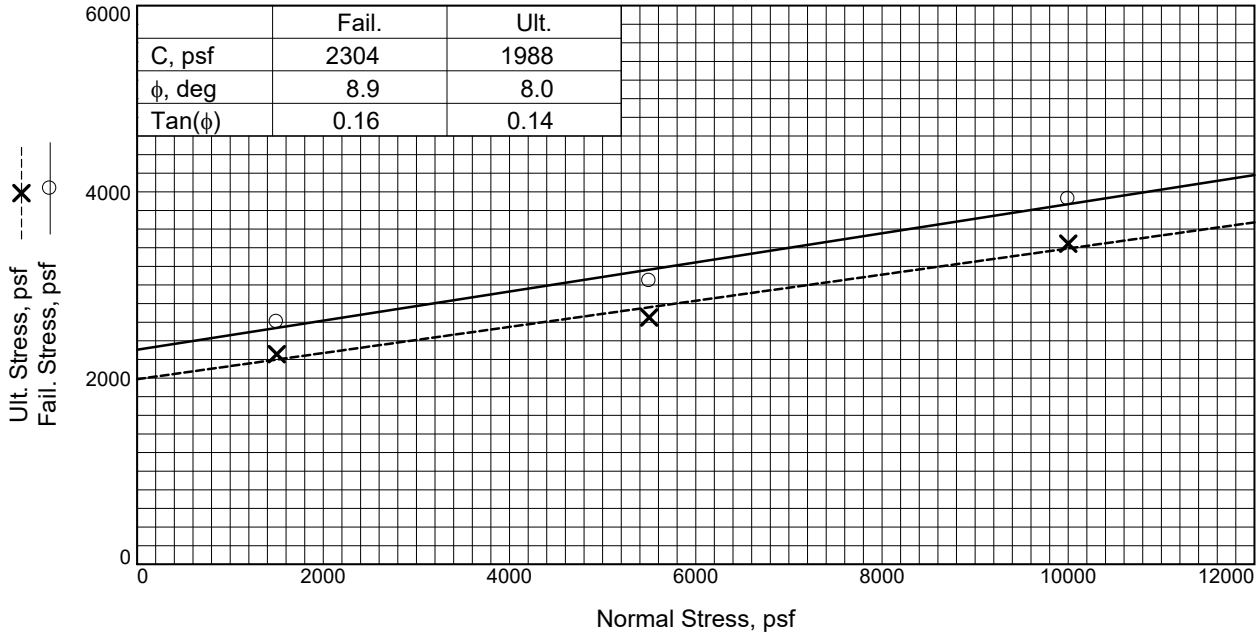
Pressure: 500 psf	TEST READINGS (continued)	Load No. 16

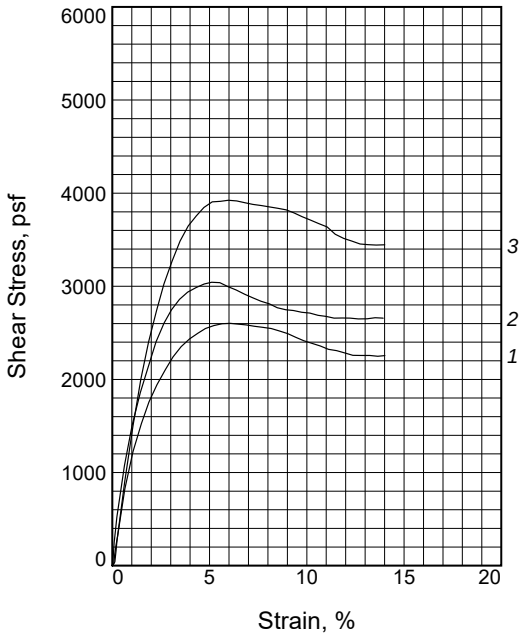
No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
77	520.0017	0.39722	87	620.0003	0.39705	97	720.0030	0.39681
78	530.0015	0.39722	88	630.0001	0.39705	98	720.1116	0.39681
79	540.0014	0.39722	89	640.0042	0.39702			
80	550.0012	0.39722	90	650.0040	0.39698			
81	560.0011	0.39722	91	660.0039	0.39698			
82	570.0010	0.39719	92	670.0037	0.39695			
83	580.0008	0.39719	93	680.0036	0.39691			
84	590.0007	0.39715	94	690.0035	0.39684			
85	600.0006	0.39715	95	700.0033	0.39684			
86	610.0004	0.39708	96	710.0032	0.39681			

Void Ratio = 0.910 **Compression =** 19.6%

D_0 = 0.4044 D_{50} = 0.4018 D_{100} = 0.3992 C_v **at 16.47 min. =** 0.019 $ft.^2/day$

B-5 STRENGTH TESTS





Sample No.		1	2	3
Initial	Water Content, %	38.9	36.3	36.3
	Dry Density, pcf	82.5	87.9	87.1
	Saturation, %	102.9	109.6	107.2
	Void Ratio	0.9968	0.8750	0.8931
	Diameter, in.	2.85	2.87	2.85
	Height, in.	0.99	1.01	0.92
At Test	Water Content, %	31.1	27.5	26.3
	Dry Density, pcf	86.0	92.1	91.3
	Saturation, %	89.5	92.0	86.4
	Void Ratio	0.9173	0.7899	0.8048
	Diameter, in.	2.85	2.87	2.85
	Height, in.	0.95	0.96	0.88
Normal Stress, psf		1500	5500	10000
Fail. Stress, psf		2602	3043	3924
Strain, %		6.1	5.1	6.0
Ult. Stress, psf		2257	2651	3443
Strain, %		13.2	13.1	13.6
Strain rate, in./min.		0.00	0.00	0.00

Sample Type:
Description: CL -Lean CLAY

LL= 34 **PL=** 22 **PI=** 12
Specific Gravity= 2.64
Remarks:

Figure _____

Client: Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Source of Sample: NE-13p-19 **Depth:** 15.5
Sample Number: S-5
Proj. No.: XL-5446 **Date Sampled:** 1/16/2020

WSDOT

Tested By: SLW **Checked By:** SLW

DIRECT SHEAR TEST

1/30/2020

Date: 1/16/2020
Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project No.: XL-5446
Location: NE-13p-19
Depth: 15.5 **Sample Number:** S-5
Description: CL -Lean CLAY
Remarks:
Type of Sample:
Specific Gravity=2.64 **LL=**34 **PL=**22 **PI=**12

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.			263.970
Moisture content: Dry soil+tare, gms.			221.400
Moisture content: Tare, gms.			84.570
Moisture, %	38.9	31.1	31.1
Moist specimen weight, gms.	190.0		
Diameter, in.	2.85	2.85	
Area, in.²	6.38	6.38	
Height, in.	0.99	0.95	
Net decrease in height, in.		0.04	
Wet density, pcf	114.6	112.7	
Dry density, pcf	82.5	86.0	
Void ratio	0.9968	0.9173	
Saturation, %	102.9	89.5	

Test Readings for Specimen No. 1

Normal stress = 1500 psf
Strain rate, in./min. = 0.00
Fail. Stress = 2602 psf **at reading no.** 29
Ult. Stress = 2257 psf **at reading no.** 46

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0013	0.027	0.0	0.0	0
1	0.0013	0.027	0.0	0.0	0
2	0.0013	0.027	0.0	0.0	0
3	0.0013	0.108	0.1	0.0	2
4	0.0014	0.296	0.3	0.0	6
5	0.0014	0.377	0.4	0.0	8
6	0.0015	0.431	0.4	0.0	9
7	0.0015	0.485	0.5	0.0	10
8	0.0017	0.673	0.6	0.0	15
9	0.0020	0.781	0.8	0.0	17
10	0.0026	0.915	0.9	0.0	20
11	0.0033	1.023	1.0	0.1	22
12	0.0035	1.158	1.1	0.1	26
13	0.0049	5.520	5.5	0.1	124

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
14	0.0067	9.935	9.9	0.2	224
15	0.0089	13.893	13.9	0.3	313
16	0.0197	36.564	36.5	0.6	825
17	0.0316	54.281	54.3	1.1	1225
18	0.0439	67.582	67.6	1.5	1525
19	0.0551	77.975	77.9	1.9	1759
20	0.0667	86.133	86.1	2.3	1944
21	0.0791	93.295	93.3	2.7	2105
22	0.0902	99.300	99.3	3.1	2241
23	0.1022	104.230	104.2	3.5	2352
24	0.1145	107.860	107.8	4.0	2434
25	0.1267	110.610	110.6	4.4	2496
26	0.1376	112.840	112.8	4.8	2546
27	0.1500	114.220	114.2	5.2	2578
28	0.1621	115.100	115.1	5.6	2598
29	0.1740	115.320	115.3	6.1	2602
30	0.1860	114.920	114.9	6.5	2593
31	0.1976	114.570	114.5	6.9	2586
32	0.2095	113.890	113.9	7.3	2570
33	0.2217	113.380	113.4	7.7	2559
34	0.2343	112.820	112.8	8.2	2546
35	0.2460	111.710	111.7	8.6	2521
36	0.2582	110.420	110.4	9.0	2492
37	0.2702	108.620	108.6	9.4	2451
38	0.2821	106.970	106.9	9.9	2414
39	0.2939	105.820	105.8	10.3	2388
40	0.3061	104.500	104.5	10.7	2358
41	0.3181	102.910	102.9	11.1	2322
42	0.3302	102.290	102.3	11.5	2308
43	0.3419	101.240	101.2	12.0	2285
44	0.3539	100.110	100.1	12.4	2259
45	0.3660	100.030	100.0	12.8	2257
46	0.3785	100.000	100.0	13.2	2257
47	0.3904	99.650	99.6	13.7	2249
48	0.4006	99.973	99.9	14.0	2256

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.			276.820
Moisture content: Dry soil+tare, gms.			235.300
Moisture content: Tare, gms.			84.540
Moisture, %	36.3	27.5	27.5
Moist specimen weight, gms.	205.5		
Diameter, in.	2.87	2.87	
Area, in.²	6.47	6.47	
Height, in.	1.01	0.96	
Net decrease in height, in.		0.05	
Wet density, pcf	119.8	117.4	
Dry density, pcf	87.9	92.1	
Void ratio	0.8750	0.7899	
Saturation, %	109.6	92.0	

Test Readings for Specimen No. 2

Normal stress = 5500 psf
Strain rate, in./min. = 0.00
Fail. Stress = 3043 psf **at reading no.** 27
Ult. Stress = 2651 psf **at reading no.** 46

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	-0.0055	0.081	0.0	0.0	0
1	-0.0055	0.081	0.0	0.0	0
2	-0.0055	0.027	-0.1	0.0	-1
3	-0.0055	0.054	0.0	0.0	-1
4	-0.0054	0.188	0.1	0.0	2
5	-0.0053	0.350	0.3	0.0	6
6	-0.0053	0.431	0.4	0.0	8
7	-0.0052	0.538	0.5	0.0	10
8	-0.0051	1.158	1.1	0.0	24
9	-0.0049	1.589	1.5	0.0	34
10	-0.0047	1.966	1.9	0.0	42
11	-0.0046	2.289	2.2	0.0	49
12	-0.0044	2.719	2.6	0.0	59
13	-0.0026	11.443	11.4	0.1	253
14	-0.0007	17.905	17.8	0.2	397
15	0.0013	23.506	23.4	0.2	521
16	0.0125	48.411	48.3	0.6	1076
17	0.0237	67.636	67.6	1.0	1504
18	0.0357	83.602	83.5	1.4	1859
19	0.0478	96.311	96.2	1.9	2142
20	0.0591	108.080	108.0	2.2	2404
21	0.0709	117.120	117.0	2.7	2605
22	0.0819	123.530	123.4	3.0	2748
23	0.0936	128.590	128.5	3.5	2861
24	0.1056	132.040	132.0	3.9	2937
25	0.1180	134.250	134.2	4.3	2986
26	0.1300	135.970	135.9	4.7	3025
27	0.1412	136.810	136.7	5.1	3043

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1530	136.590	136.5	5.5	3039
29	0.1654	134.680	134.6	6.0	2996
30	0.1773	133.060	133.0	6.4	2960
31	0.1900	131.020	130.9	6.8	2915
32	0.2015	129.350	129.3	7.2	2877
33	0.2137	127.650	127.6	7.6	2840
34	0.2262	126.410	126.3	8.1	2812
35	0.2379	124.500	124.4	8.5	2769
36	0.2504	123.530	123.4	8.9	2748
37	0.2619	123.160	123.1	9.3	2740
38	0.2739	122.320	122.2	9.7	2721
39	0.2859	121.920	121.8	10.2	2712
40	0.2981	120.840	120.8	10.6	2688
41	0.3099	120.330	120.2	11.0	2677
42	0.3217	119.490	119.4	11.4	2658
43	0.3341	119.570	119.5	11.8	2660
44	0.3455	119.490	119.4	12.2	2658
45	0.3575	119.120	119.0	12.6	2650
46	0.3705	119.170	119.1	13.1	2651
47	0.3824	119.680	119.6	13.5	2662
48	0.3938	119.520	119.4	13.9	2659
49	0.3941	119.410	119.3	13.9	2656

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.			257.340
Moisture content: Dry soil+tare, gms.			222.000
Moisture content: Tare, gms.			87.880
Moisture, %	36.3	26.3	26.3
Moist specimen weight, gms.	182.8		
Diameter, in.	2.85	2.85	
Area, in.²	6.38	6.38	
Height, in.	0.92	0.88	
Net decrease in height, in.		0.04	
Wet density, pcf	118.6	115.4	
Dry density, pcf	87.1	91.3	
Void ratio	0.8931	0.8048	
Saturation, %	107.2	86.4	

Test Readings for Specimen No. 3

Normal stress = 10000 psf
Strain rate, in./min. = 0.00
Fail. Stress = 3924 psf **at reading no.** 29
Ult. Stress = 3443 psf **at reading no.** 47

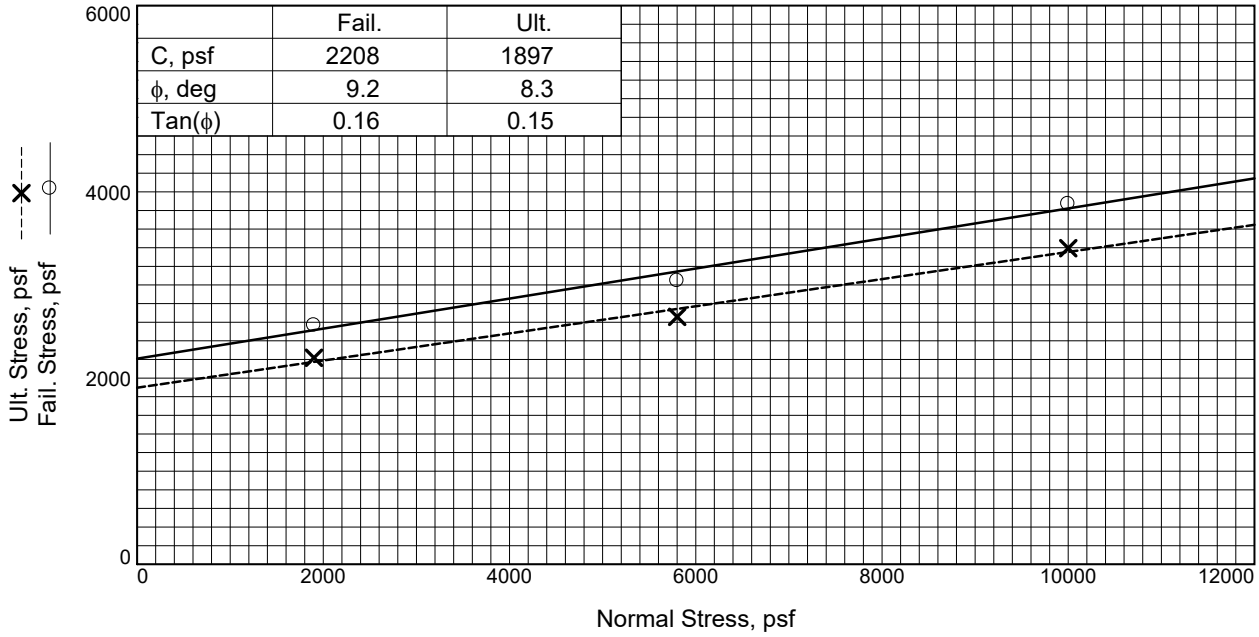
No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0042	0.027	0.0	0.0	0
1	0.0042	0.027	0.0	0.0	0
2	0.0042	0.000	0.0	0.0	-1
3	0.0042	0.054	0.0	0.0	1
4	0.0042	0.135	0.1	0.0	2
5	0.0044	0.188	0.2	0.0	4
6	0.0045	0.242	0.2	0.0	5
7	0.0045	0.242	0.2	0.0	5
8	0.0047	0.350	0.3	0.0	7
9	0.0049	0.377	0.4	0.0	8
10	0.0051	0.377	0.4	0.0	8
11	0.0053	0.485	0.5	0.0	10
12	0.0057	0.592	0.6	0.1	13
13	0.0079	1.804	1.8	0.1	40
14	0.0095	7.135	7.1	0.2	160
15	0.0109	11.928	11.9	0.2	269
16	0.0224	40.038	40.0	0.6	903
17	0.0344	66.505	66.5	1.1	1501
18	0.0460	88.772	88.7	1.5	2003
19	0.0573	106.490	106.5	1.9	2403
20	0.0690	121.460	121.4	2.3	2741
21	0.0798	134.030	134.0	2.7	3025
22	0.0916	144.860	144.8	3.1	3269
23	0.1034	154.420	154.4	3.5	3485
24	0.1154	161.600	161.6	3.9	3647
25	0.1272	166.420	166.4	4.3	3756
26	0.1383	170.410	170.4	4.7	3846
27	0.1504	173.130	173.1	5.1	3907

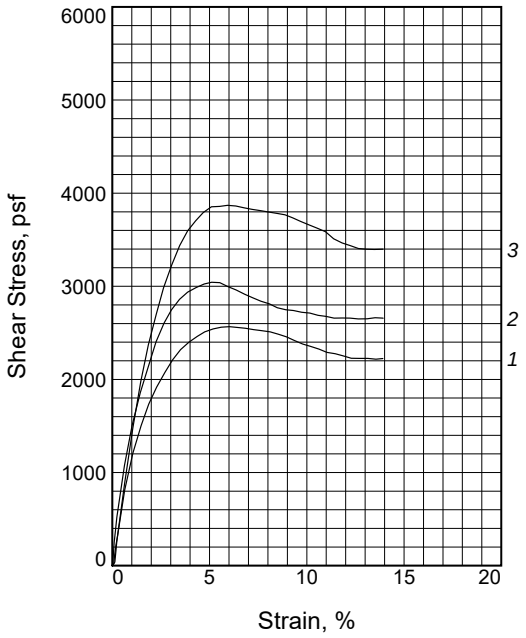
Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1626	173.370	173.3	5.6	3913
29	0.1741	173.860	173.8	6.0	3924
30	0.1864	173.560	173.5	6.4	3917
31	0.1981	172.700	172.7	6.8	3898
32	0.2101	171.920	171.9	7.2	3880
33	0.2230	171.300	171.3	7.7	3866
34	0.2345	170.680	170.7	8.1	3852
35	0.2465	170.030	170.0	8.5	3837
36	0.2590	169.280	169.3	8.9	3820
37	0.2704	167.820	167.8	9.3	3788
38	0.2822	166.070	166.0	9.8	3748
39	0.2946	164.430	164.4	10.2	3711
40	0.3067	162.790	162.8	10.6	3674
41	0.3189	161.150	161.1	11.0	3637
42	0.3308	157.700	157.7	11.5	3559
43	0.3432	155.730	155.7	11.9	3515
44	0.3551	154.470	154.4	12.3	3486
45	0.3673	153.040	153.0	12.7	3454
46	0.3790	152.720	152.7	13.2	3447
47	0.3908	152.560	152.5	13.6	3443
48	0.4030	152.690	152.7	14.0	3446
49	0.4034	152.690	152.7	14.0	3446

Return to: Samuel Wade

JOB#	XL-5446	3"	(75)
HOLE#	NE-16p-19	1.5"	(37.5)
LAB#	G-2686	1"	(25)
DEPTH#	29.3' - 29.8'	.75"	(19)
SAMPLE#	P-12	#4	(4.75)
COLOR		#10	(2)
PI	Grad Hydro SG	#40	(.425)
Comments:		#60	(.25)
XL-5446 NE-16p-19 P-12		#80	(.18)
Moisture Content:		#100	(.15)
Wet Wt:		#200	(.075)
Dry Wt:		Passed	
Tare #	Wt:	Total	





Sample No.		1	2	3
Initial	Water Content, %	21.3	22.3	21.3
	Dry Density, pcf	111.4	108.3	110.4
	Saturation, %	107.4	104.2	104.7
	Void Ratio	0.5472	0.5904	0.5604
	Diameter, in.	2.87	2.87	2.87
	Height, in.	0.99	1.01	1.01
At Test	Water Content, %	18.6	18.9	18.5
	Dry Density, pcf	112.0	113.1	114.2
	Saturation, %	95.5	99.8	100.3
	Void Ratio	0.5379	0.5237	0.5088
	Diameter, in.	2.87	2.87	2.87
	Height, in.	0.98	0.97	0.98
Normal Stress, psf		1900	5800	10000
Fail. Stress, psf		2566	3043	3869
Strain, %		6.0	5.1	5.9
Ult. Stress, psf		2218	2658	3395
Strain, %		13.6	12.2	13.5
Strain rate, in./min.		0.00	0.00	0.00

Sample Type:
Description: CL - Lean CLAY

LL= 19 **PL=** 16 **PI=** 3
Specific Gravity= 2.76
Remarks:

Figure _____

Client: Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Source of Sample: NE-16p-19 **Depth:** 29.3
Sample Number: P-12
Proj. No.: XL-5446 **Date Sampled:** 1/27/2020

WSDOT

Tested By: SLW **Checked By:** SLW

DIRECT SHEAR TEST

2/18/2020

Date: 1/27/2020
Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project No.: XL-5446
Location: NE-16p-19
Depth: 29.3 **Sample Number:** P-12
Description: CL - Lean CLAY
Remarks:
Type of Sample:
Specific Gravity=2.76 **LL=**19 **PL=**16 **PI=**3

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.			306.840
Moisture content: Dry soil+tare, gms.			272.000
Moisture content: Tare, gms.			84.780
Moisture, %	21.3	18.6	18.6
Moist specimen weight, gms.	227.1		
Diameter, in.	2.87	2.87	
Area, in.²	6.47	6.47	
Height, in.	0.99	0.98	
Net decrease in height, in.		0.01	
Wet density, pcf	135.1	132.9	
Dry density, pcf	111.4	112.0	
Void ratio	0.5472	0.5379	
Saturation, %	107.4	95.5	

Test Readings for Specimen No. 1

Normal stress = 1900 psf
Strain rate, in./min. = 0.00
Fail. Stress = 2566 psf **at reading no.** 29
Ult. Stress = 2218 psf **at reading no.** 47

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0013	0.027	0.0	0.0	0
1	0.0013	0.027	0.0	0.0	0
2	0.0013	0.027	0.0	0.0	0
3	0.0013	0.108	0.1	0.0	2
4	0.0014	0.296	0.3	0.0	6
5	0.0014	0.377	0.4	0.0	8
6	0.0015	0.431	0.4	0.0	9
7	0.0015	0.485	0.5	0.0	10
8	0.0017	0.673	0.6	0.0	14
9	0.0020	0.781	0.8	0.0	17
10	0.0026	0.915	0.9	0.0	20
11	0.0033	1.023	1.0	0.1	22
12	0.0035	1.158	1.1	0.1	25
13	0.0049	5.520	5.5	0.1	122

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
14	0.0067	9.935	9.9	0.2	221
15	0.0089	13.893	13.9	0.3	309
16	0.0197	36.564	36.5	0.6	813
17	0.0316	54.281	54.3	1.1	1208
18	0.0439	67.582	67.6	1.5	1504
19	0.0551	77.975	77.9	1.9	1735
20	0.0667	86.133	86.1	2.3	1917
21	0.0791	93.295	93.3	2.7	2076
22	0.0902	99.300	99.3	3.1	2210
23	0.1022	104.230	104.2	3.5	2319
24	0.1145	107.860	107.8	3.9	2400
25	0.1267	110.610	110.6	4.4	2461
26	0.1376	112.840	112.8	4.8	2511
27	0.1500	114.220	114.2	5.2	2542
28	0.1621	115.100	115.1	5.6	2561
29	0.1740	115.320	115.3	6.0	2566
30	0.1860	114.920	114.9	6.4	2557
31	0.1976	114.570	114.5	6.8	2550
32	0.2095	113.890	113.9	7.3	2534
33	0.2217	113.380	113.4	7.7	2523
34	0.2343	112.820	112.8	8.1	2511
35	0.2460	111.710	111.7	8.5	2486
36	0.2582	110.420	110.4	9.0	2457
37	0.2702	108.620	108.6	9.4	2417
38	0.2821	106.970	106.9	9.8	2380
39	0.2939	105.820	105.8	10.2	2355
40	0.3061	104.500	104.5	10.6	2325
41	0.3181	102.910	102.9	11.0	2290
42	0.3302	102.290	102.3	11.5	2276
43	0.3419	101.240	101.2	11.9	2253
44	0.3539	100.110	100.1	12.3	2228
45	0.3660	100.030	100.0	12.7	2226
46	0.3785	100.000	100.0	13.1	2225
47	0.3904	99.650	99.6	13.6	2218
48	0.4006	99.973	99.9	13.9	2225

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.			308.400
Moisture content: Dry soil+tare, gms.			273.200
Moisture content: Tare, gms.			87.380
Moisture, %	22.3	18.9	18.9
Moist specimen weight, gms.	227.2		
Diameter, in.	2.87	2.87	
Area, in.²	6.47	6.47	
Height, in.	1.01	0.97	
Net decrease in height, in.		0.04	
Wet density, pcf	132.5	134.5	
Dry density, pcf	108.3	113.1	
Void ratio	0.5904	0.5237	
Saturation, %	104.2	99.8	

Test Readings for Specimen No. 2

Normal stress = 5800 psf
Strain rate, in./min. = 0.00
Fail. Stress = 3043 psf **at reading no.** 27
Ult. Stress = 2658 psf **at reading no.** 44

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	-0.0055	0.081	0.0	0.0	0
1	-0.0055	0.081	0.0	0.0	0
2	-0.0055	0.027	-0.1	0.0	-1
3	-0.0055	0.054	0.0	0.0	-1
4	-0.0054	0.188	0.1	0.0	2
5	-0.0053	0.350	0.3	0.0	6
6	-0.0053	0.431	0.4	0.0	8
7	-0.0052	0.538	0.5	0.0	10
8	-0.0051	1.158	1.1	0.0	24
9	-0.0049	1.589	1.5	0.0	34
10	-0.0047	1.966	1.9	0.0	42
11	-0.0046	2.289	2.2	0.0	49
12	-0.0044	2.719	2.6	0.0	59
13	-0.0026	11.443	11.4	0.1	253
14	-0.0007	17.905	17.8	0.2	397
15	0.0013	23.506	23.4	0.2	521
16	0.0125	48.411	48.3	0.6	1076
17	0.0237	67.636	67.6	1.0	1504
18	0.0357	83.602	83.5	1.4	1859
19	0.0478	96.311	96.2	1.9	2142
20	0.0591	108.080	108.0	2.2	2404
21	0.0709	117.120	117.0	2.7	2605
22	0.0819	123.530	123.4	3.0	2748
23	0.0936	128.590	128.5	3.5	2861
24	0.1056	132.040	132.0	3.9	2937
25	0.1180	134.250	134.2	4.3	2986
26	0.1300	135.970	135.9	4.7	3025
27	0.1412	136.810	136.7	5.1	3043

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1530	136.590	136.5	5.5	3039
29	0.1654	134.680	134.6	6.0	2996
30	0.1773	133.060	133.0	6.4	2960
31	0.1900	131.020	130.9	6.8	2915
32	0.2015	129.350	129.3	7.2	2877
33	0.2137	127.650	127.6	7.6	2840
34	0.2262	126.410	126.3	8.1	2812
35	0.2379	124.500	124.4	8.5	2769
36	0.2504	123.530	123.4	8.9	2748
37	0.2619	123.160	123.1	9.3	2740
38	0.2739	122.320	122.2	9.7	2721
39	0.2859	121.920	121.8	10.2	2712
40	0.2981	120.840	120.8	10.6	2688
41	0.3099	120.330	120.2	11.0	2677
42	0.3217	119.490	119.4	11.4	2658
43	0.3341	119.570	119.5	11.8	2660
44	0.3455	119.490	119.4	12.2	2658
45	0.3575	119.120	119.0	12.6	2650
46	0.3705	119.170	119.1	13.1	2651
47	0.3824	119.680	119.6	13.5	2662
48	0.3938	119.520	119.4	13.9	2659
49	0.3941	119.410	119.3	13.9	2656

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.			312.330
Moisture content: Dry soil+tare, gms.			277.300
Moisture content: Tare, gms.			87.910
Moisture, %	21.3	18.5	18.5
Moist specimen weight, gms.	229.7		
Diameter, in.	2.87	2.87	
Area, in.²	6.47	6.47	
Height, in.	1.01	0.98	
Net decrease in height, in.		0.03	
Wet density, pcf	133.9	135.3	
Dry density, pcf	110.4	114.2	
Void ratio	0.5604	0.5088	
Saturation, %	104.7	100.3	

Test Readings for Specimen No. 3

Normal stress = 10000 psf
Strain rate, in./min. = 0.00
Fail. Stress = 3869 psf **at reading no.** 29
Ult. Stress = 3395 psf **at reading no.** 47

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0042	0.027	0.0	0.0	0
1	0.0042	0.027	0.0	0.0	0
2	0.0042	0.000	0.0	0.0	-1
3	0.0042	0.054	0.0	0.0	1
4	0.0042	0.135	0.1	0.0	2
5	0.0044	0.188	0.2	0.0	4
6	0.0045	0.242	0.2	0.0	5
7	0.0045	0.242	0.2	0.0	5
8	0.0047	0.350	0.3	0.0	7
9	0.0049	0.377	0.4	0.0	8
10	0.0051	0.377	0.4	0.0	8
11	0.0053	0.485	0.5	0.0	10
12	0.0057	0.592	0.6	0.1	13
13	0.0079	1.804	1.8	0.1	40
14	0.0095	7.135	7.1	0.2	158
15	0.0109	11.928	11.9	0.2	265
16	0.0224	40.038	40.0	0.6	891
17	0.0344	66.505	66.5	1.1	1480
18	0.0460	88.772	88.7	1.5	1975
19	0.0573	106.490	106.5	1.9	2370
20	0.0690	121.460	121.4	2.3	2703
21	0.0798	134.030	134.0	2.6	2983
22	0.0916	144.860	144.8	3.0	3224
23	0.1034	154.420	154.4	3.5	3437
24	0.1154	161.600	161.6	3.9	3596
25	0.1272	166.420	166.4	4.3	3704
26	0.1383	170.410	170.4	4.7	3793
27	0.1504	173.130	173.1	5.1	3853

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1626	173.370	173.3	5.5	3858
29	0.1741	173.860	173.8	5.9	3869
30	0.1864	173.560	173.5	6.4	3863
31	0.1981	172.700	172.7	6.8	3844
32	0.2101	171.920	171.9	7.2	3826
33	0.2230	171.300	171.3	7.6	3812
34	0.2345	170.680	170.7	8.0	3799
35	0.2465	170.030	170.0	8.4	3784
36	0.2590	169.280	169.3	8.9	3767
37	0.2704	167.820	167.8	9.3	3735
38	0.2822	166.070	166.0	9.7	3696
39	0.2946	164.430	164.4	10.1	3659
40	0.3067	162.790	162.8	10.5	3623
41	0.3189	161.150	161.1	11.0	3586
42	0.3308	157.700	157.7	11.4	3510
43	0.3432	155.730	155.7	11.8	3466
44	0.3551	154.470	154.4	12.2	3438
45	0.3673	153.040	153.0	12.7	3406
46	0.3790	152.720	152.7	13.1	3399
47	0.3908	152.560	152.5	13.5	3395
48	0.4030	152.690	152.7	13.9	3398
49	0.4034	152.690	152.7	13.9	3398

Ring Shear Test Report (ASTM D6467-13)

Washington State Department of Transportation

PROJECT INFORMATION			
Project	XL-5446		
Location	I-405/SR522 Vicinty to SR 527 Express Toll Lanes Improvement Project		
Project Manager	Jason Qui	Sample Number	P-6
Project Number	XL-5446	Depth	15.5' to 16'
Boring Number	NE-16p-19	Sample Type	Remolded
Description	CL - Lean CLAY		

		Specimen				
INITIAL		**50 KPA**	**100 KPA**	**200 KPA**	**400 KPA**	**700 KPA**
Specimen Thickness (in)		0.200	0.200	0.200	0.200	0.200
Internal Ring Radius(in)		1.375	1.375	1.375	1.375	1.375
External Ring Radius(in)		1.970	1.970	1.970	1.970	1.970
Moisture Content (%)		33.5				
SHEAR		**50 KPA**	**100 KPA**	**200 KPA**	**400 KPA**	**700 KPA**
Rate of Linear Displacement (in/min)		0.0007	0.0007	0.0007	0.0007	0.0007
Rate of Angular Displacement (Deg/min)		0.0240	0.0240	0.0240	0.0240	0.0240
Normal Stress (psi)		7.3	14.5	29.0	58.0	101.0
Residual Shear Stress (psi)		3.806	7.598	14.064	28.762	49.521
Linear Displacement (in)		0.840	0.252	14.064	0.336	49.521
Angular Displacement (Deg)		28.8	8.6	28.8	11.5	28.8
FINAL		**50 KPA**	**100 KPA**	**200 KPA**	**400 KPA**	**700 KPA**
Final Moisture Content (%)						20.1
Assumed Cohesion (psi)		0.0	0.0	0.0	0.0	0.0
Liquid limit		37.0	37.0	37.0	37.0	37.0
Plastic Limit		20.0	20.0	20.0	20.0	20.0
Plasticity Index		17.0	17.0	17.0	17.0	17.0
Specific Gravity		2.70	2.70	2.70	2.70	2.70
Angle of Residual Shear Resistance (Deg)	**26.2**	**27.5**	**27.7**	**25.9**	**26.4**	**26.1**
CF%:	24					

COMMENT/REMARKS

Tested By	Samuel Wade	Date	2/18/2020
Checked By	Samuel Wade	Date	2/18/2020

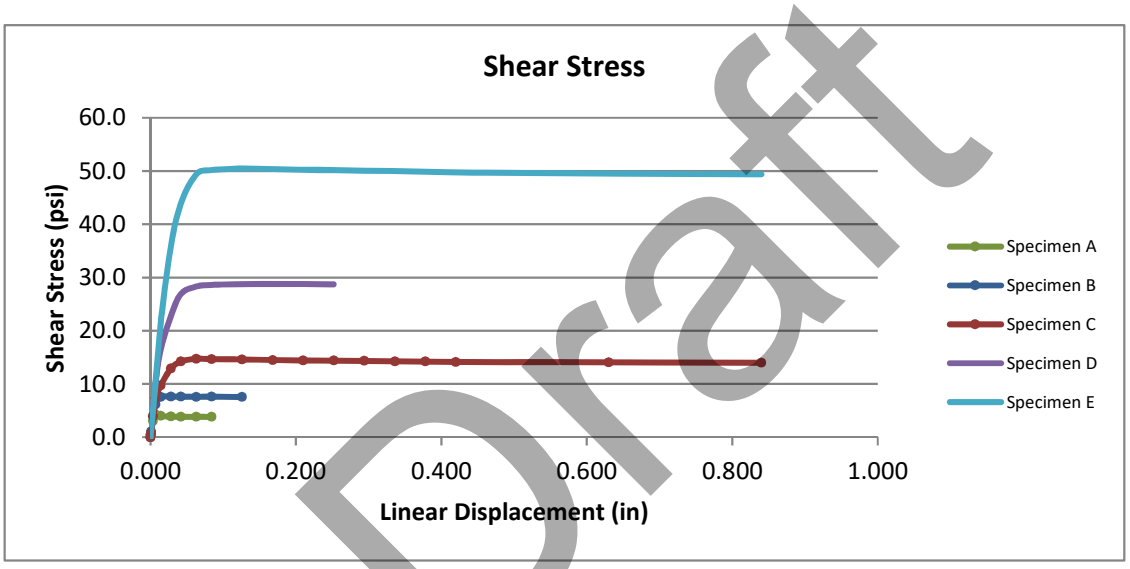
Draft

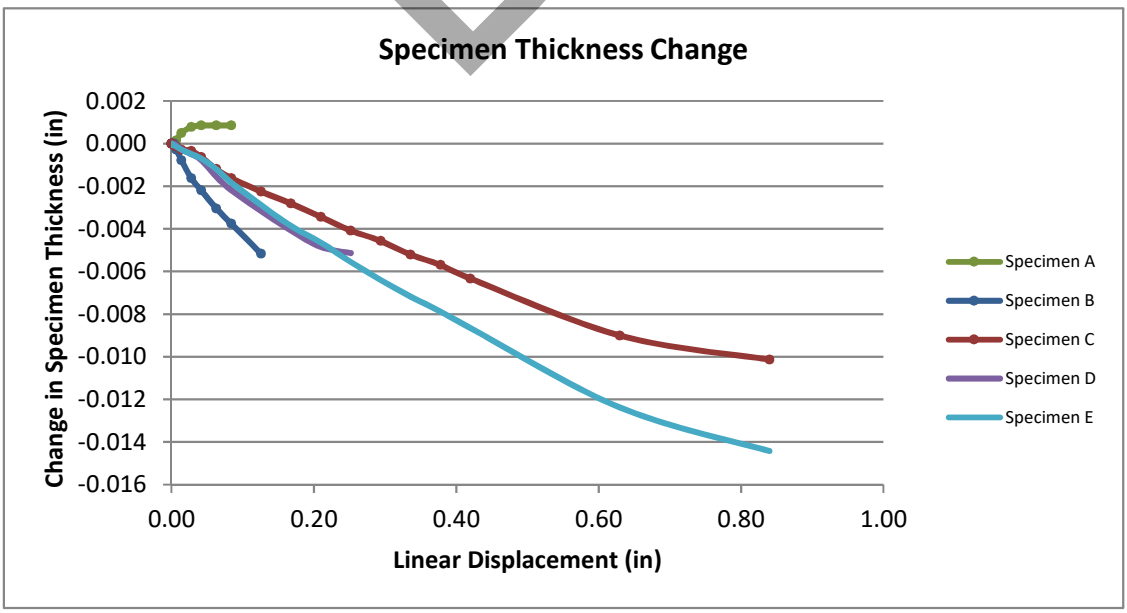
Ring Shear Test Report (ASTM D6467-13)

Washington State Department of Transportation Geotechnical Division

PROJECT INFORMATION			
Project	XL-5446		
Location	I-405/SR522 Vicinty to SR 527 Express Toll Lanes Improvement Project		
Project Manager	Jason Qui	Sample Number	P-6
Project Number	XL-5446	Depth	15.5' to 16'
Boring Number	NE-16p-19	Sample Type	Remolded
Description	CL - Lean CLAY		

FINAL GRAPHS (1 of 3)





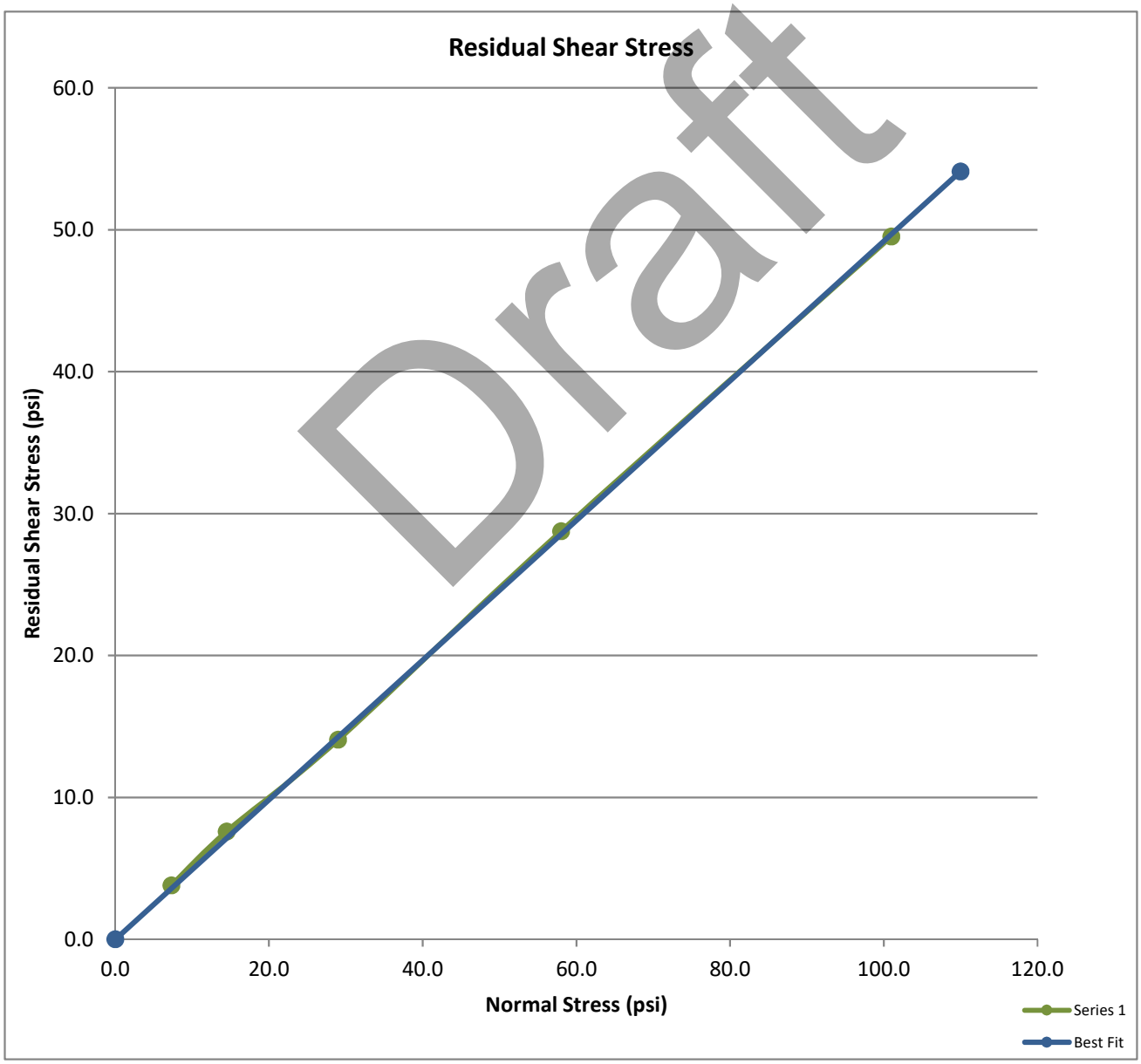
Draft

Ring Shear Test Report (ASTM D6467-13)

Washington State Department of Transportation Geotechnical Division

PROJECT INFORMATION			
Project	XL-5446		
Location	I-405/SR522 Vicinty to SR 527 Express Toll Lanes Improvement Project		
Project Manager	Jason Qui	Sample Numb	P-6
Project Number	XL-5446	Depth	15.5' to 16'
Boring Number	NE-16p-19	Sample Type	Remolded
Description	CL - Lean CLAY		

FINAL GRAPHS (2 of 3)



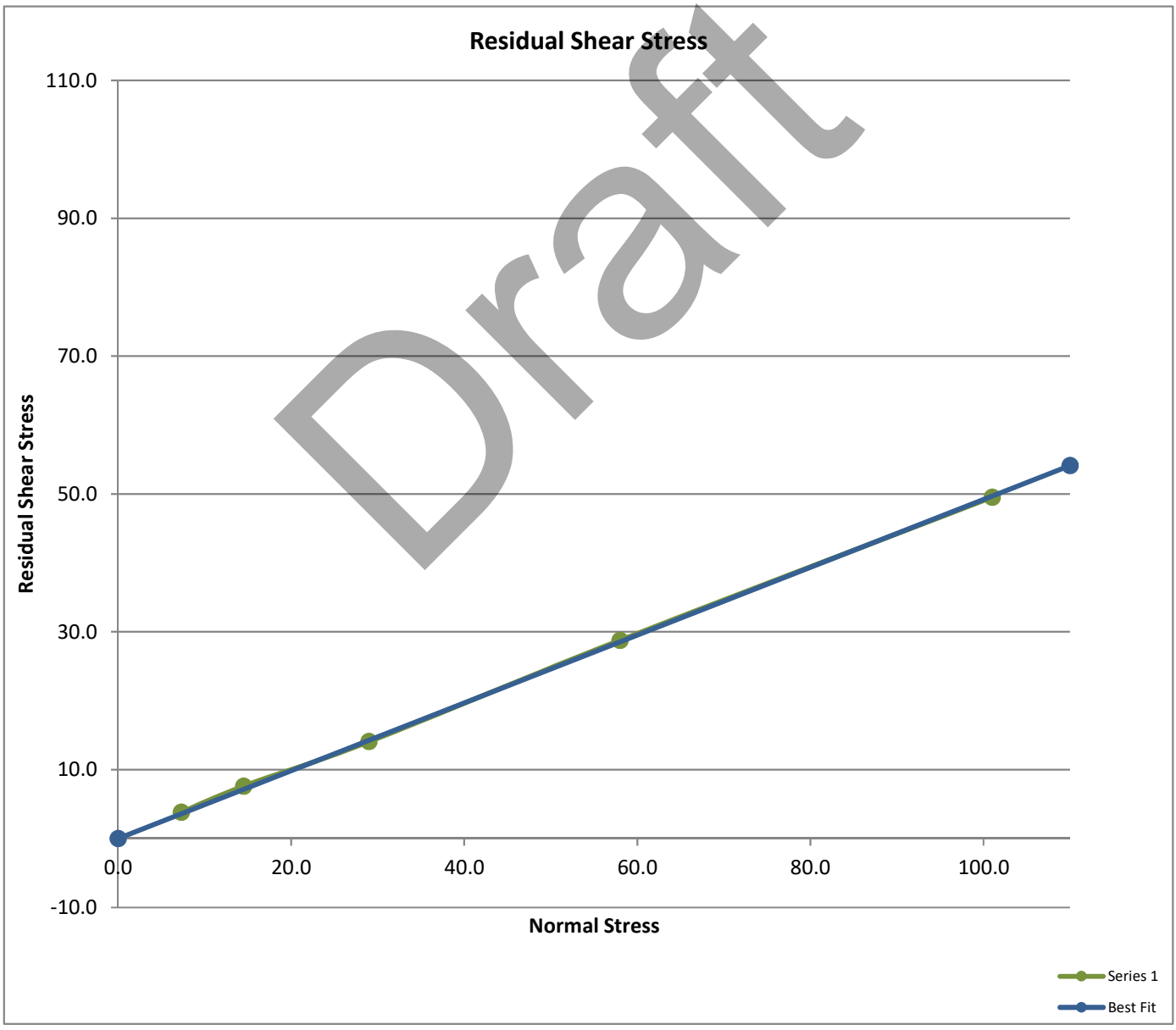
Draft

Ring Shear Test Report (ASTM D6467-13)

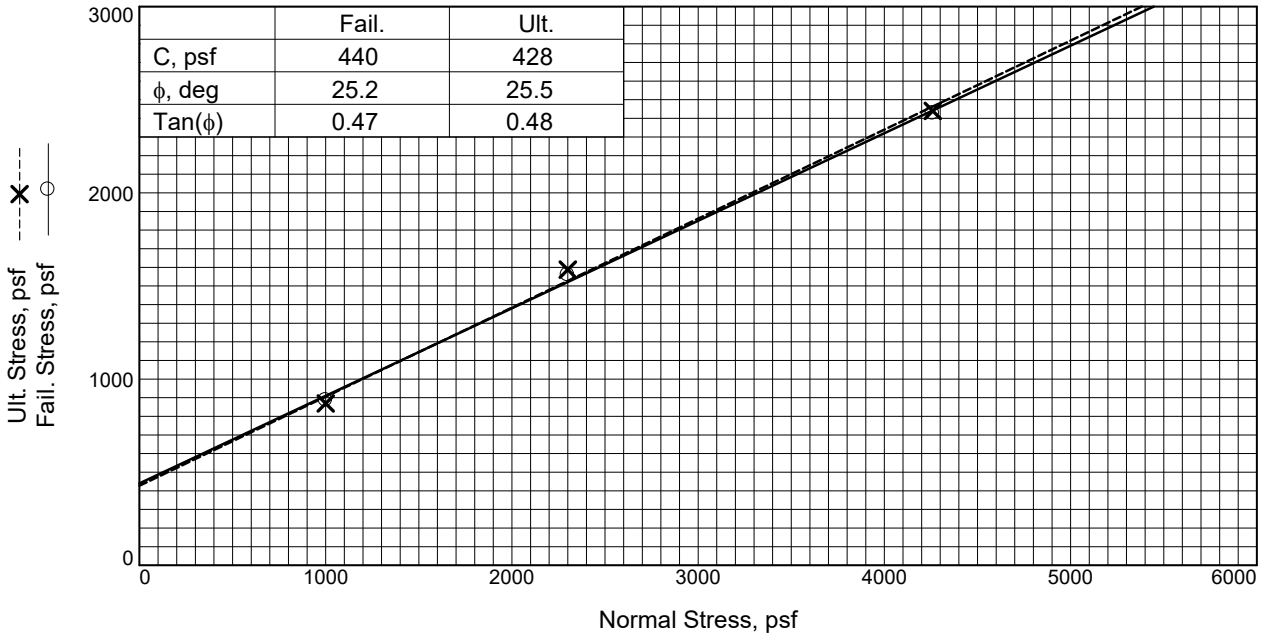
Washington State Department of Transportation Geotechnical Division

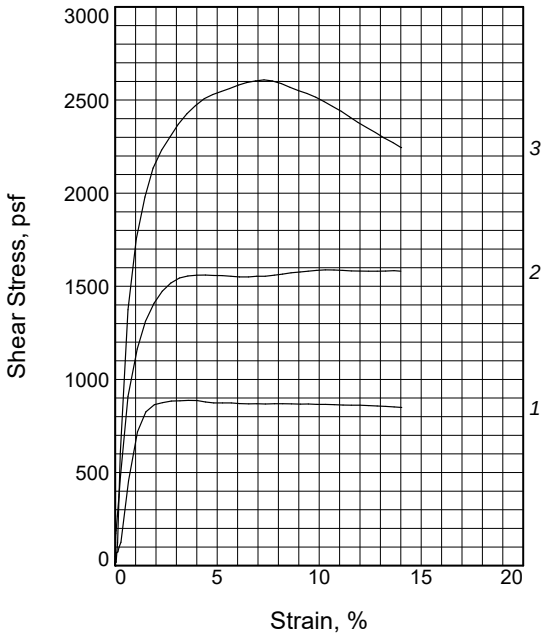
PROJECT INFORMATION			
Project	XL-5446		
Location	I-405/SR522 Vicinty to SR 527 Express Toll Lanes Improvement Project		
Project Manager	Jason Qui	Sample Number	P-6
Project Number	XL-5446	Depth	15.5' to 16'
Boring Number	NE-16p-19	Sample Type	Remolded
Description	CL - Lean CLAY		

FINAL GRAPHS (3 of 3)



Draft





Sample No.		1	2	3
Initial	Water Content, %	43.2	43.2	43.2
	Dry Density, pcf	82.3	83.0	83.2
	Saturation, %	110.5	112.5	113.0
	Void Ratio	1.0637	1.0449	1.0407
	Diameter, in.	2.85	2.85	2.85
	Height, in.	0.99	1.02	1.02
At Test	Water Content, %	36.0	33.9	31.7
	Dry Density, pcf	83.5	86.5	86.1
	Saturation, %	94.9	95.7	88.8
	Void Ratio	1.0326	0.9637	0.9718
	Diameter, in.	2.85	2.85	2.85
	Height, in.	0.98	0.98	0.99
Normal Stress, psf		1000	2300	4260
Fail. Stress, psf		887	1560	2427
Strain, %		4.0	4.4	3.5
Ult. Stress, psf		869	1587	2440
Strain, %		6.9	10.7	11.1
Strain rate, in./min.		0.50	0.50	0.50

Sample Type: 3" Shelby Tube
Description: CL - LEAN CLAY

LL= 45 **PL=** 24 **PI=** 21
Specific Gravity= 2.72
Remarks:

Figure _____

Client: Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Source of Sample: NE-17p-19 **Depth:** 19.5
Sample Number: S-8
Proj. No.: XL-5446 **Date Sampled:** 7/1/2019

WSDOT

Tested By: DH **Checked By:** DH

DIRECT SHEAR TEST

7/1/2019

Date: 7/1/2019
Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project No.: XL-5446
Location: NE-17p-19
Depth: 19.5 **Sample Number:** S-8
Description: CL - LEAN CLAY
Remarks:
Type of Sample: 3" Shelby Tube
Specific Gravity=2.72 **LL=**45 **PL=**24 **PI=**21

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	340.340		275.450
Moisture content: Dry soil+tare, gms.	263.100		224.400
Moisture content: Tare, gms.	84.410		82.640
Moisture, %	43.2	36.0	36.0
Moist specimen weight, gms.	195.4		
Diameter, in.	2.85	2.85	
Area, in.²	6.38	6.38	
Height, in.	0.99	0.98	
Net decrease in height, in.		0.01	
Wet density, pcf	117.8	113.6	
Dry density, pcf	82.3	83.5	
Void ratio	1.0637	1.0326	
Saturation, %	110.5	94.9	

Test Readings for Specimen No. 1

Normal stress = 1000 psf
Strain rate, in./min. = 0.50
Fail. Stress = 887 psf **at reading no.** 24
Ult. Stress = 869 psf **at reading no.** 31

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0029	-2.935	0.0	0.0	0
1	0.0029	-2.935	0.0	0.0	0
2	0.0029	-2.773	0.2	0.0	4
3	0.0029	-2.558	0.4	0.0	9
4	0.0029	-2.208	0.7	0.0	16
5	0.0031	-1.912	1.0	0.0	23
6	0.0033	-1.642	1.3	0.0	29
7	0.0034	-1.427	1.5	0.0	34
8	0.0038	-0.512	2.4	0.0	55
9	0.0041	0.027	3.0	0.0	67
10	0.0043	0.108	3.0	0.0	69
11	0.0045	0.135	3.1	0.1	69
12	0.0047	0.135	3.1	0.1	69

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
13	0.0067	0.350	3.3	0.1	74
14	0.0084	1.454	4.4	0.2	99
15	0.0109	2.612	5.5	0.3	125
16	0.0216	17.232	20.2	0.7	455
17	0.0340	28.891	31.8	1.1	718
18	0.0457	33.656	36.6	1.5	826
19	0.0576	35.353	38.3	1.9	864
20	0.0690	35.837	38.8	2.3	875
21	0.0813	36.214	39.1	2.8	884
22	0.0935	36.268	39.2	3.2	885
23	0.1049	36.376	39.3	3.6	887
24	0.1174	36.349	39.3	4.0	887
25	0.1291	35.999	38.9	4.4	879
26	0.1405	35.783	38.7	4.8	874
27	0.1529	35.783	38.7	5.3	874
28	0.1652	35.756	38.7	5.7	873
29	0.1769	35.622	38.6	6.1	870
30	0.1895	35.541	38.5	6.5	869
31	0.2009	35.568	38.5	6.9	869
32	0.2127	35.514	38.4	7.4	868
33	0.2255	35.568	38.5	7.8	869
34	0.2371	35.568	38.5	8.2	869
35	0.2491	35.541	38.5	8.6	869
36	0.2616	35.487	38.4	9.1	867
37	0.2728	35.514	38.4	9.5	868
38	0.2846	35.433	38.4	9.9	866
39	0.2968	35.433	38.4	10.3	866
40	0.3089	35.353	38.3	10.7	864
41	0.3213	35.272	38.2	11.2	862
42	0.3328	35.245	38.2	11.6	862
43	0.3450	35.218	38.2	12.0	861
44	0.3571	35.137	38.1	12.4	859
45	0.3689	35.030	38.0	12.8	857
46	0.3810	34.949	37.9	13.3	855
47	0.3925	34.814	37.7	13.7	852
48	0.4033	34.679	37.6	14.1	849

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	340.340		278.990
Moisture content: Dry soil+tare, gms.	263.100		229.000
Moisture content: Tare, gms.	84.410		81.630
Moisture, %	43.2	33.9	33.9
Moist specimen weight, gms.	203.1		
Diameter, in.	2.85	2.85	
Area, in.²	6.38	6.38	
Height, in.	1.02	0.98	
Net decrease in height, in.		0.04	
Wet density, pcf	118.9	115.8	
Dry density, pcf	83.0	86.5	
Void ratio	1.0449	0.9637	
Saturation, %	112.5	95.7	

Test Readings for Specimen No. 2

Normal stress = 2300 psf
Strain rate, in./min. = 0.50
Fail. Stress = 1560 psf **at reading no.** 25
Ult. Stress = 1587 psf **at reading no.** 40

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0046	0.754	0.0	0.0	0
1	0.0046	0.754	0.0	0.0	0
2	0.0045	0.862	0.1	0.0	2
3	0.0046	1.077	0.3	0.0	7
4	0.0046	1.723	1.0	0.0	22
5	0.0047	2.154	1.4	0.0	32
6	0.0047	2.531	1.8	0.0	40
7	0.0047	2.908	2.2	0.0	49
8	0.0049	4.766	4.0	0.0	91
9	0.0051	6.301	5.5	0.0	125
10	0.0052	7.512	6.8	0.0	153
11	0.0055	8.401	7.6	0.0	173
12	0.0059	9.074	8.3	0.0	188
13	0.0077	12.520	11.8	0.1	266
14	0.0099	17.097	16.3	0.2	369
15	0.0119	21.836	21.1	0.3	476
16	0.0225	41.007	40.3	0.6	909
17	0.0355	52.288	51.5	1.1	1163
18	0.0468	58.858	58.1	1.5	1312
19	0.0588	63.139	62.4	1.9	1408
20	0.0704	66.047	65.3	2.3	1474
21	0.0823	67.959	67.2	2.7	1517
22	0.0944	69.171	68.4	3.1	1544
23	0.1061	69.655	68.9	3.6	1555
24	0.1185	69.844	69.1	4.0	1560
25	0.1308	69.871	69.1	4.4	1560
26	0.1420	69.790	69.0	4.8	1558
27	0.1540	69.763	69.0	5.2	1558

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1664	69.601	68.8	5.7	1554
29	0.1783	69.440	68.7	6.1	1550
30	0.1909	69.440	68.7	6.5	1550
31	0.2022	69.601	68.8	6.9	1554
32	0.2143	69.601	68.8	7.4	1554
33	0.2269	69.844	69.1	7.8	1560
34	0.2384	70.113	69.4	8.2	1566
35	0.2504	70.409	69.7	8.6	1572
36	0.2628	70.598	69.8	9.1	1577
37	0.2742	70.813	70.1	9.5	1581
38	0.2859	70.974	70.2	9.9	1585
39	0.2982	71.109	70.4	10.3	1588
40	0.3103	71.082	70.3	10.7	1587
41	0.3226	70.974	70.2	11.2	1585
42	0.3344	70.867	70.1	11.6	1583
43	0.3465	70.840	70.1	12.0	1582
44	0.3587	70.786	70.0	12.4	1581
45	0.3706	70.813	70.1	12.8	1581
46	0.3824	70.840	70.1	13.3	1582
47	0.3942	70.921	70.2	13.7	1584
48	0.4036	70.813	70.1	14.0	1581

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	340.340		288.120
Moisture content: Dry soil+tare, gms.	263.100		240.400
Moisture content: Tare, gms.	84.410		90.040
Moisture, %	43.2	31.7	31.7
Moist specimen weight, gms.	203.6		
Diameter, in.	2.85	2.85	
Area, in.²	6.38	6.38	
Height, in.	1.02	0.99	
Net decrease in height, in.		0.03	
Wet density, pcf	119.2	113.4	
Dry density, pcf	83.2	86.1	
Void ratio	1.0407	0.9718	
Saturation, %	113.0	88.8	

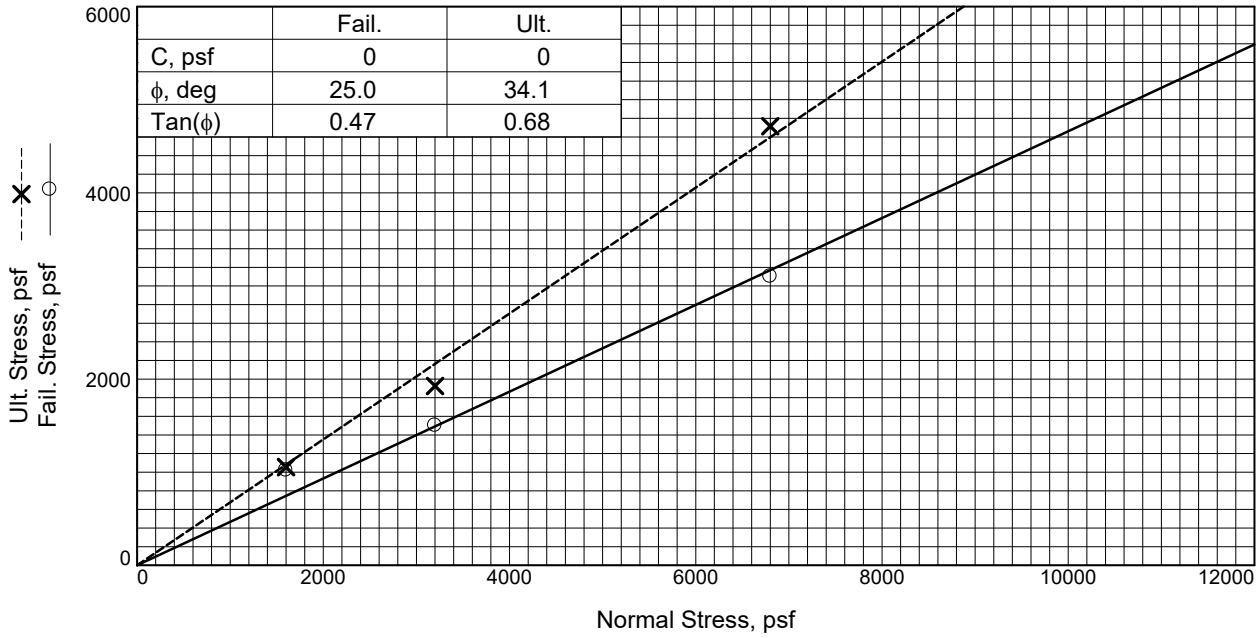
Test Readings for Specimen No. 3

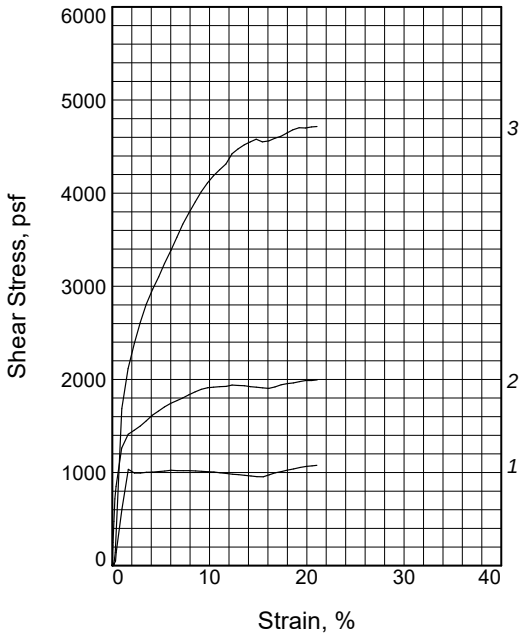
Normal stress = 4260 psf
Strain rate, in./min. = 0.50
Fail. Stress = 2427 psf **at reading no.** 23
Ult. Stress = 2440 psf **at reading no.** 41

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	-0.0019	-0.081	0.0	0.0	0
1	-0.0019	-0.081	0.0	0.0	0
2	-0.0019	-0.054	0.0	0.0	1
3	-0.0019	0.000	0.1	0.0	2
4	-0.0018	0.135	0.2	0.0	5
5	-0.0018	0.269	0.4	0.0	8
6	-0.0018	0.350	0.4	0.0	10
7	-0.0018	0.431	0.5	0.0	12
8	-0.0017	0.700	0.8	0.0	18
9	-0.0015	0.781	0.9	0.0	19
10	-0.0011	0.727	0.8	0.0	18
11	-0.0009	0.808	0.9	0.0	20
12	-0.0006	0.754	0.8	0.0	19
13	0.0016	5.385	5.5	0.1	123
14	0.0035	16.747	16.8	0.2	380
15	0.0053	26.467	26.5	0.3	599
16	0.0161	60.797	60.9	0.6	1374
17	0.0276	77.598	77.7	1.0	1753
18	0.0396	87.587	87.7	1.5	1979
19	0.0511	94.480	94.6	1.9	2134
20	0.0631	98.761	98.8	2.3	2231
21	0.0748	101.940	102.0	2.7	2303
22	0.0862	104.930	105.0	3.1	2370
23	0.0984	107.430	107.5	3.5	2427
24	0.1103	109.370	109.5	3.9	2471
25	0.1226	111.010	111.1	4.4	2508
26	0.1344	111.980	112.1	4.8	2530
27	0.1464	112.710	112.8	5.2	2546

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1580	113.410	113.5	5.6	2562
29	0.1705	114.240	114.3	6.0	2581
30	0.1820	114.840	114.9	6.5	2594
31	0.1943	115.210	115.3	6.9	2602
32	0.2060	115.480	115.6	7.3	2609
33	0.2177	115.210	115.3	7.7	2602
34	0.2303	114.590	114.7	8.1	2588
35	0.2424	113.700	113.8	8.6	2568
36	0.2543	112.920	113.0	9.0	2551
37	0.2660	112.250	112.3	9.4	2536
38	0.2783	111.360	111.4	9.8	2516
39	0.2901	110.310	110.4	10.2	2492
40	0.3019	109.150	109.2	10.7	2466
41	0.3141	108.000	108.1	11.1	2440
42	0.3255	106.680	106.8	11.5	2410
43	0.3376	105.330	105.4	11.9	2379
44	0.3494	104.170	104.3	12.3	2353
45	0.3617	102.960	103.0	12.8	2326
46	0.3737	101.670	101.8	13.2	2297
47	0.3863	100.540	100.6	13.6	2271
48	0.3975	99.380	99.5	14.0	2245
49	0.3983	99.407	99.5	14.0	2246





Sample No.		1	2	3
Initial	Water Content, %	38.5	38.5	38.5
	Dry Density, pcf	82.3	80.2	84.5
	Saturation, %	95.5	91.0	100.4
	Void Ratio	1.1317	1.1877	1.0764
	Diameter, in.	1.90	1.90	1.90
	Height, in.	1.12	1.12	1.12
At Test	Water Content, %	40.9	39.3	31.7
	Dry Density, pcf	84.6	84.3	91.7
	Saturation, %	107.2	102.1	97.7
	Void Ratio	1.0724	1.0819	0.9126
	Diameter, in.	1.90	1.90	1.90
	Height, in.	1.09	1.07	1.03
Normal Stress, psf		1600	3200	6800
Fail. Stress, psf		1020	1500	3101
Strain, %		7.3	2.9	4.8
Ult. Stress, psf		1054	1925	4715
Strain, %		19.3	11.7	21.1
Strain rate, in./min.		0.50	0.50	0.50

Sample Type: 3" Shelby Tube
Description: CL - LEAN CLAY

LL= 33 **PL=** 20 **PI=** 13
Specific Gravity= 2.81
Remarks:

Figure _____

Client: Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Source of Sample: NE-21p-19 **Depth:** 45.1 to 45.5
Sample Number: S-18
Proj. No.: XL-5446 **Date Sampled:** 4/19/2019

WSDOT

Tested By: DH **Checked By:** DH

DIRECT SHEAR TEST

6/21/2019

Date: 4/19/2019
Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project No.: XL-5446
Location: NE-21p-19
Depth: 45.1 to 45.5 **Sample Number:** S-18
Description: CL - LEAN CLAY
Remarks:
Type of Sample: 3" Shelby Tube
Specific Gravity=2.81 **LL=**33 **PL=**20 **PI=**13

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	253.080		175.770
Moisture content: Dry soil+tare, gms.	207.080		149.010
Moisture content: Tare, gms.	87.450		83.630
Moisture, %	38.5	40.9	40.9
Moist specimen weight, gms.	95.0		
Diameter, in.	1.90	1.90	
Area, in.²	2.84	2.84	
Height, in.	1.12	1.09	
Net decrease in height, in.		0.03	
Wet density, pcf	113.9	119.3	
Dry density, pcf	82.3	84.6	
Void ratio	1.1317	1.0724	
Saturation, %	95.5	107.2	

Test Readings for Specimen No. 1

Normal stress = 1600 psf
Strain rate, in./min. = 0.50
Fail. Stress = 1020 psf **at reading no.** 26
Ult. Stress = 1054 psf **at reading no.** 45

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0035	0.162	0.0	0.0	0
1	0.0035	0.162	0.0	0.0	0
2	0.0035	0.188	0.0	0.0	1
3	0.0035	0.188	0.0	0.0	1
4	0.0035	0.242	0.1	0.0	4
5	0.0036	0.269	0.1	0.0	5
6	0.0036	0.296	0.1	0.0	7
7	0.0036	0.323	0.2	0.0	8
8	0.0041	0.404	0.2	0.0	12
9	0.0044	0.512	0.4	0.0	18
10	0.0048	0.538	0.4	0.1	19
11	0.0052	0.538	0.4	0.1	19
12	0.0055	0.512	0.4	0.1	18

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
13	0.0074	0.619	0.5	0.2	23
14	0.0097	1.131	1.0	0.3	49
15	0.0111	2.935	2.8	0.4	141
16	0.0223	12.089	11.9	1.0	606
17	0.0348	20.517	20.4	1.6	1034
18	0.0468	19.736	19.6	2.3	994
19	0.0583	19.736	19.6	2.9	994
20	0.0704	19.898	19.7	3.5	1002
21	0.0819	19.925	19.8	4.1	1004
22	0.0937	20.059	19.9	4.7	1011
23	0.1059	20.167	20.0	5.4	1016
24	0.1182	20.328	20.2	6.0	1024
25	0.1303	20.248	20.1	6.7	1020
26	0.1421	20.248	20.1	7.3	1020
27	0.1540	20.248	20.1	7.9	1020
28	0.1662	20.194	20.0	8.6	1017
29	0.1780	20.113	20.0	9.2	1013
30	0.1904	20.032	19.9	9.8	1009
31	0.2020	19.951	19.8	10.4	1005
32	0.2139	19.790	19.6	11.1	997
33	0.2264	19.655	19.5	11.7	990
34	0.2386	19.494	19.3	12.4	982
35	0.2504	19.386	19.2	13.0	976
36	0.2622	19.251	19.1	13.6	970
37	0.2744	19.117	19.0	14.3	963
38	0.2861	18.982	18.8	14.9	956
39	0.2983	18.955	18.8	15.5	954
40	0.3102	19.359	19.2	16.1	975
41	0.3218	19.790	19.6	16.8	997
42	0.3339	20.059	19.9	17.4	1011
43	0.3455	20.355	20.2	18.0	1026
44	0.3577	20.625	20.5	18.6	1039
45	0.3703	20.921	20.8	19.3	1054
46	0.3826	21.136	21.0	20.0	1065
47	0.3937	21.271	21.1	20.5	1072
48	0.4031	21.379	21.2	21.0	1078

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	253.080		172.170
Moisture content: Dry soil+tare, gms.	207.080		146.940
Moisture content: Tare, gms.	87.450		82.760
Moisture, %	38.5	39.3	39.3
Moist specimen weight, gms.	92.5		
Diameter, in.	1.90	1.90	
Area, in.²	2.84	2.84	
Height, in.	1.12	1.07	
Net decrease in height, in.		0.05	
Wet density, pcf	111.0	117.4	
Dry density, pcf	80.2	84.3	
Void ratio	1.1877	1.0819	
Saturation, %	91.0	102.1	

Test Readings for Specimen No. 2

Normal stress = 3200 psf
Strain rate, in./min. = 0.50
Fail. Stress = 1500 psf **at reading no.** 19
Ult. Stress = 1925 psf **at reading no.** 33

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0032	0.404	0.0	0.0	0
1	0.0032	0.404	0.0	0.0	0
2	0.0032	0.512	0.1	0.0	5
3	0.0032	0.619	0.2	0.0	11
4	0.0034	0.835	0.4	0.0	22
5	0.0035	1.050	0.6	0.0	33
6	0.0035	1.185	0.8	0.0	40
7	0.0035	1.346	0.9	0.0	48
8	0.0037	2.181	1.8	0.0	90
9	0.0038	3.070	2.7	0.0	135
10	0.0041	3.931	3.5	0.0	179
11	0.0043	4.685	4.3	0.1	217
12	0.0046	5.304	4.9	0.1	249
13	0.0064	9.747	9.3	0.2	475
14	0.0083	14.513	14.1	0.3	717
15	0.0105	17.151	16.7	0.4	851
16	0.0214	25.256	24.9	1.0	1262
17	0.0343	28.191	27.8	1.6	1411
18	0.0459	29.025	28.6	2.2	1454
19	0.0580	29.941	29.5	2.9	1500
20	0.0696	31.045	30.6	3.5	1556
21	0.0812	32.175	31.8	4.1	1614
22	0.0931	33.064	32.7	4.7	1659
23	0.1051	33.953	33.5	5.4	1704
24	0.1173	34.733	34.3	6.0	1744
25	0.1298	35.326	34.9	6.7	1774
26	0.1408	35.864	35.5	7.2	1801
27	0.1527	36.537	36.1	7.9	1835

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1650	37.157	36.8	8.5	1867
29	0.1770	37.695	37.3	9.1	1894
30	0.1896	38.018	37.6	9.8	1910
31	0.2009	38.126	37.7	10.4	1916
32	0.2131	38.261	37.9	11.0	1923
33	0.2258	38.314	37.9	11.7	1925
34	0.2372	38.584	38.2	12.3	1939
35	0.2491	38.503	38.1	12.9	1935
36	0.2614	38.449	38.0	13.6	1932
37	0.2729	38.261	37.9	14.2	1923
38	0.2846	38.126	37.7	14.8	1916
39	0.2971	37.991	37.6	15.5	1909
40	0.3089	37.884	37.5	16.1	1904
41	0.3210	38.207	37.8	16.7	1920
42	0.3329	38.637	38.2	17.4	1942
43	0.3452	38.907	38.5	18.0	1956
44	0.3571	39.041	38.6	18.6	1962
45	0.3693	39.311	38.9	19.3	1976
46	0.3810	39.553	39.1	19.9	1988
47	0.3928	39.553	39.1	20.5	1988
48	0.4035	39.688	39.3	21.1	1995

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	253.080		172.890
Moisture content: Dry soil+tare, gms.	207.080		150.910
Moisture content: Tare, gms.	87.450		81.660
Moisture, %	38.5	31.7	31.7
Moist specimen weight, gms.	97.5		
Diameter, in.	1.90	1.90	
Area, in.²	2.84	2.84	
Height, in.	1.12	1.03	
Net decrease in height, in.		0.09	
Wet density, pcf	117.0	120.8	
Dry density, pcf	84.5	91.7	
Void ratio	1.0764	0.9126	
Saturation, %	100.4	97.7	

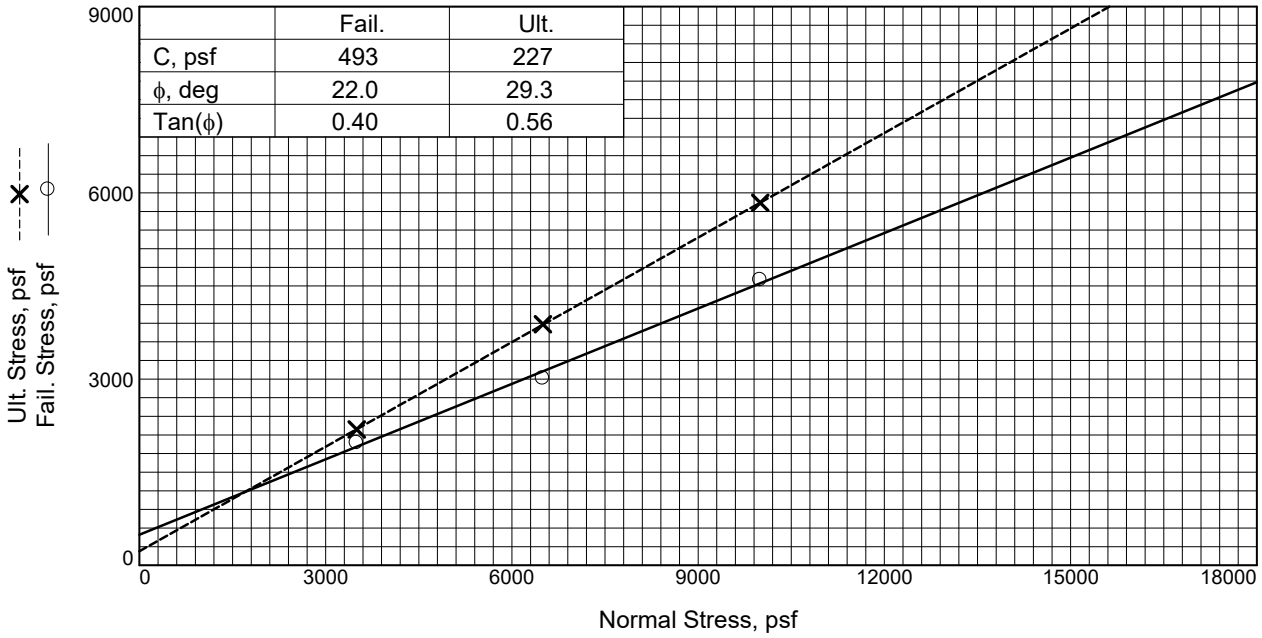
Test Readings for Specimen No. 3

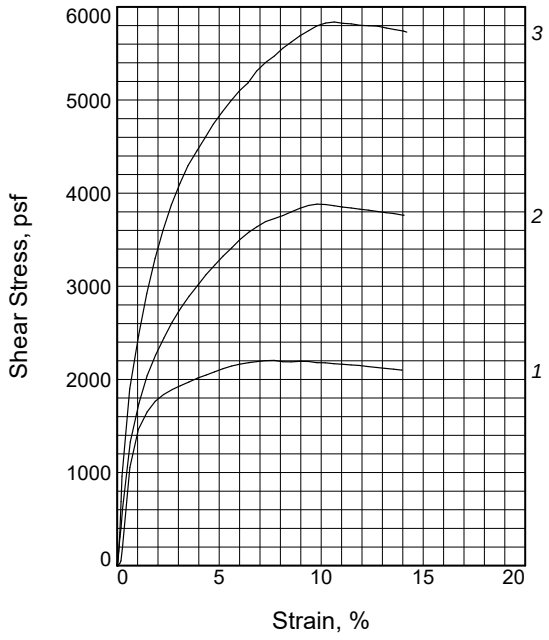
Normal stress = 6800 psf
Strain rate, in./min. = 0.50
Fail. Stress = 3101 psf **at reading no.** 22
Ult. Stress = 4715 psf **at reading no.** 48

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0034	0.108	0.0	0.0	0
1	0.0034	0.108	0.0	0.0	0
2	0.0034	0.135	0.0	0.0	1
3	0.0034	0.162	0.1	0.0	3
4	0.0034	0.215	0.1	0.0	5
5	0.0035	0.269	0.2	0.0	8
6	0.0035	0.296	0.2	0.0	10
7	0.0036	0.296	0.2	0.0	10
8	0.0042	0.350	0.2	0.0	12
9	0.0048	0.350	0.2	0.1	12
10	0.0051	0.350	0.2	0.1	12
11	0.0053	0.350	0.2	0.1	12
12	0.0055	0.350	0.2	0.1	12
13	0.0072	1.185	1.1	0.2	55
14	0.0091	2.908	2.8	0.3	142
15	0.0113	7.835	7.7	0.4	392
16	0.0219	33.306	33.2	1.0	1686
17	0.0340	41.761	41.7	1.6	2116
18	0.0463	47.092	47.0	2.3	2386
19	0.0580	51.562	51.5	2.9	2613
20	0.0696	55.358	55.3	3.5	2806
21	0.0822	58.589	58.5	4.1	2970
22	0.0939	61.174	61.1	4.8	3101
23	0.1053	63.974	63.9	5.4	3244
24	0.1176	66.747	66.6	6.0	3385
25	0.1294	69.521	69.4	6.6	3525
26	0.1408	72.294	72.2	7.2	3666
27	0.1533	74.717	74.6	7.9	3789

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1655	77.033	76.9	8.5	3907
29	0.1771	79.160	79.1	9.1	4015
30	0.1892	80.991	80.9	9.8	4108
31	0.2008	82.525	82.4	10.4	4186
32	0.2131	83.818	83.7	11.0	4252
33	0.2254	85.029	84.9	11.7	4313
34	0.2372	87.210	87.1	12.3	4424
35	0.2491	88.233	88.1	12.9	4476
36	0.2613	89.095	89.0	13.6	4520
37	0.2731	89.714	89.6	14.2	4551
38	0.2845	90.280	90.2	14.8	4580
39	0.2965	89.714	89.6	15.4	4551
40	0.3089	89.903	89.8	16.1	4561
41	0.3210	90.468	90.4	16.7	4589
42	0.3325	90.872	90.8	17.3	4610
43	0.3445	91.572	91.5	18.0	4645
44	0.3559	92.245	92.1	18.6	4680
45	0.3685	92.703	92.6	19.2	4703
46	0.3809	92.649	92.5	19.9	4700
47	0.3926	92.865	92.8	20.5	4711
48	0.4034	92.945	92.8	21.1	4715





Sample No.		1	2	3
Initial	Water Content, %	31.5	31.5	31.5
	Dry Density, pcf	91.5	91.8	93.6
	Saturation, %	98.5	99.3	103.5
	Void Ratio	0.8838	0.8767	0.8411
	Diameter, in.	2.86	2.84	2.82
	Height, in.	0.99	1.02	1.01
At Test	Water Content, %	30.7	29.1	26.9
	Dry Density, pcf	96.1	98.2	100.9
	Saturation, %	106.7	106.5	104.8
	Void Ratio	0.7933	0.7552	0.7080
	Diameter, in.	2.86	2.84	2.82
	Height, in.	0.94	0.95	0.94
Normal Stress, psf		3500	6500	10000
Fail. Stress, psf		1972	3011	4595
Strain, %		3.5	3.9	4.3
Ult. Stress, psf		2189	3883	5839
Strain, %		8.5	9.8	10.6
Strain rate, in./min.		0.50	0.50	0.50

Sample Type: 3" Shelby Tube
Description: CL - LEAN CLAY

LL= 40 **PL=** 21 **PI=** 19
Specific Gravity= 2.76
Remarks:

Figure _____

Client: Jason Qiu (WSDOT)

Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project

Source of Sample: NE-21p-19 **Depth:** 105.5 to 105.7

Sample Number: S-36

Proj. No.: XL-5446 **Date Sampled:** 4/29/2019

WSDOT

Tested By: DH **Checked By:** DH

DIRECT SHEAR TEST

6/21/2019

Date: 4/29/2019
Client: Jason Qiu (WSDOT)
Project: I-405 / SR-522 Vicinity to SR-527 Express Toll Lanes Improvement Project
Project No.: XL-5446
Location: NE-21p-19
Depth: 105.5 to 105.7 **Sample Number:** S-36
Description: CL - LEAN CLAY
Remarks:
Type of Sample: 3" Shelby Tube
Specific Gravity=2.76 **LL=**40 **PL=**21 **PI=**19

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	319.080		281.030
Moisture content: Dry soil+tare, gms.	262.400		235.700
Moisture content: Tare, gms.	82.630		87.910
Moisture, %	31.5	30.7	30.7
Moist specimen weight, gms.	200.8		
Diameter, in.	2.86	2.86	
Area, in.²	6.42	6.42	
Height, in.	0.99	0.94	
Net decrease in height, in.		0.05	
Wet density, pcf	120.3	125.5	
Dry density, pcf	91.5	96.1	
Void ratio	0.8838	0.7933	
Saturation, %	98.5	106.7	

Test Readings for Specimen No. 1

Normal stress = 3500 psf
Strain rate, in./min. = 0.50
Fail. Stress = 1972 psf **at reading no.** 23
Ult. Stress = 2189 psf **at reading no.** 35

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	-0.0016	-0.108	0.0	0.0	0
1	-0.0016	-0.108	0.0	0.0	0
2	-0.0016	-0.081	0.0	0.0	1
3	-0.0016	-0.108	0.0	0.0	0
4	-0.0017	-0.108	0.0	0.0	0
5	-0.0016	-0.108	0.0	0.0	0
6	-0.0016	-0.108	0.0	0.0	0
7	-0.0016	-0.054	0.1	0.0	1
8	-0.0014	0.269	0.4	0.0	8
9	-0.0009	0.377	0.5	0.0	11
10	-0.0002	0.512	0.6	0.0	14
11	0.0001	0.538	0.6	0.1	14
12	0.0003	0.512	0.6	0.1	14

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
13	0.0021	0.862	1.0	0.1	22
14	0.0037	2.181	2.3	0.2	51
15	0.0059	8.185	8.3	0.3	186
16	0.0163	46.903	47.0	0.6	1054
17	0.0282	65.186	65.3	1.0	1464
18	0.0405	73.586	73.7	1.5	1652
19	0.0517	78.594	78.7	1.9	1764
20	0.0635	81.852	82.0	2.3	1837
21	0.0758	84.329	84.4	2.7	1893
22	0.0872	86.106	86.2	3.1	1932
23	0.0990	87.883	88.0	3.5	1972
24	0.1116	89.768	89.9	4.0	2015
25	0.1235	91.276	91.4	4.4	2048
26	0.1349	92.703	92.8	4.8	2080
27	0.1468	94.292	94.4	5.2	2116
28	0.1591	95.530	95.6	5.6	2144
29	0.1707	96.419	96.5	6.0	2164
30	0.1828	97.173	97.3	6.4	2181
31	0.1945	97.684	97.8	6.9	2192
32	0.2062	98.088	98.2	7.3	2201
33	0.2185	98.196	98.3	7.7	2203
34	0.2306	97.576	97.7	8.1	2190
35	0.2424	97.550	97.7	8.5	2189
36	0.2545	97.765	97.9	9.0	2194
37	0.2666	97.711	97.8	9.4	2193
38	0.2783	97.173	97.3	9.8	2181
39	0.2901	97.092	97.2	10.2	2179
40	0.3025	96.661	96.8	10.6	2169
41	0.3143	96.392	96.5	11.0	2163
42	0.3262	96.042	96.1	11.5	2155
43	0.3379	95.772	95.9	11.9	2149
44	0.3497	95.288	95.4	12.3	2138
45	0.3621	94.830	94.9	12.7	2128
46	0.3743	94.426	94.5	13.1	2119
47	0.3862	93.995	94.1	13.6	2109
48	0.3976	93.565	93.7	14.0	2100
49	0.3978	93.565	93.7	14.0	2100

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	319.080		277.580
Moisture content: Dry soil+tare, gms.	262.400		233.380
Moisture content: Tare, gms.	82.630		81.640
Moisture, %	31.5	29.1	29.1
Moist specimen weight, gms.	204.8		
Diameter, in.	2.84	2.84	
Area, in.²	6.33	6.33	
Height, in.	1.02	0.95	
Net decrease in height, in.		0.07	
Wet density, pcf	120.8	126.8	
Dry density, pcf	91.8	98.2	
Void ratio	0.8767	0.7552	
Saturation, %	99.3	106.5	

Test Readings for Specimen No. 2

Normal stress = 6500 psf
Strain rate, in./min. = 0.50
Fail. Stress = 3011 psf **at reading no.** 24
Ult. Stress = 3883 psf **at reading no.** 38

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0035	0.000	0.0	0.0	0
1	0.0035	0.000	0.0	0.0	0
2	0.0035	0.027	0.0	0.0	1
3	0.0035	0.188	0.2	0.0	4
4	0.0036	0.296	0.3	0.0	7
5	0.0037	0.404	0.4	0.0	9
6	0.0037	0.512	0.5	0.0	12
7	0.0038	0.700	0.7	0.0	16
8	0.0041	1.346	1.3	0.0	31
9	0.0044	2.504	2.5	0.0	57
10	0.0047	3.877	3.9	0.0	88
11	0.0052	5.277	5.3	0.1	120
12	0.0056	6.597	6.6	0.1	150
13	0.0076	13.597	13.6	0.1	309
14	0.0089	17.986	18.0	0.2	409
15	0.0111	26.764	26.8	0.3	608
16	0.0218	58.427	58.4	0.6	1328
17	0.0339	76.656	76.7	1.1	1743
18	0.0451	89.634	89.6	1.5	2038
19	0.0569	99.354	99.4	1.9	2259
20	0.0686	107.480	107.5	2.3	2443
21	0.0798	114.920	114.9	2.7	2612
22	0.0919	121.570	121.6	3.1	2764
23	0.1036	127.270	127.3	3.5	2893
24	0.1157	132.440	132.4	3.9	3011
25	0.1275	137.510	137.5	4.4	3126
26	0.1394	141.950	141.9	4.8	3227
27	0.1510	146.230	146.2	5.2	3324

Test Readings for Specimen No. 2

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1630	150.110	150.1	5.6	3412
29	0.1744	154.040	154.0	6.0	3502
30	0.1870	157.570	157.6	6.5	3582
31	0.1981	160.100	160.1	6.8	3639
32	0.2102	162.550	162.6	7.3	3695
33	0.2226	164.000	164.0	7.7	3728
34	0.2342	165.370	165.4	8.1	3759
35	0.2464	167.200	167.2	8.6	3801
36	0.2581	168.820	168.8	9.0	3838
37	0.2699	170.170	170.2	9.4	3868
38	0.2819	170.810	170.8	9.8	3883
39	0.2938	170.600	170.6	10.2	3878
40	0.3055	170.030	170.0	10.6	3865
41	0.3174	169.390	169.4	11.1	3851
42	0.3295	168.950	168.9	11.5	3841
43	0.3413	168.420	168.4	11.9	3829
44	0.3532	167.930	167.9	12.3	3817
45	0.3656	167.340	167.3	12.7	3804
46	0.3778	166.750	166.8	13.2	3791
47	0.3892	166.340	166.3	13.6	3781
48	0.4016	165.540	165.5	14.0	3763
49	0.4030	165.540	165.5	14.1	3763

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	319.080		273.900
Moisture content: Dry soil+tare, gms.	262.400		233.400
Moisture content: Tare, gms.	82.630		82.730
Moisture, %	31.5	26.9	26.9
Moist specimen weight, gms.	203.8		
Diameter, in.	2.82	2.82	
Area, in.²	6.25	6.25	
Height, in.	1.01	0.94	
Net decrease in height, in.		0.07	
Wet density, pcf	123.1	128.0	
Dry density, pcf	93.6	100.9	
Void ratio	0.8411	0.7080	
Saturation, %	103.5	104.8	

Test Readings for Specimen No. 3

Normal stress = 10000 psf
Strain rate, in./min. = 0.50
Fail. Stress = 4595 psf **at reading no.** 25
Ult. Stress = 5839 psf **at reading no.** 40

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
0	0.0026	0.108	0.0	0.0	0
1	0.0026	0.108	0.0	0.0	0
2	0.0026	0.188	0.1	0.0	2
3	0.0027	0.242	0.1	0.0	3
4	0.0029	0.485	0.4	0.0	9
5	0.0029	0.673	0.6	0.0	13
6	0.0030	0.835	0.7	0.0	17
7	0.0030	0.969	0.9	0.0	20
8	0.0033	1.508	1.4	0.0	32
9	0.0035	1.777	1.7	0.0	38
10	0.0038	2.235	2.1	0.0	49
11	0.0041	3.096	3.0	0.1	69
12	0.0043	4.093	4.0	0.1	92
13	0.0065	15.590	15.5	0.1	357
14	0.0080	29.914	29.8	0.2	687
15	0.0094	41.761	41.7	0.2	960
16	0.0200	82.471	82.4	0.6	1899
17	0.0323	107.460	107.4	1.1	2475
18	0.0435	126.920	126.8	1.4	2924
19	0.0551	143.160	143.1	1.9	3298
20	0.0662	156.410	156.3	2.3	3604
21	0.0776	168.120	168.0	2.7	3874
22	0.0895	178.190	178.1	3.1	4106
23	0.1006	186.430	186.3	3.5	4296
24	0.1127	193.190	193.1	3.9	4452
25	0.1242	199.430	199.3	4.3	4595
26	0.1356	205.760	205.7	4.7	4741
27	0.1482	211.550	211.4	5.2	4875

Test Readings for Specimen No. 3

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress psf
28	0.1603	216.770	216.7	5.6	4995
29	0.1718	221.320	221.2	6.0	5100
30	0.1836	225.040	224.9	6.4	5186
31	0.1953	230.400	230.3	6.8	5310
32	0.2076	234.460	234.4	7.3	5403
33	0.2199	237.450	237.3	7.7	5472
34	0.2315	241.110	241.0	8.1	5556
35	0.2432	243.970	243.9	8.5	5622
36	0.2552	246.850	246.7	9.0	5689
37	0.2674	249.330	249.2	9.4	5746
38	0.2788	251.510	251.4	9.8	5796
39	0.2907	252.850	252.7	10.2	5827
40	0.3028	253.360	253.3	10.6	5839
41	0.3148	252.720	252.6	11.1	5824
42	0.3265	252.450	252.3	11.5	5818
43	0.3387	251.800	251.7	11.9	5803
44	0.3501	251.590	251.5	12.3	5798
45	0.3625	251.430	251.3	12.8	5794
46	0.3747	250.560	250.5	13.2	5774
47	0.3866	249.780	249.7	13.6	5756
48	0.3984	249.110	249.0	14.0	5741
49	0.4030	248.600	248.5	14.2	5729

APPENDIX C – PROJECT GROUNDWATER DATA

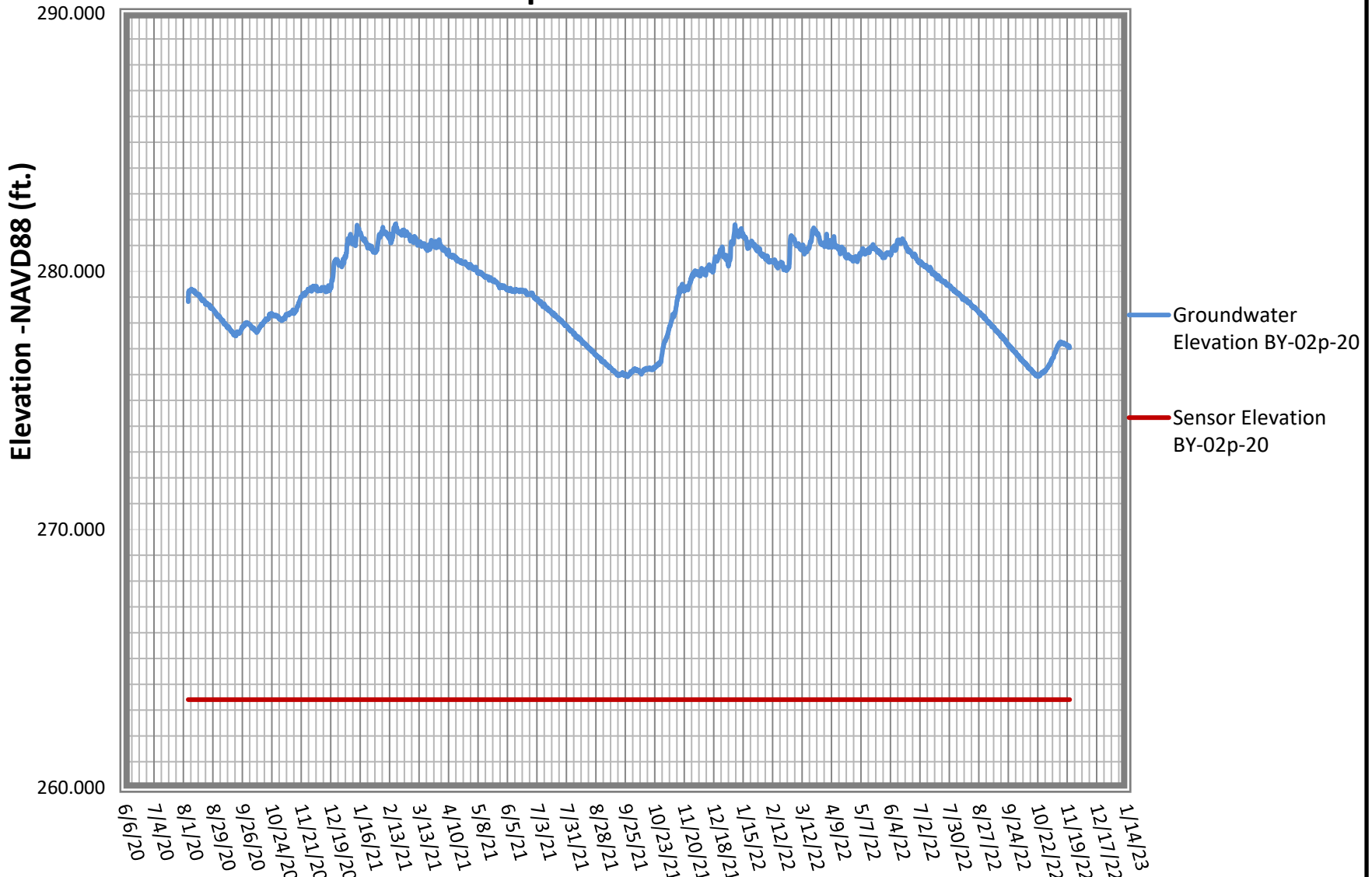
Table C-1 Summary of Groundwater Monitoring Results, I-405, Brickyard to SR 527 Improvement Project

Boring ID	Sensor Elev. (ft)	Water Level Elevation (ft)				Reading Period	
		Min.	Max.	Average	Standard Deviation (SD)	From	To
BY-02p-20	263.4	275.9	281.8	279.2	1.70	08-05-20	11-21-22
NE-02p-20	212.0	223.0	226.1	223.8	0.40	07-24-19	11-21-22
NE-04vw-19	137.0	137.5	149.2	139.5	0.70	05-29-19	10-28-22
NE-10p-19	182.6	185.8	186.8	186.3	0.20	07-24-19	11-16-22
NE-12p-19	88.5	88.5	95.3	92.6	1.40	07-24-19	11-16-22
NE-13p-19	35.9	35.9	51.8	48.1	3.40	01-06-20	11-16-22
NE-14p-19	25.6	38.4	50.1	46.9	2.90	07-24-19	11-16-23
NE-15p-19	40.5	41.4	58.0	49.2	3.60	08-20-19	11-16-22
NE-16p-19	-30.1	35.0	38.0	36.2	0.60	01-06-20	11-16-22
NE-17p-19	15.6	17.8	35.3	23.8	4.20	06-18-19	11-16-22
NE-18p-19	13.2	17.9	25.2	19.5	1.10	07-24-19	11-21-22
NE-19p-19	0.4	17.5	25.2	19.9	1.10	06-18-19	11-21-22
NE-20vw-19	-12.4	19.2	27.6	21.8	1.10	05-29-19	11-21-22
NE-21p-19	9.4	22.5	27.5	24.3	1.30	05-29-19	11-21-22
NE-22p-19	6.6	19.0	25.8	20.2	0.90	06-18-19	11-21-22
NE-25p-19	13.3	12.8	27.2	21.2	1.60	05-29-19	09-14-20
NE-28p-19	17.4	16.9	25.9	24.4	1.00	10-15-19	09-14-20
NE-30vw-19	16.1	21.9	27.8	24.9	1.30	05-29-19	11-16-22
NE-31p-19	-2.9	21.6	25.8	24.1	1.10	10-15-19	11-21-22
NE-32p-19	15.2	20.8	26.2	23.6	1.10	06-18-19	11-21-22
NE-34p-19	24.0	29.4	34.1	31.0	1.00	05-29-19	11-16-22
NE-35p-19	79.2	79.0	94.1	86.8	3.90	05-29-19	11-16-22
NE-36p-19	120.5	129.4	131.7	130.3	0.50	06-18-19	09-09-20
NE-42p-19	93.7	95.5	98.4	96.6	0.50	07-24-19	11-21-22
NE-44p-19	96.1	98.4	99.8	98.9	0.20	10-09-19	11-21-22
NE-46p-19	96.7	103.0	103.6	103.3	0.10	10-09-19	11-21-22
NE-48vw19	104.1	112.8	115.2	114.1	0.40	10-09-19	11-16-22
NE-49vw-19	46.6	116.1	119.4	117.8	0.60	10-09-19	11-16-22
NE-51vw-19	68.1	99.0	101.9	100.4	0.50	05-29-19	11-16-22
NE-55p-19	137.5	137.5	144.0	141.4	1.40	06-18-19	11-16-22
NE-56p-19	114.5	121.2	123.3	122.1	0.40	06-18-19	11-16-22
NE-64p-19	91.3	97.8	100.7	99.0	0.80	05-29-19	09-09-20
NE-65p-19	125.4	131.1	134.2	132.7	1.00	05-29-19	09-09-20
NE-67p-19	257.9	261.3	264.4	262.9	0.90	09-09-20	11-21-22
NE-69p-19	53.7	64.7	71.5	69.0	1.80	09-09-20	11-16-22
NE-70p-19	41.1	48.7	52.6	50.2	1.10	09-09-20	11-21-22
NE-72p-19	119.3	119.0	122.7	119.4	0.60	09-09-20	11-21-22
NE-73p-19	106.5	117.8	120.0	118.5	0.40	12-02-20	11-16-22
NE-74p-19	162.3	167.8	172.0	170.2	1.20	09-09-20	11-16-22
NE-76p-19	67.5	74.8	83.1	77.8	2.40	08-05-20	11-16-22
NE-77p-19	71.7	75.5	89.8	81.5	4.20	08-05-20	11-16-22
NE-78p-19	77.3	75.1	88.0	79.7	3.70	09-29-20	11-16-22
NE-79p-19	43.9	44.2	55.7	50.6	3.10	09-09-20	11-21-22
NE-80p-19	59.6	64.2	75.5	69.9	2.80	08-05-20	11-16-22

Notes:

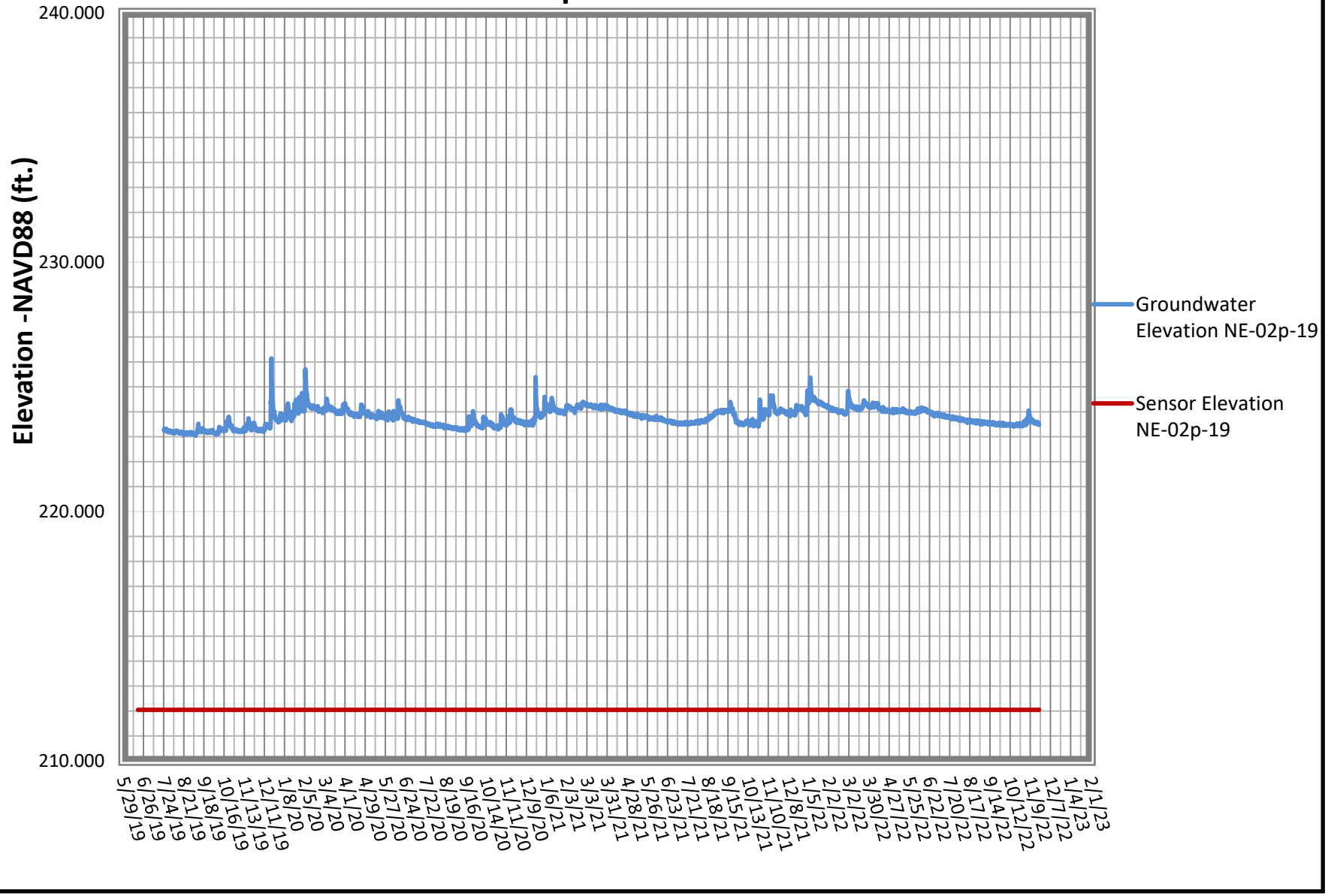
1. Refer to boring logs for the well construction details.

Figure C-1. Groundwater Elevation Versus Time
BY-02p-20



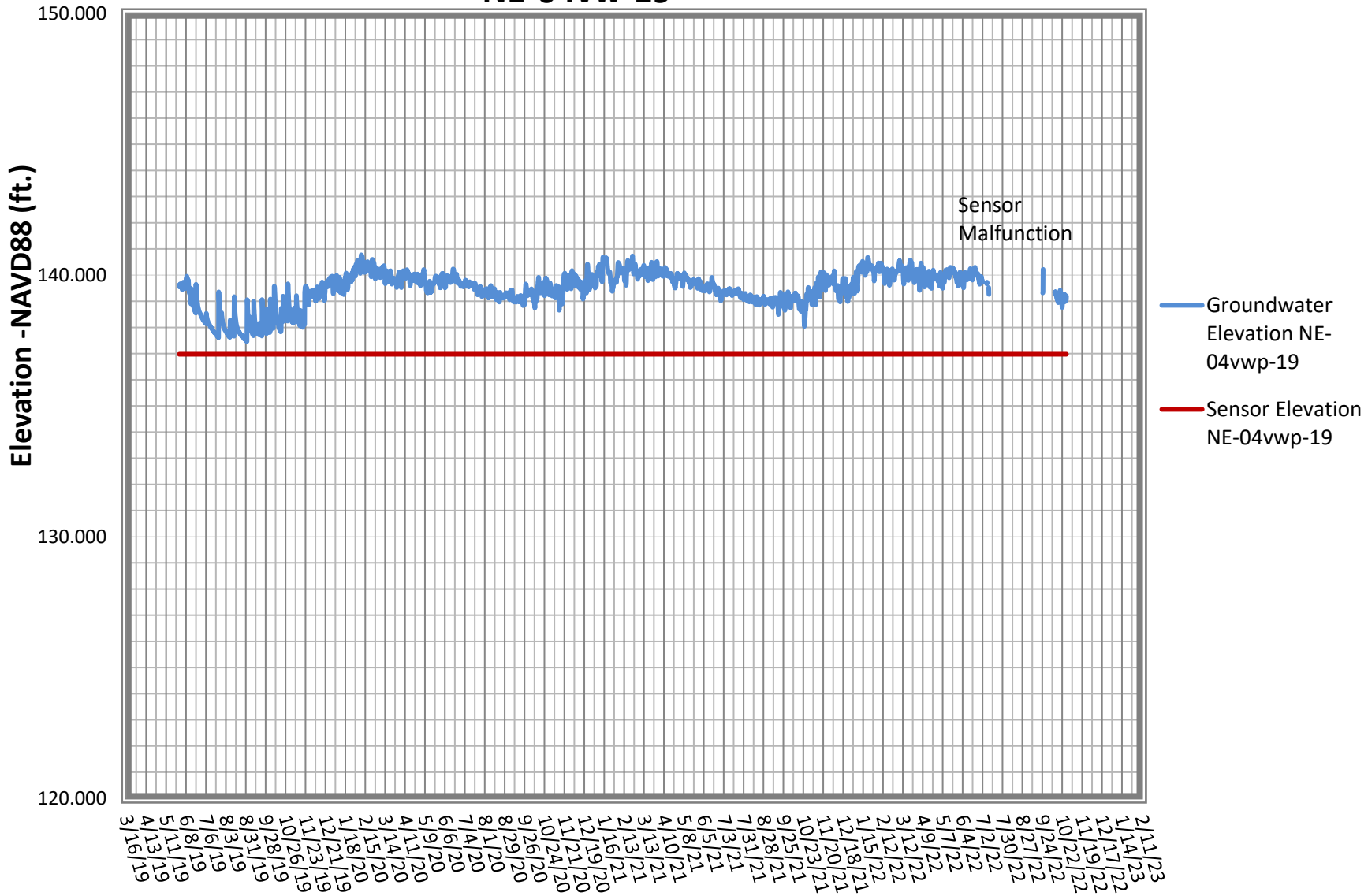
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-2. Groundwater Elevation Versus Time
NE-02p-19



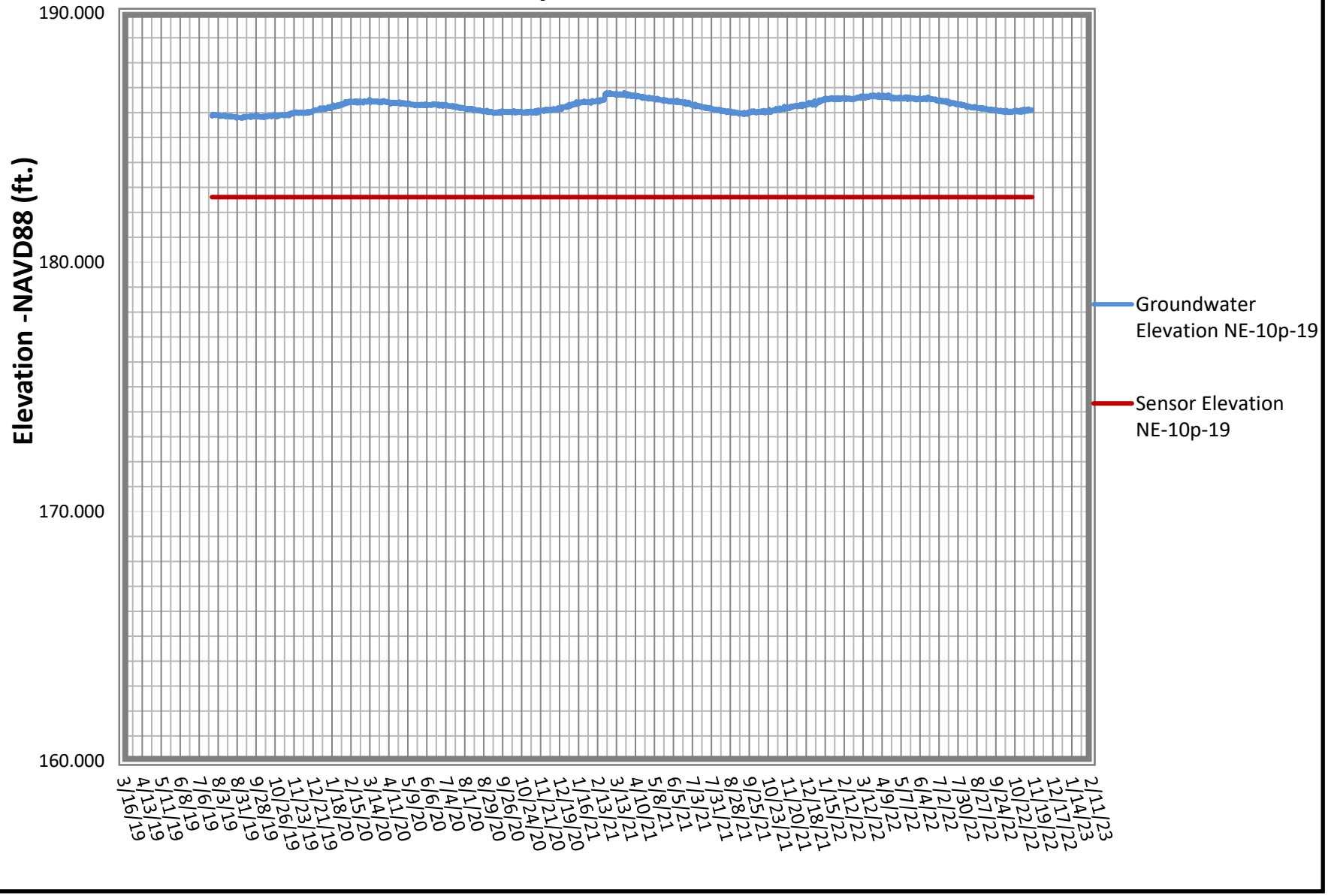
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-3. Groundwater Elevation Versus Time
NE-04vw-19



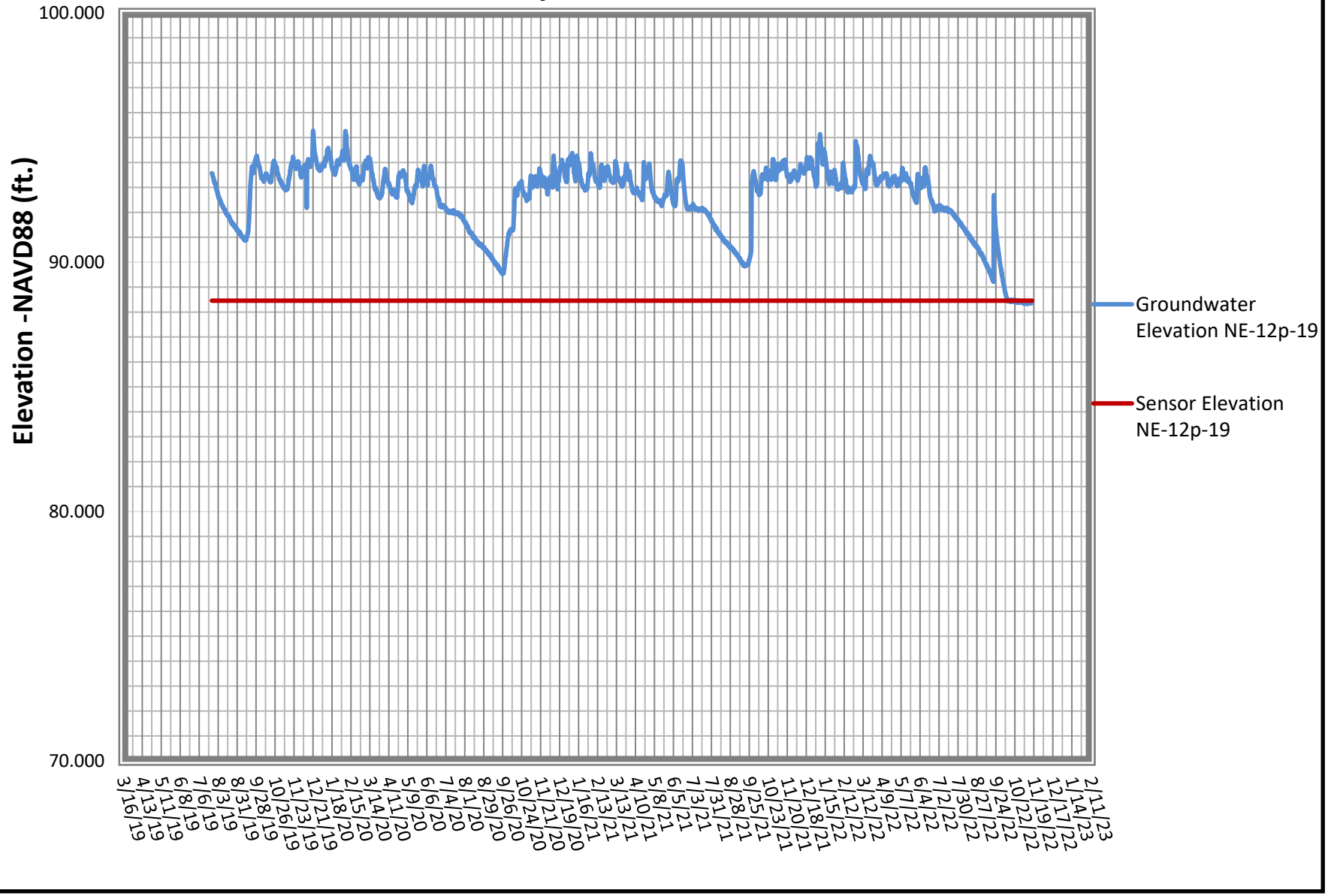
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-4. Groundwater Elevation Versus Time
NE-10p-19



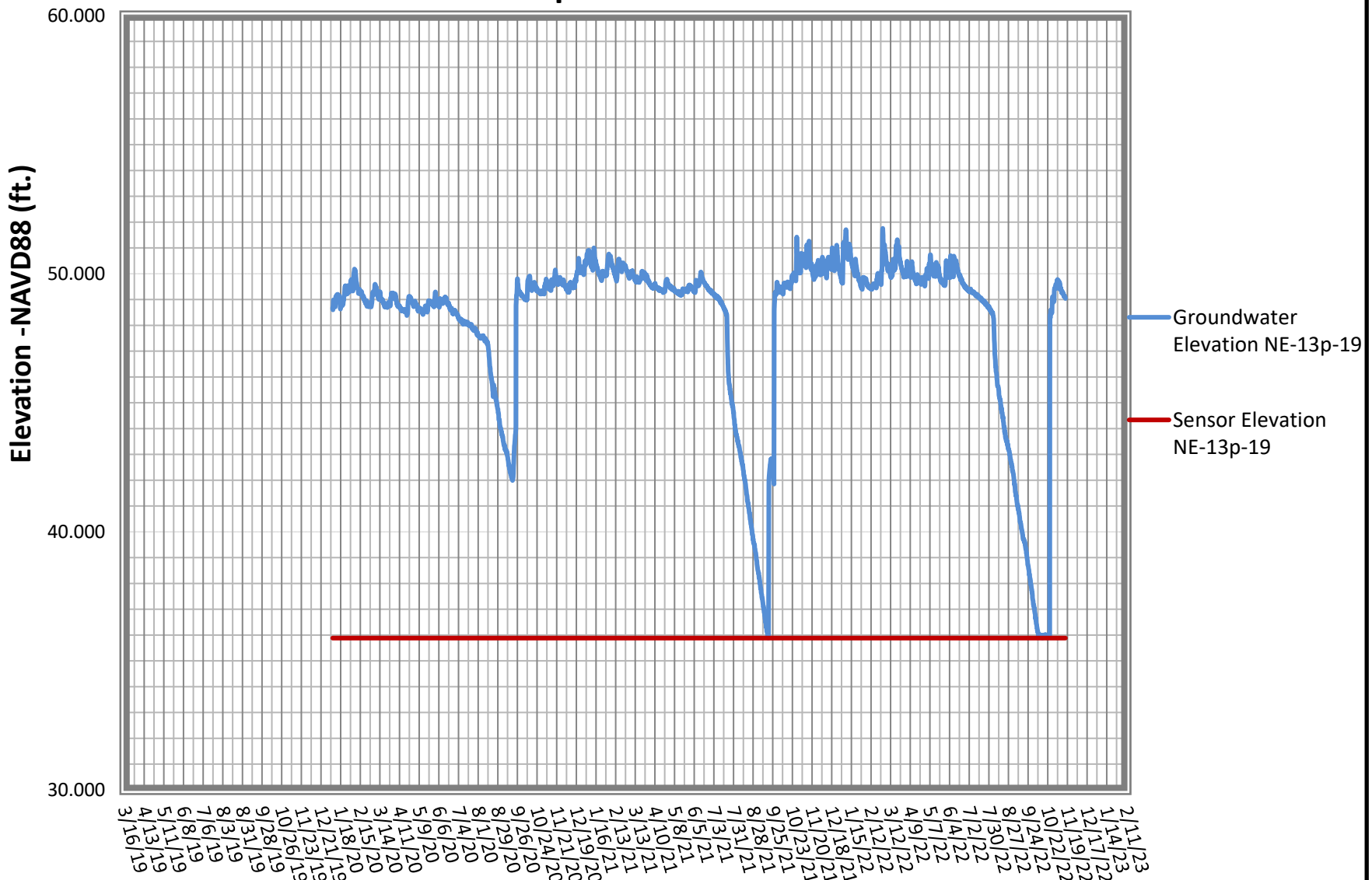
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-5. Groundwater Elevation Versus Time
NE-12p-19



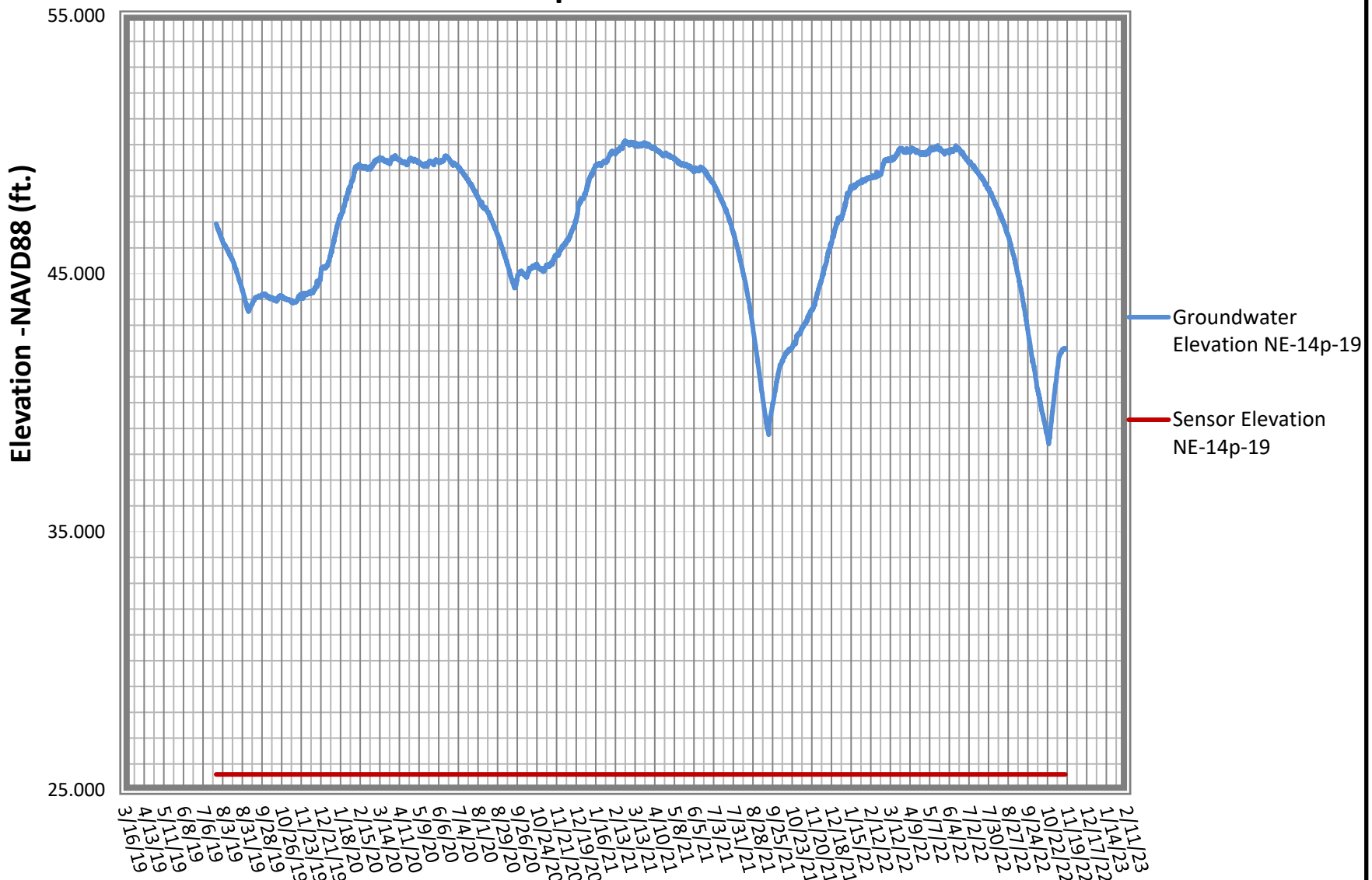
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-6. Groundwater Elevation Versus Time
NE-13p-19



WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-7. Groundwater Elevation Versus Time
NE-14p-19



WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-8. Groundwater Elevation Versus Time
NE-15p-19

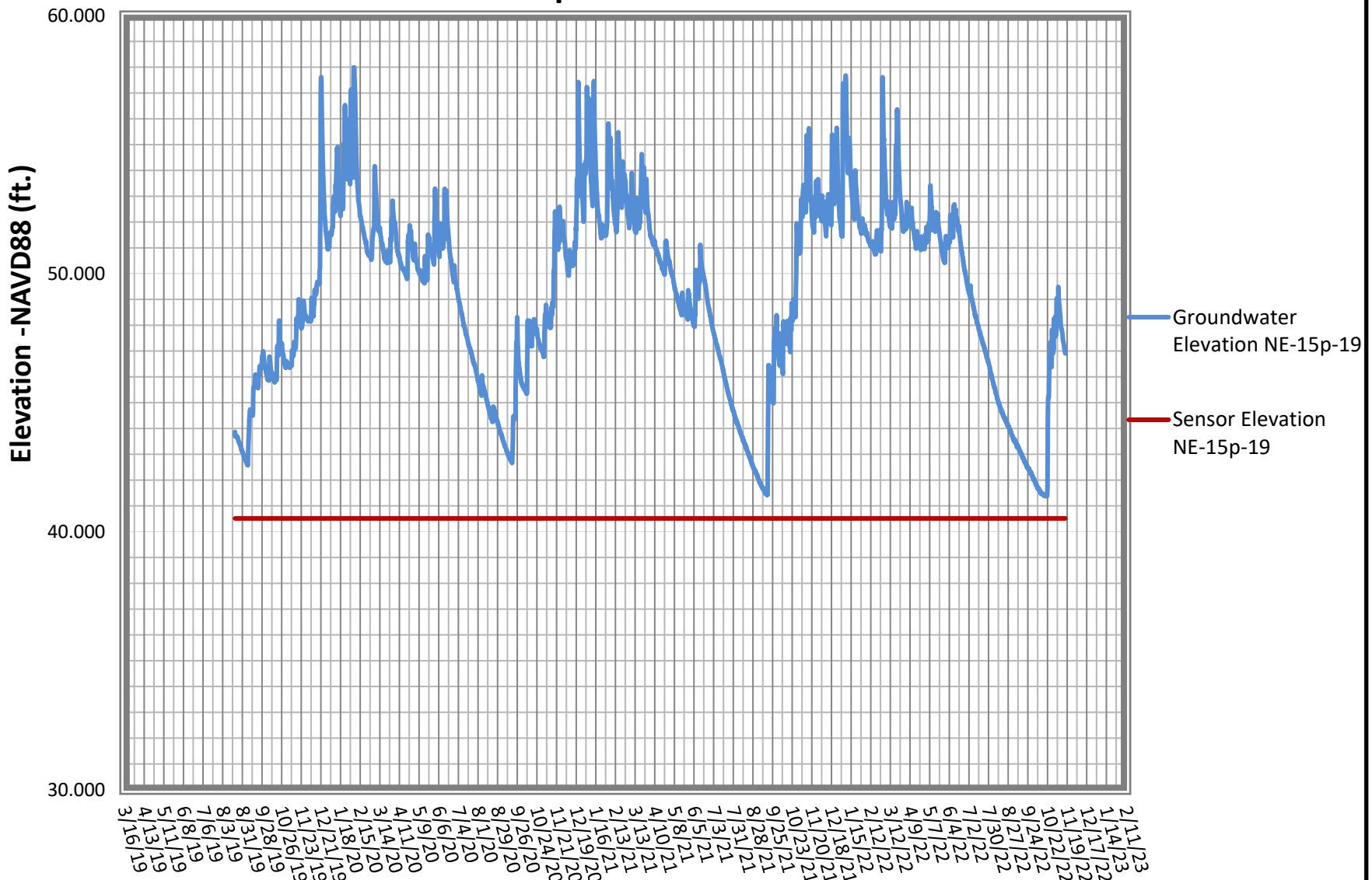
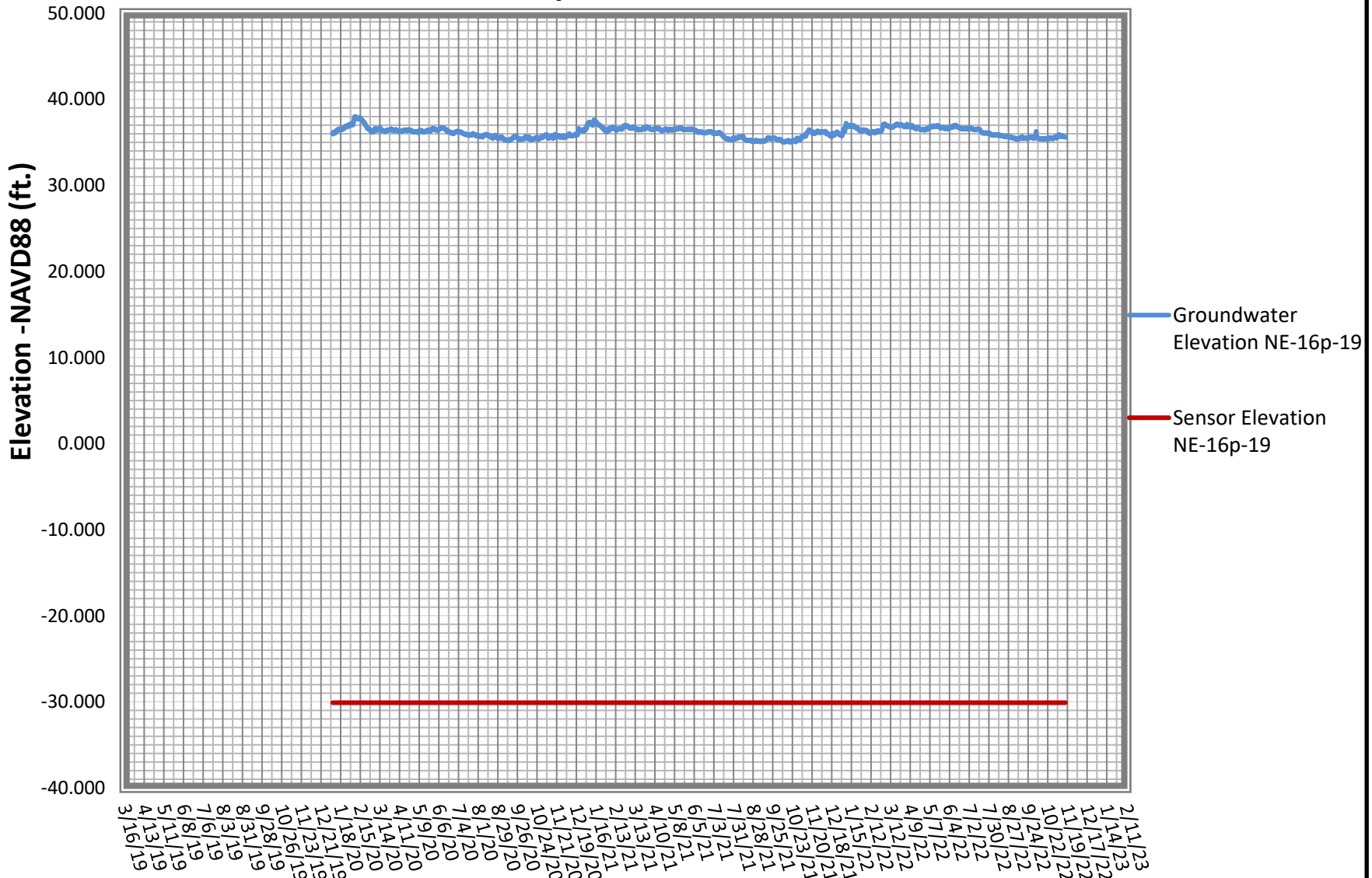
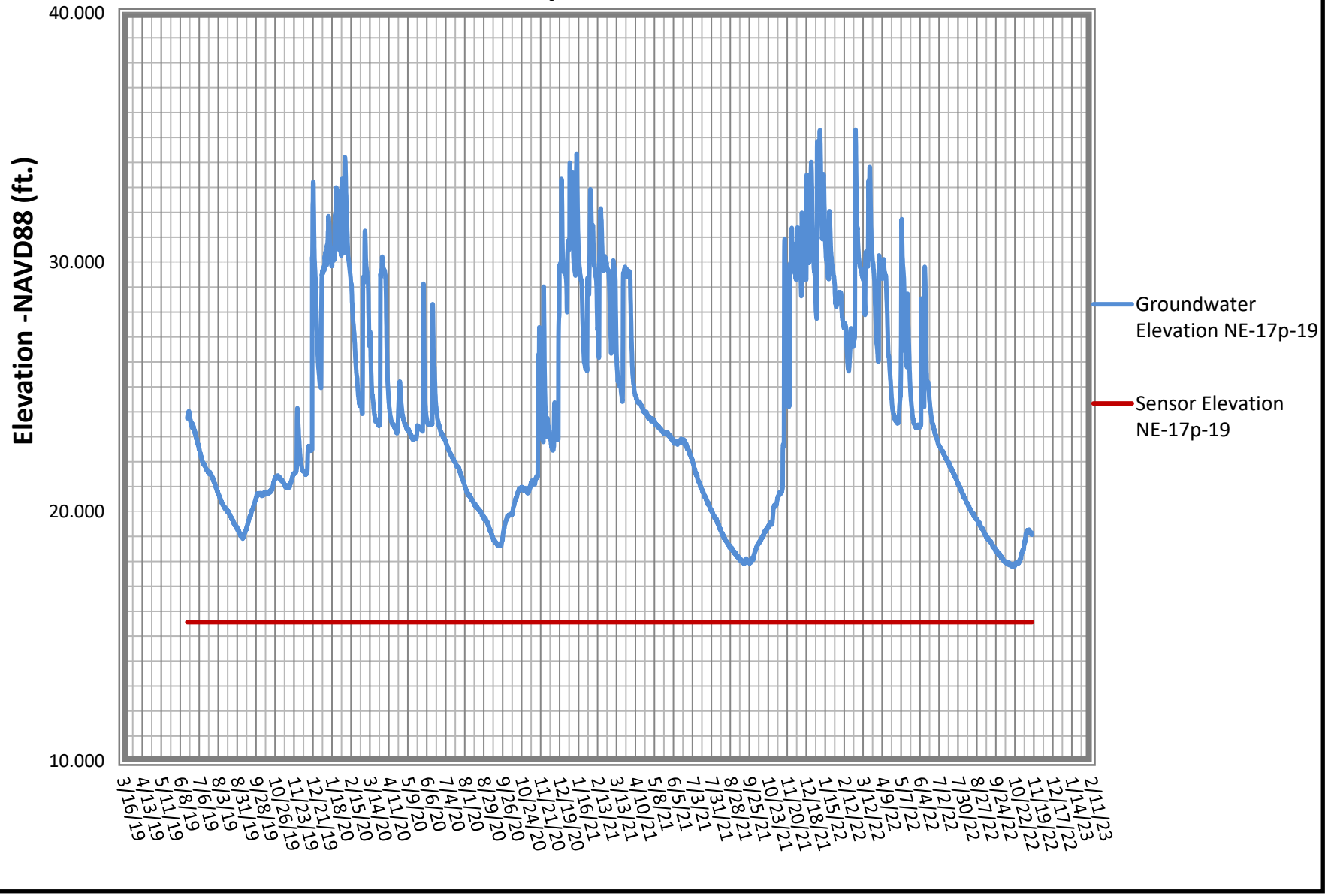


Figure C-9. Groundwater Elevation Versus Time
NE-16p-19



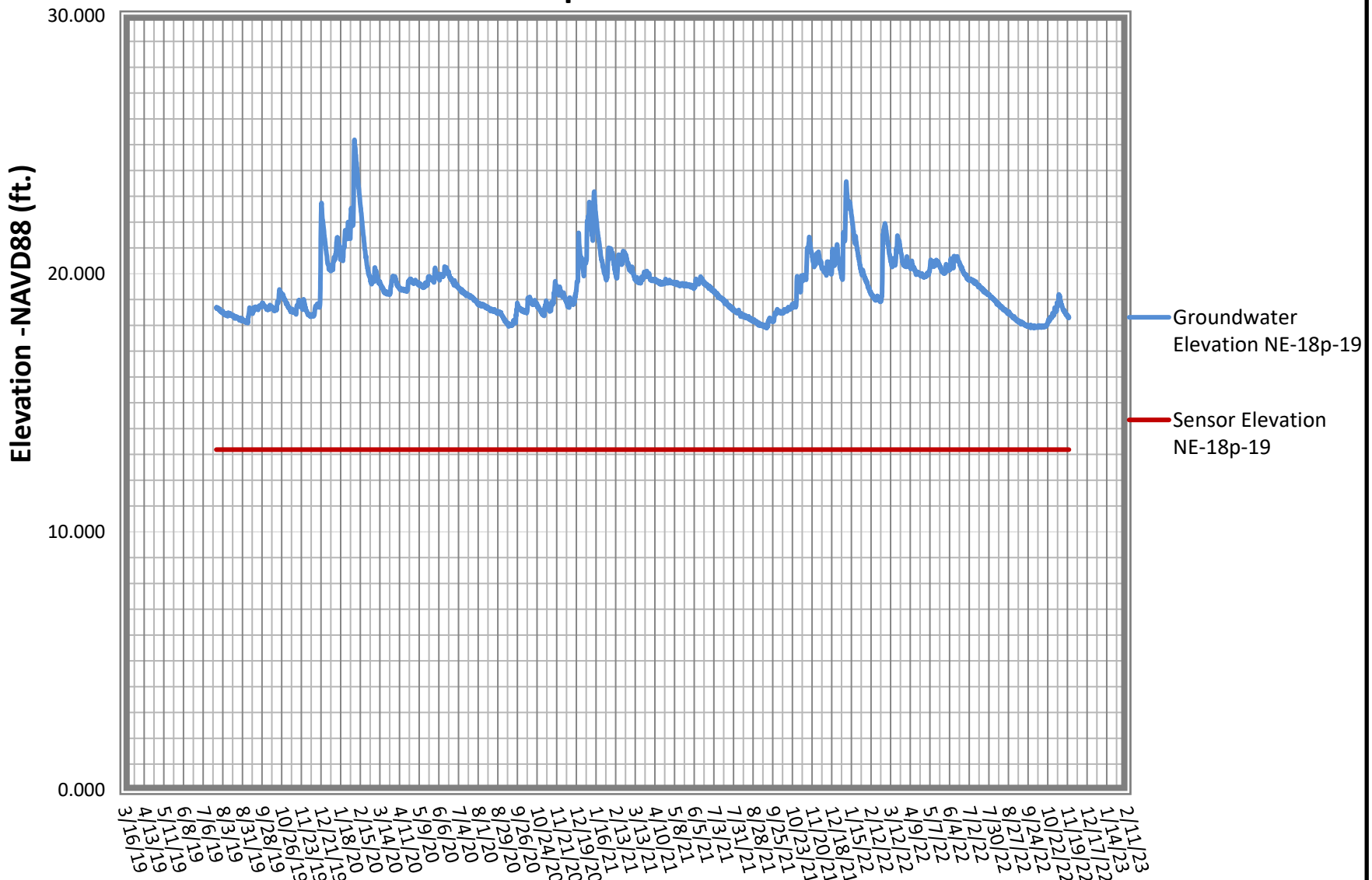
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-10. Groundwater Elevation Versus Time
NE-17p-19



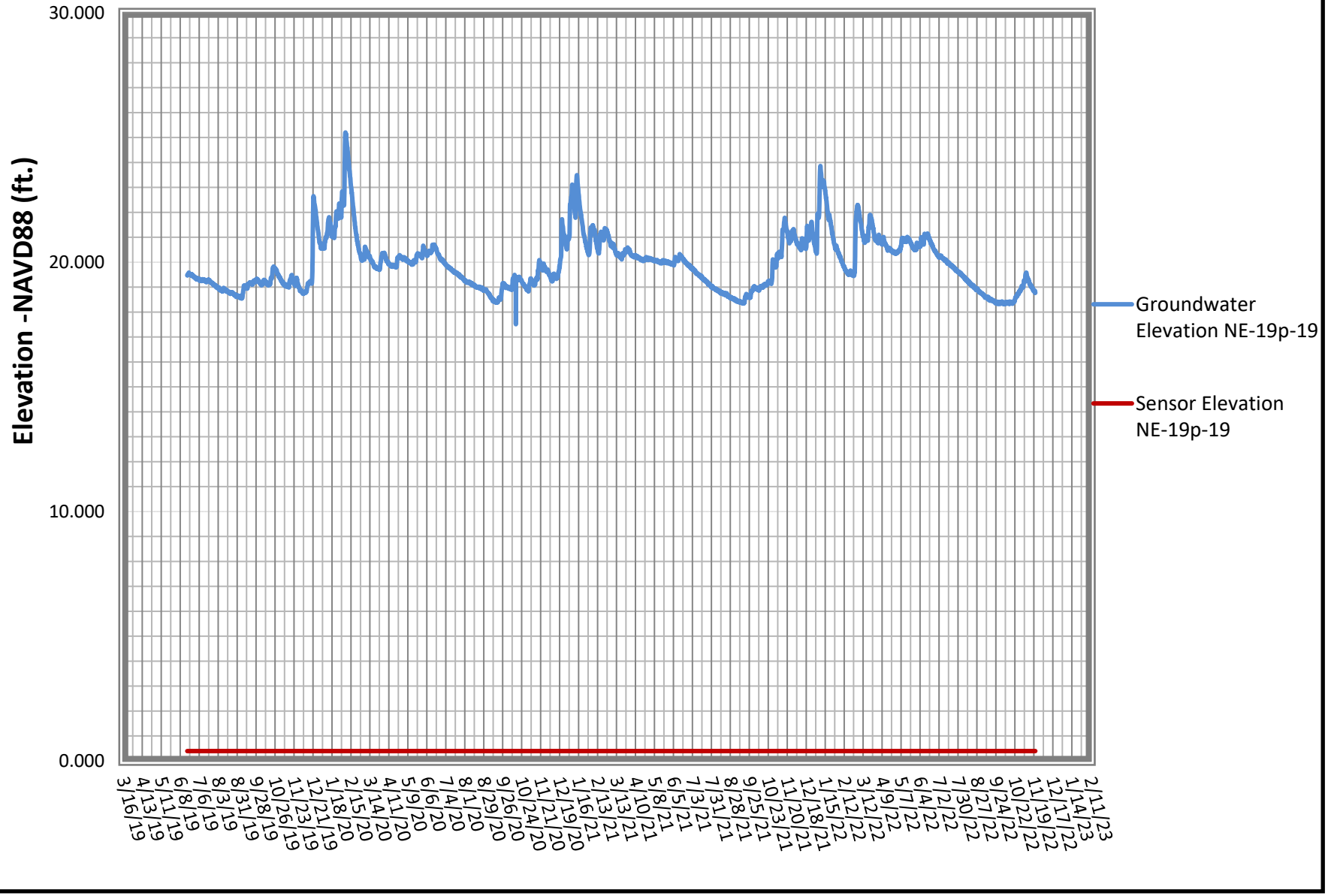
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-11. Groundwater Elevation Versus Time
NE-18p-19



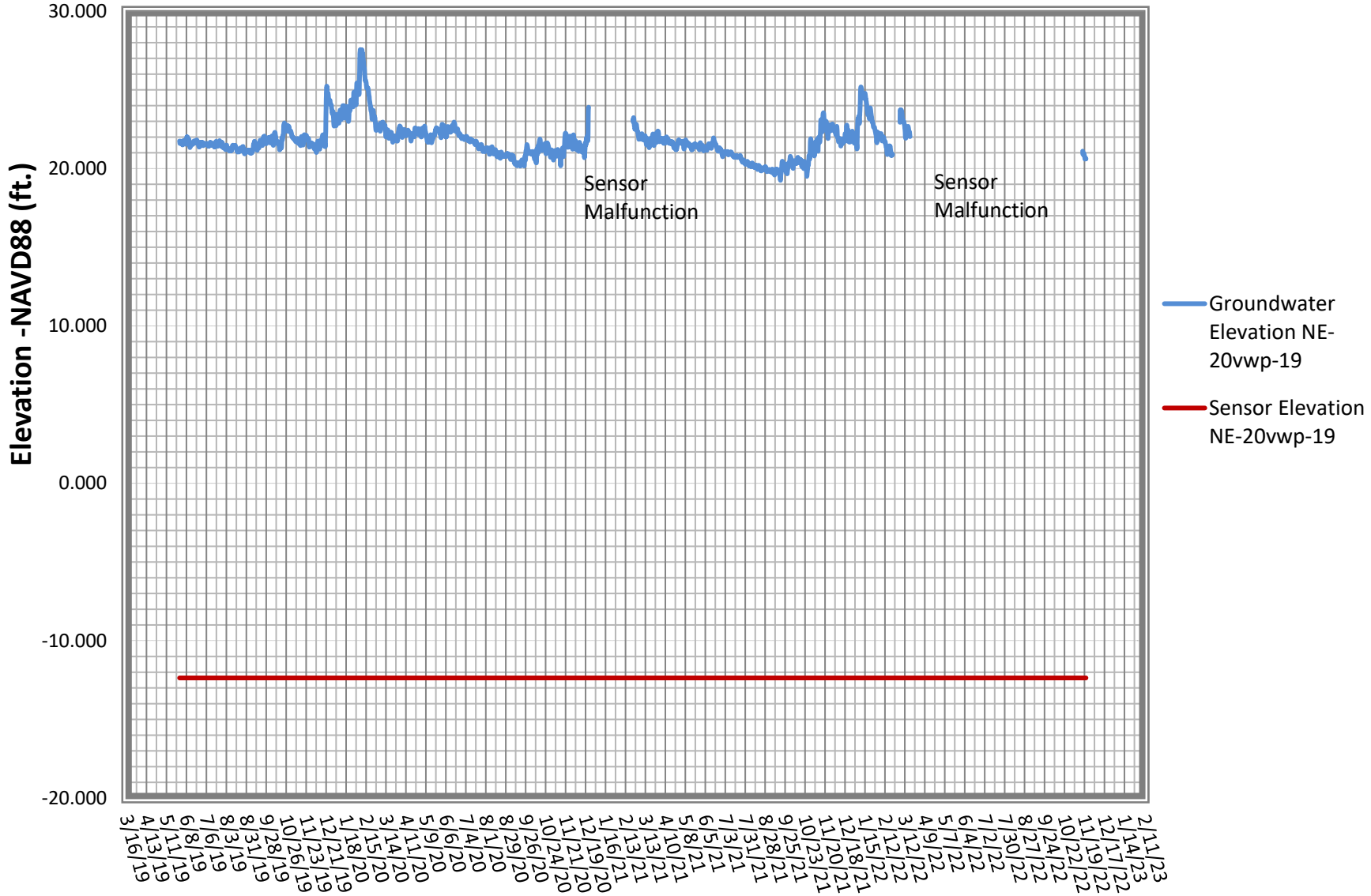
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-12. Groundwater Elevation Versus Time
NE-19p-19



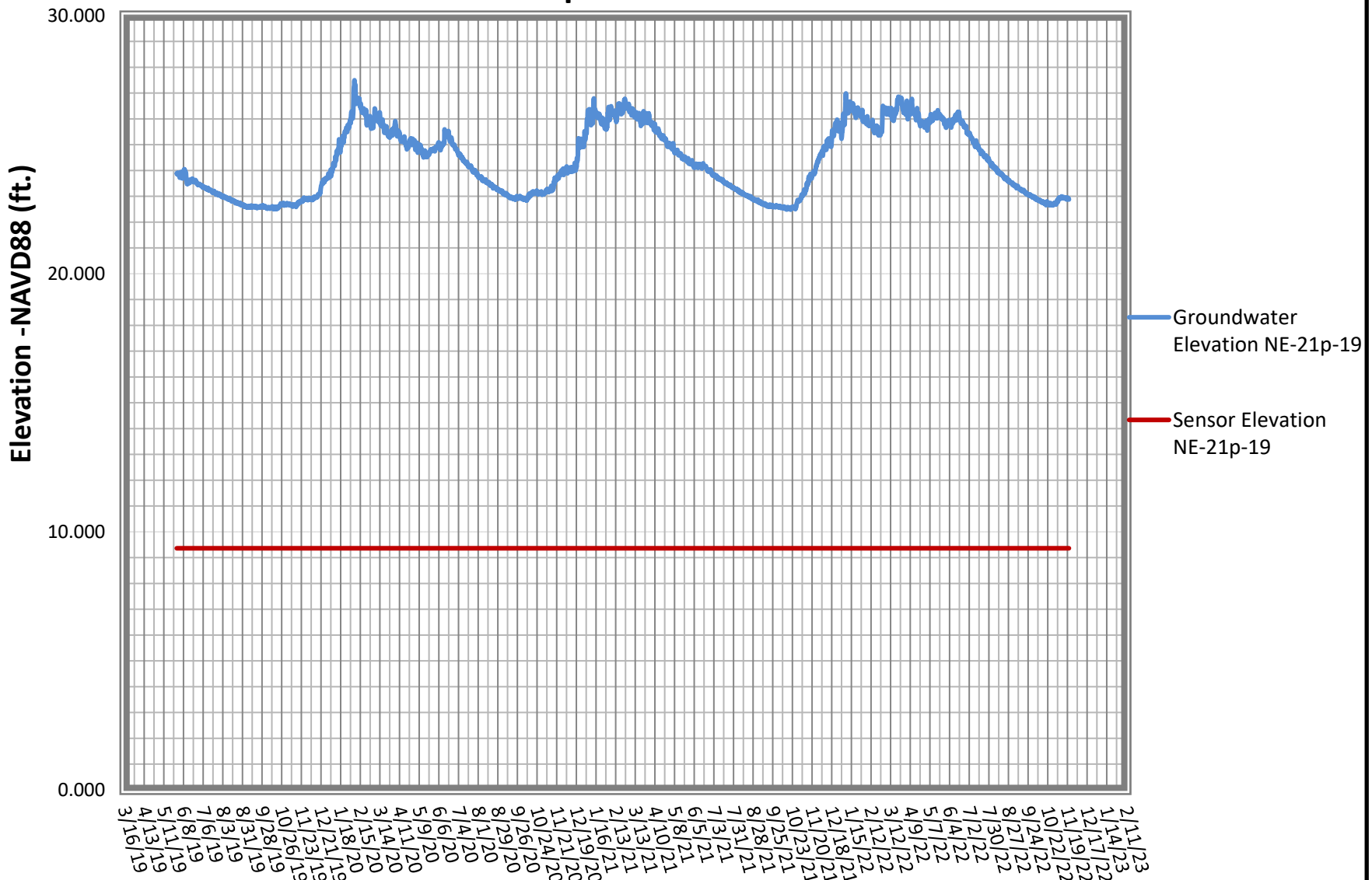
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-13. Groundwater Elevation Versus Time
NE-20vw-19



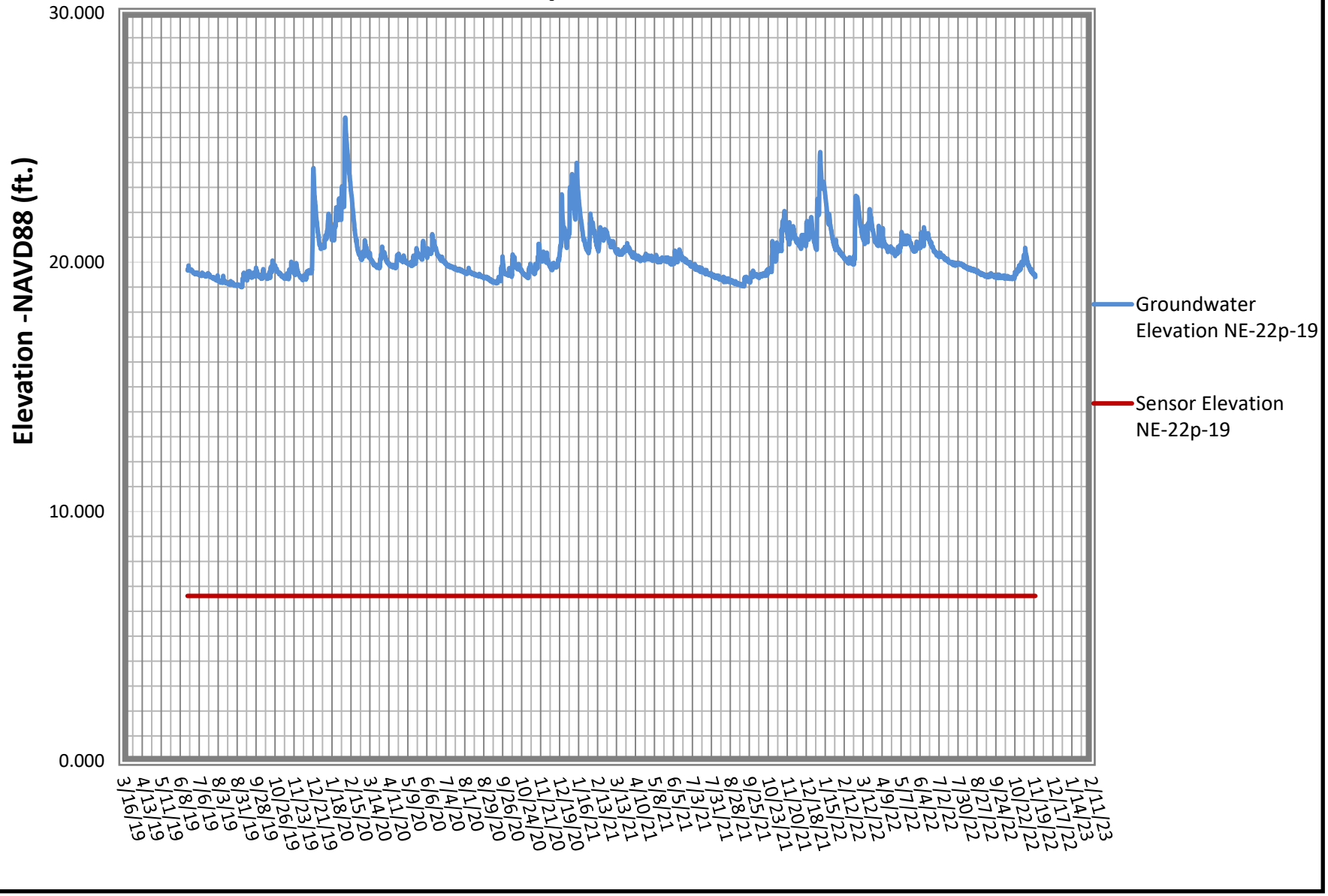
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-14. Groundwater Elevation Versus Time
NE-21p-19



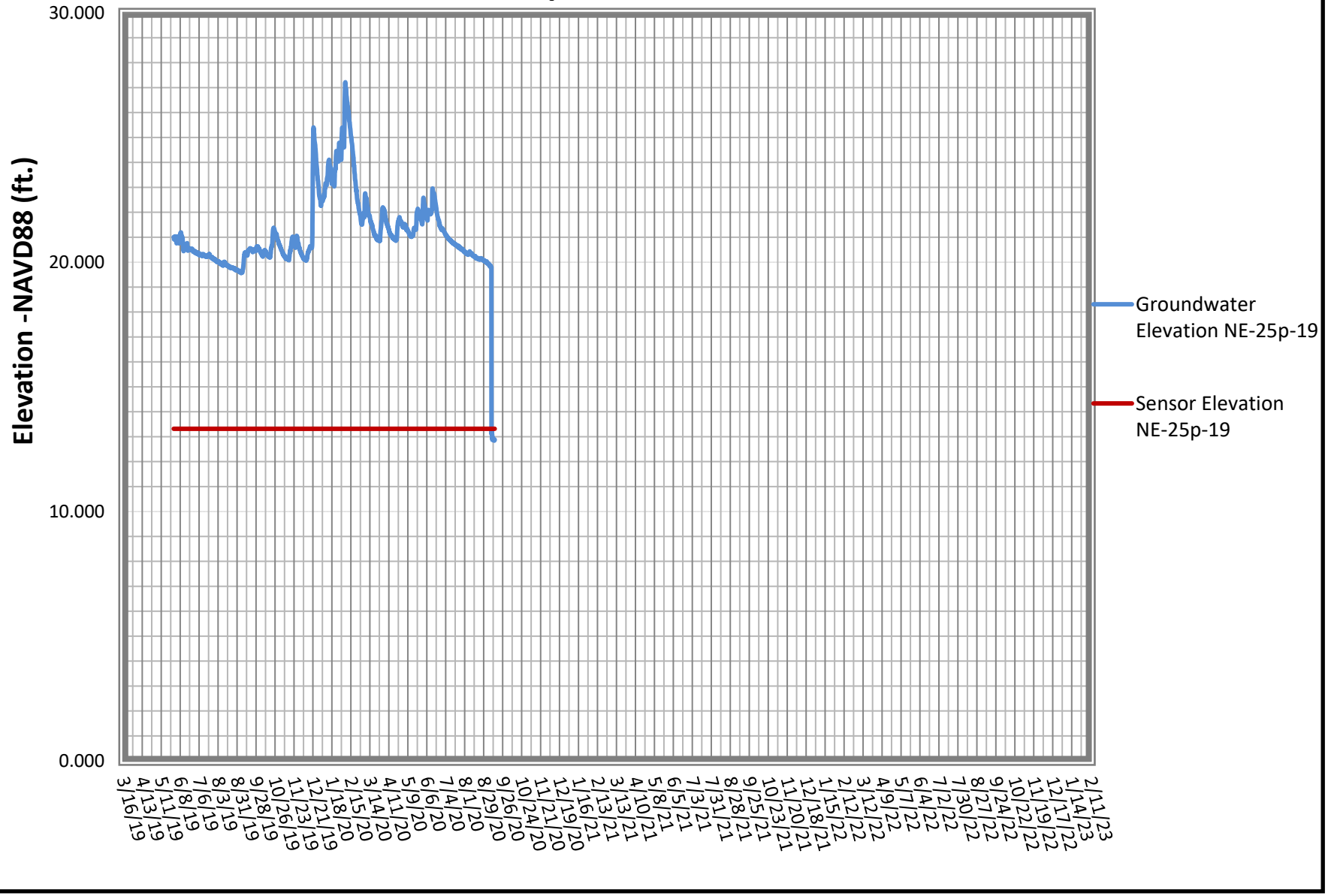
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-15. Groundwater Elevation Versus Time
NE-22p-19



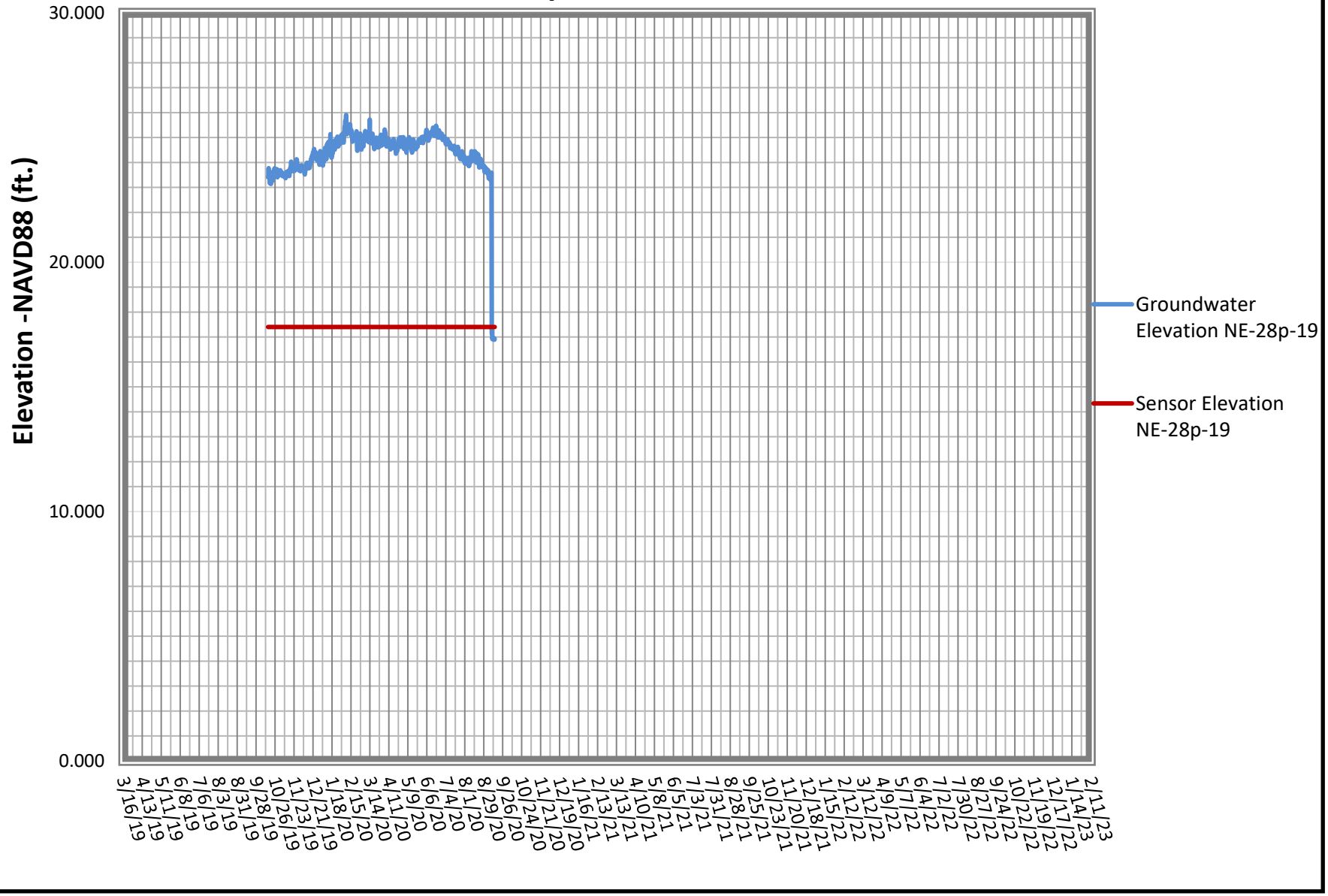
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-16. Groundwater Elevation Versus Time
NE-25p-19



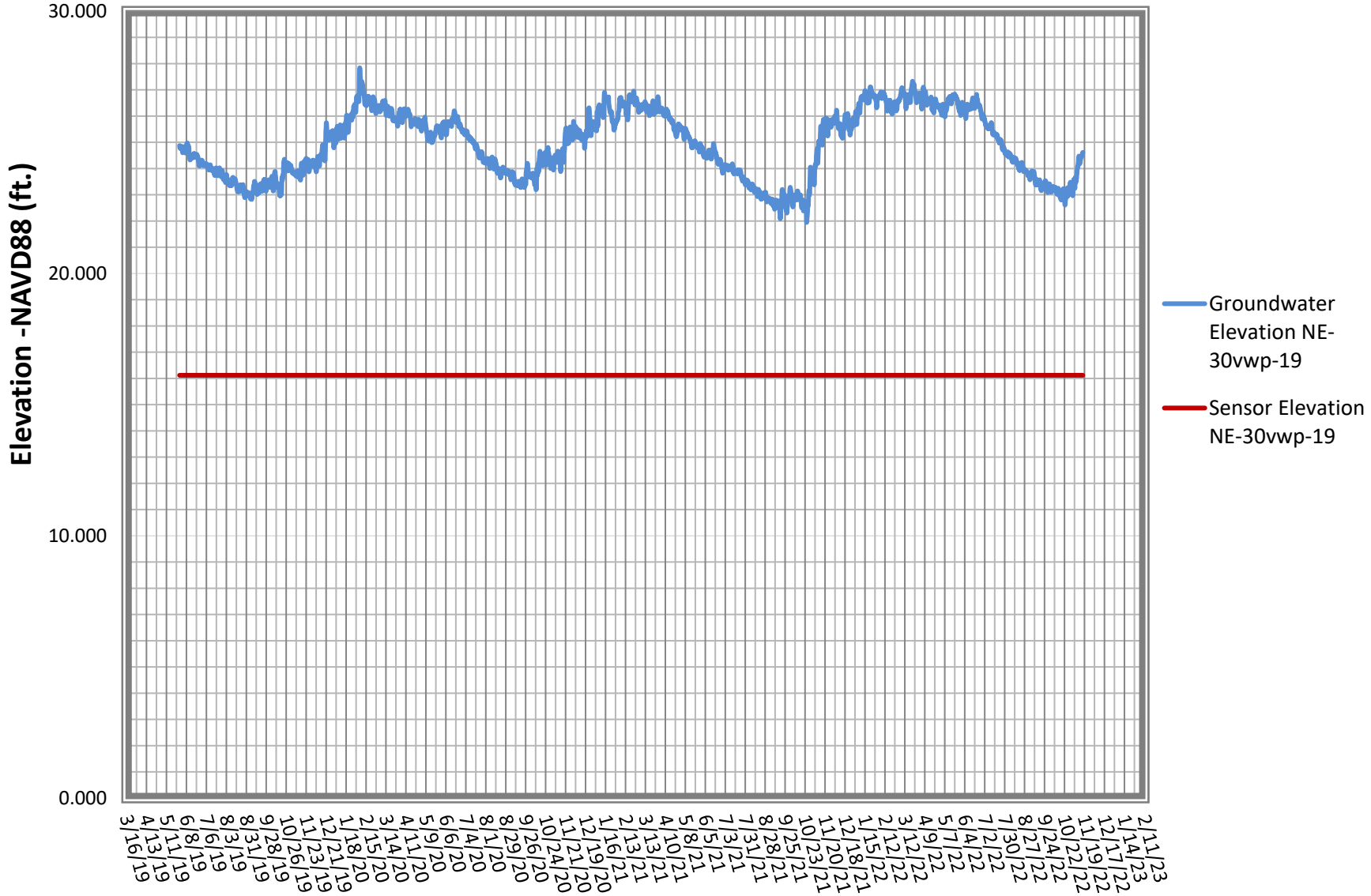
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-17. Groundwater Elevation Versus Time
NE-28p-19



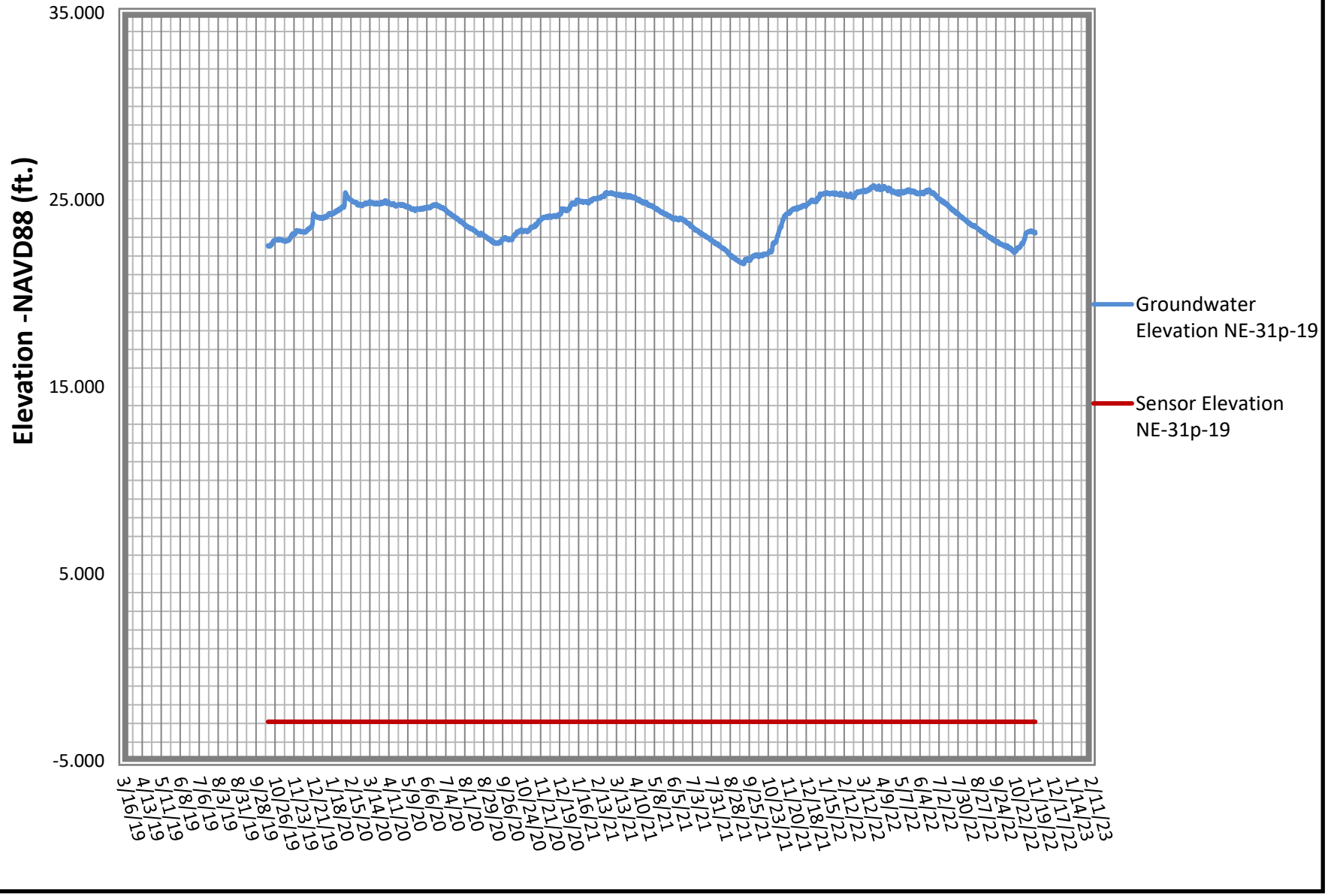
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-18. Groundwater Elevation Versus Time
NE-30vw-19



WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-19. Groundwater Elevation Versus Time
NE-31p-19



WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-20. Groundwater Elevation Versus Time
NE-32p-19

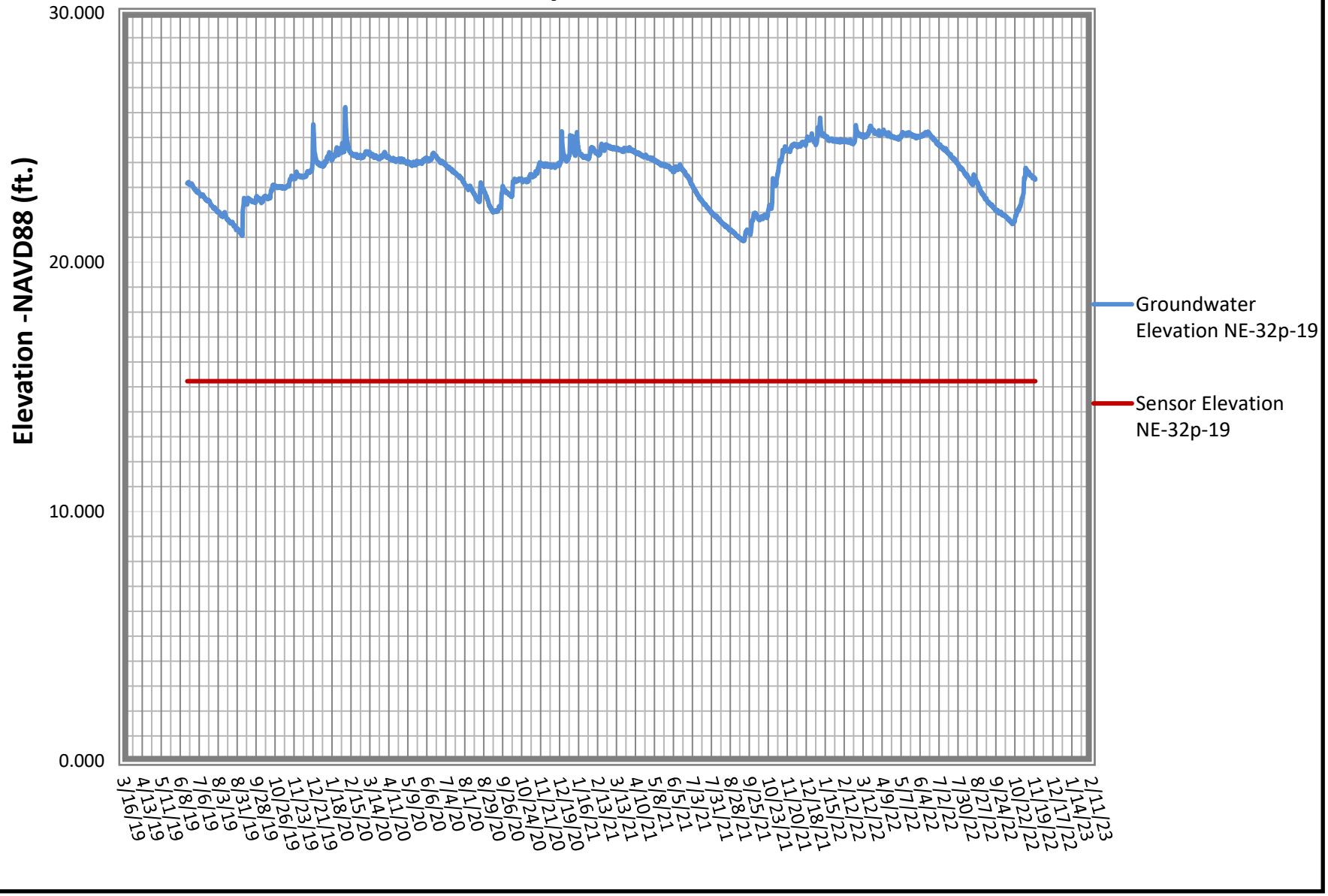
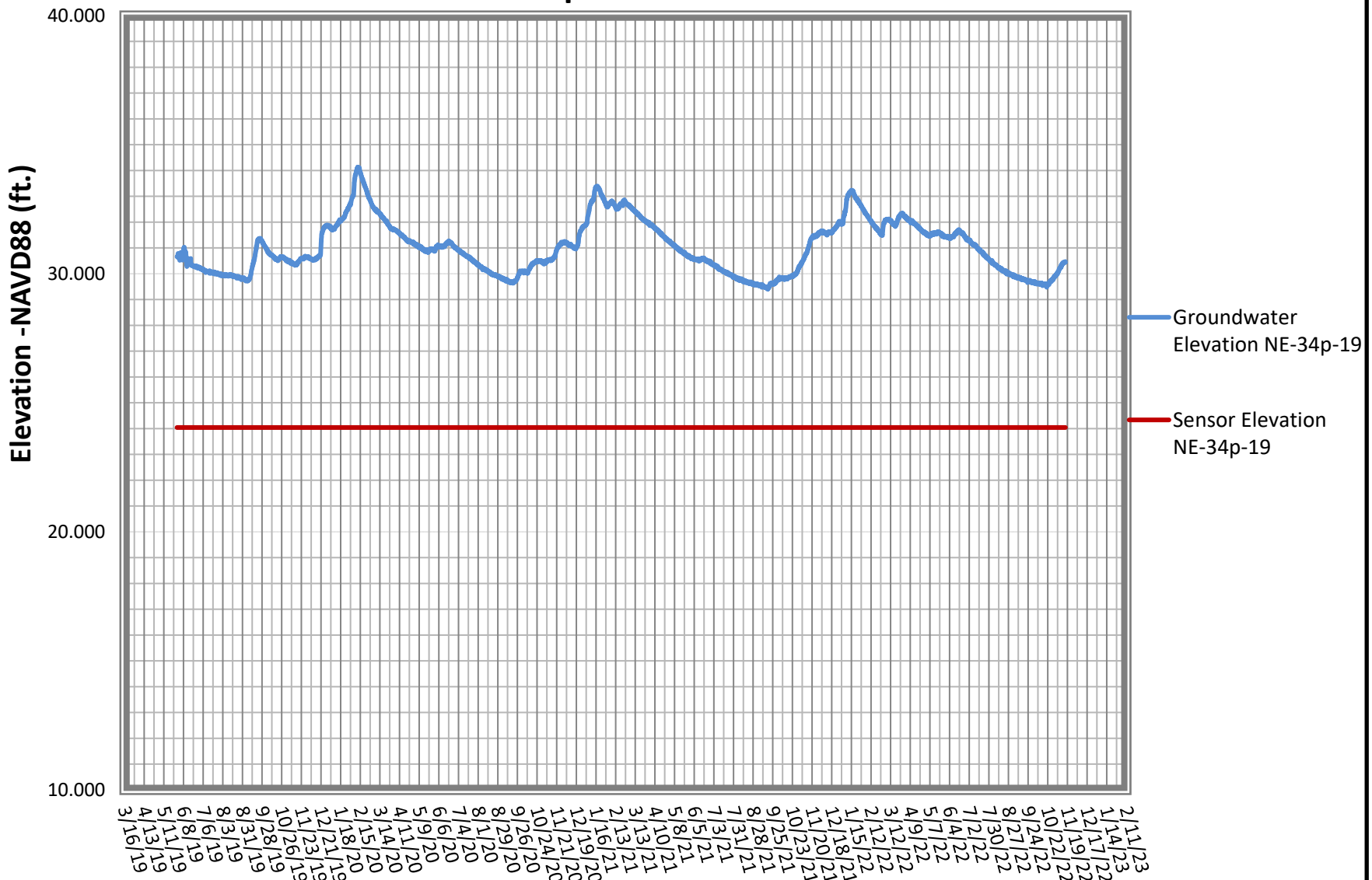
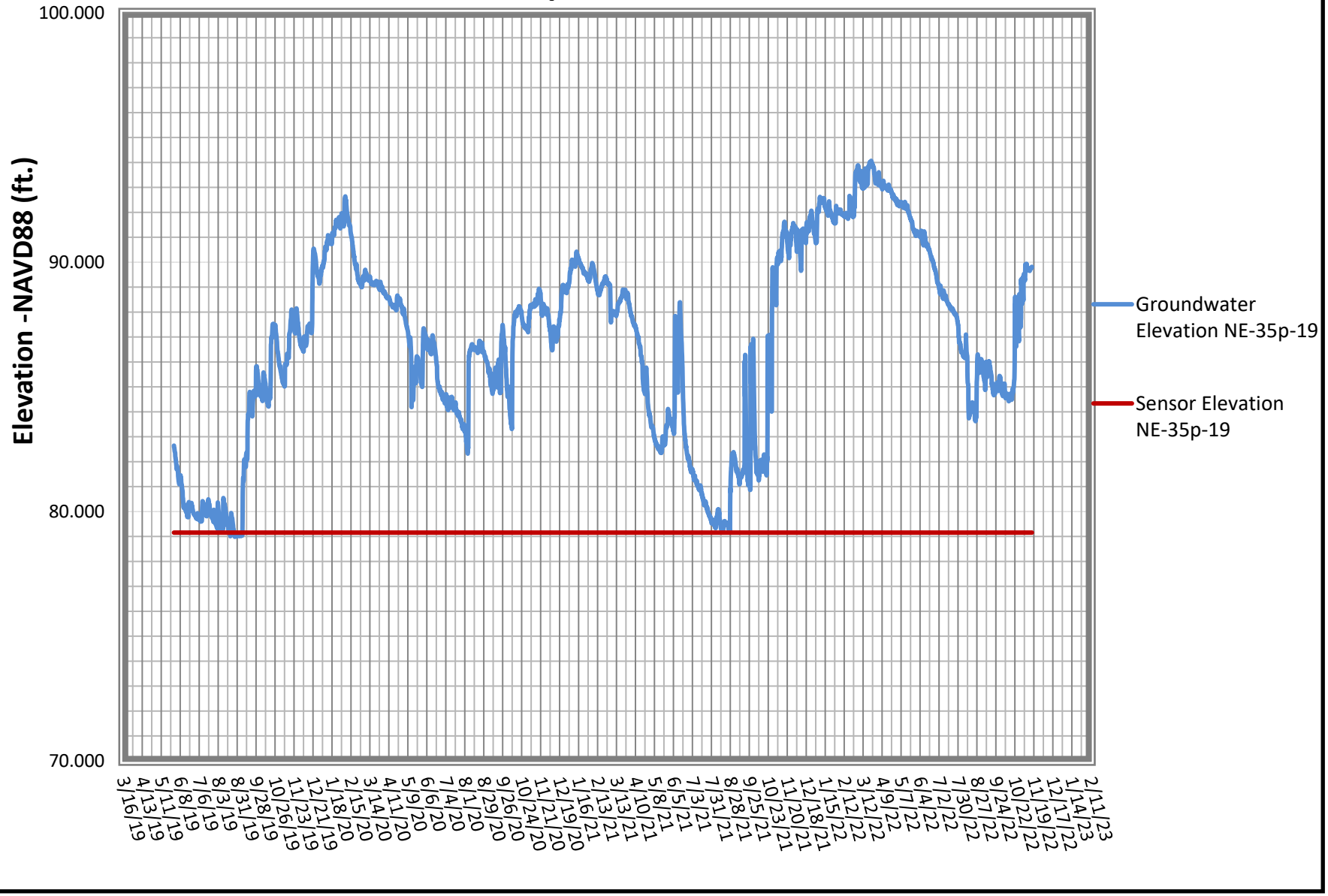


Figure C-21. Groundwater Elevation Versus Time
NE-34p-19



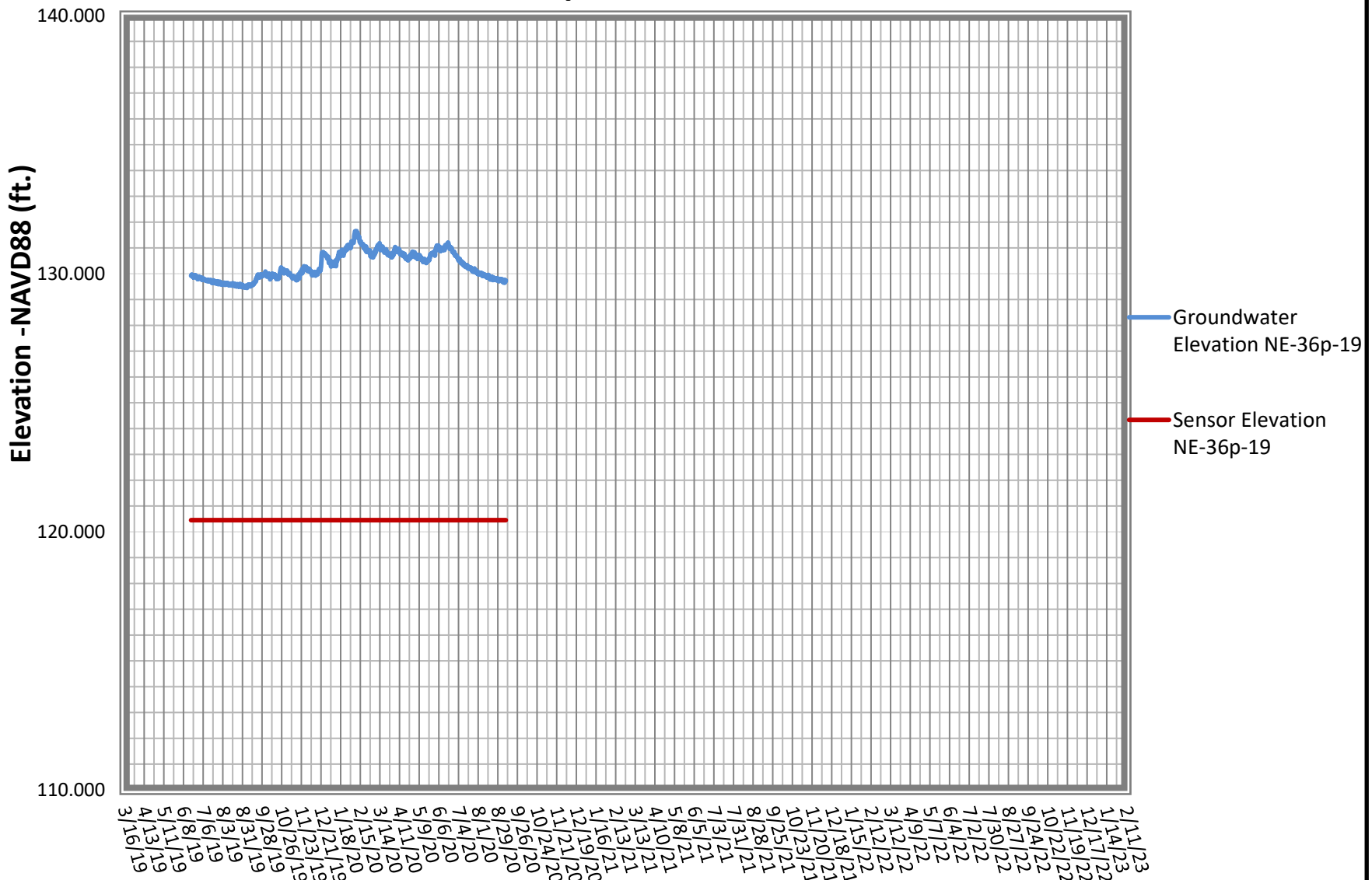
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-22. Groundwater Elevation Versus Time
NE-35p-19



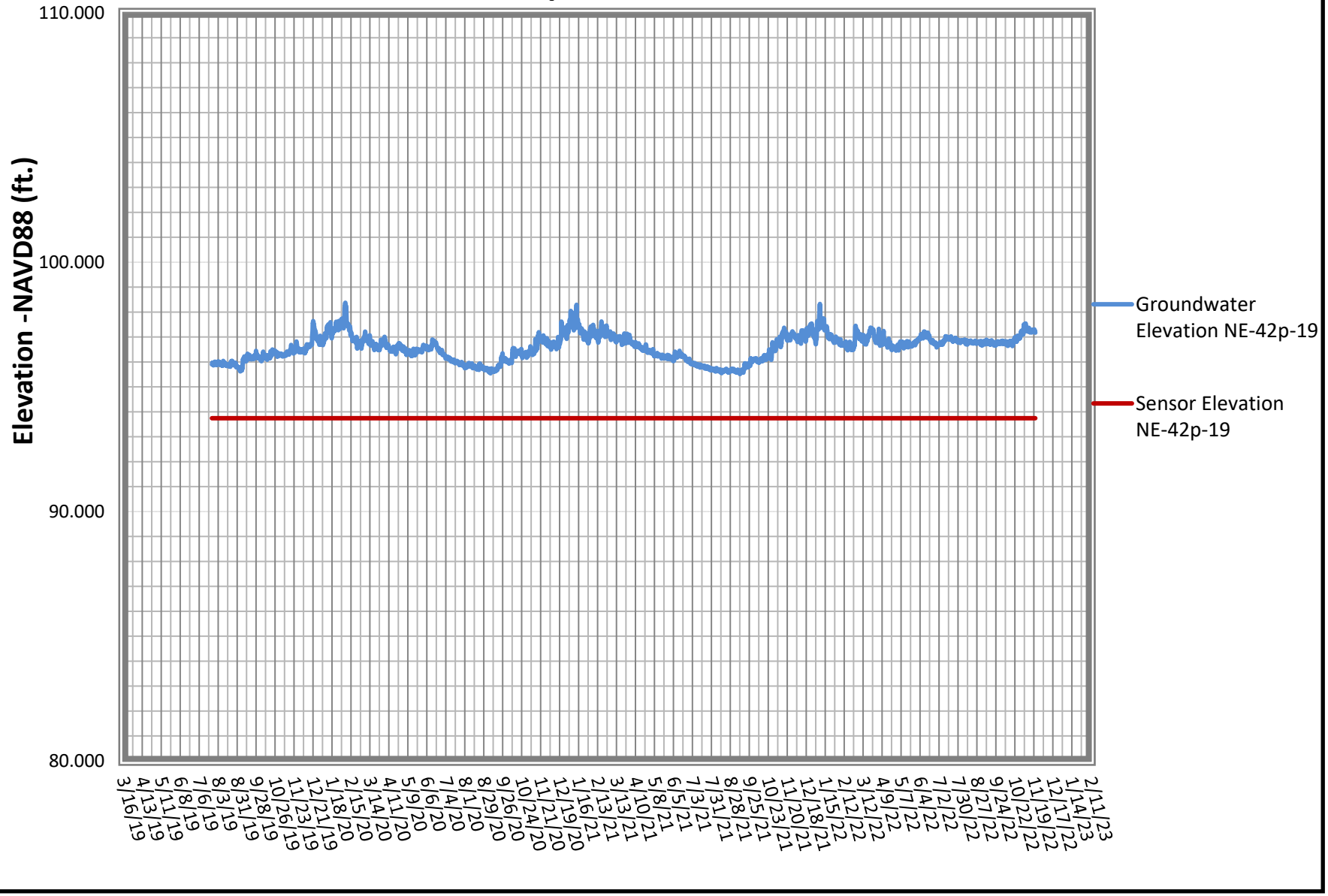
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-23. Groundwater Elevation Versus Time
NE-36p-19



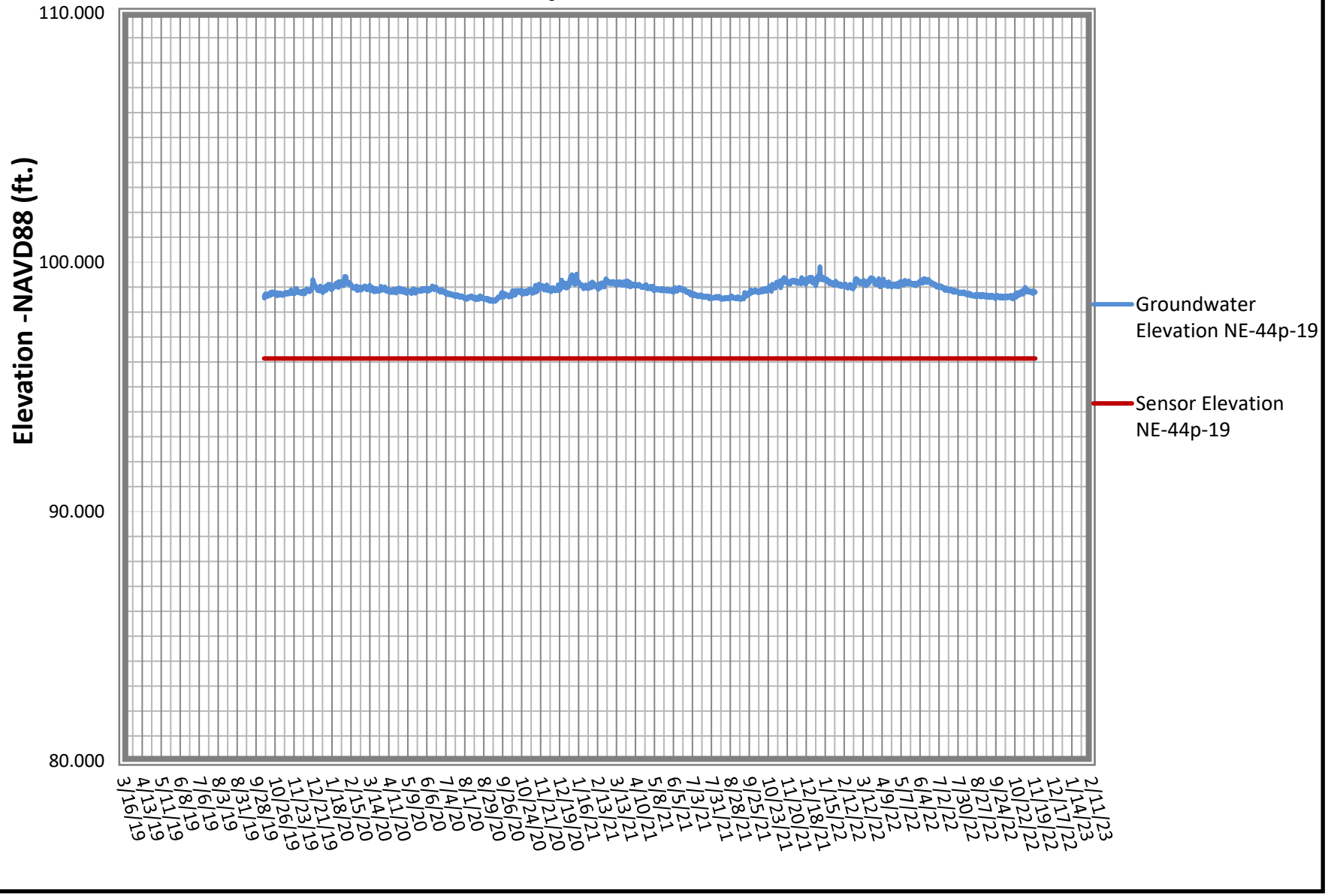
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-24. Groundwater Elevation Versus Time
NE-42p-19



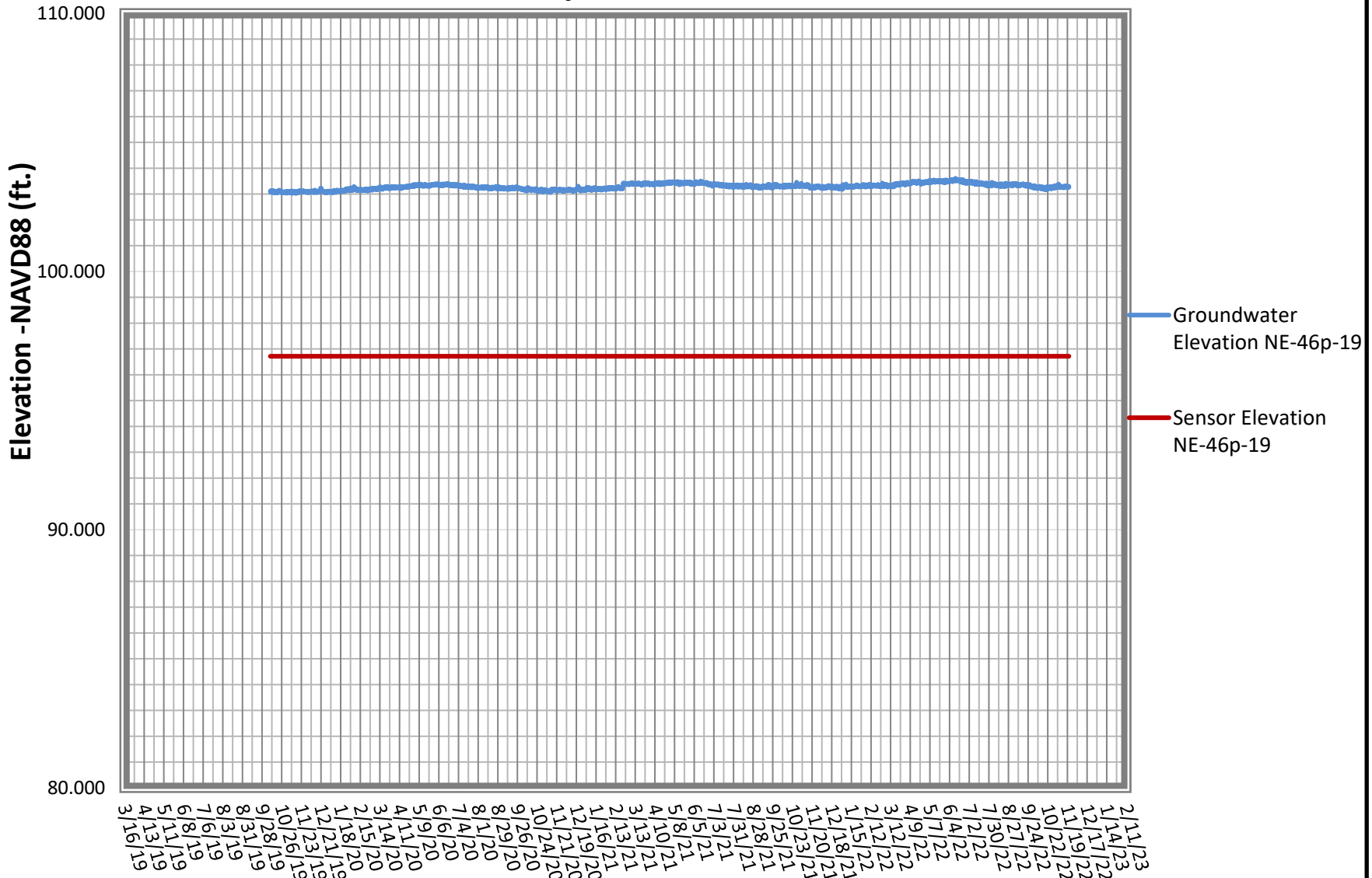
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-25. Groundwater Elevation Versus Time
NE-44p-19



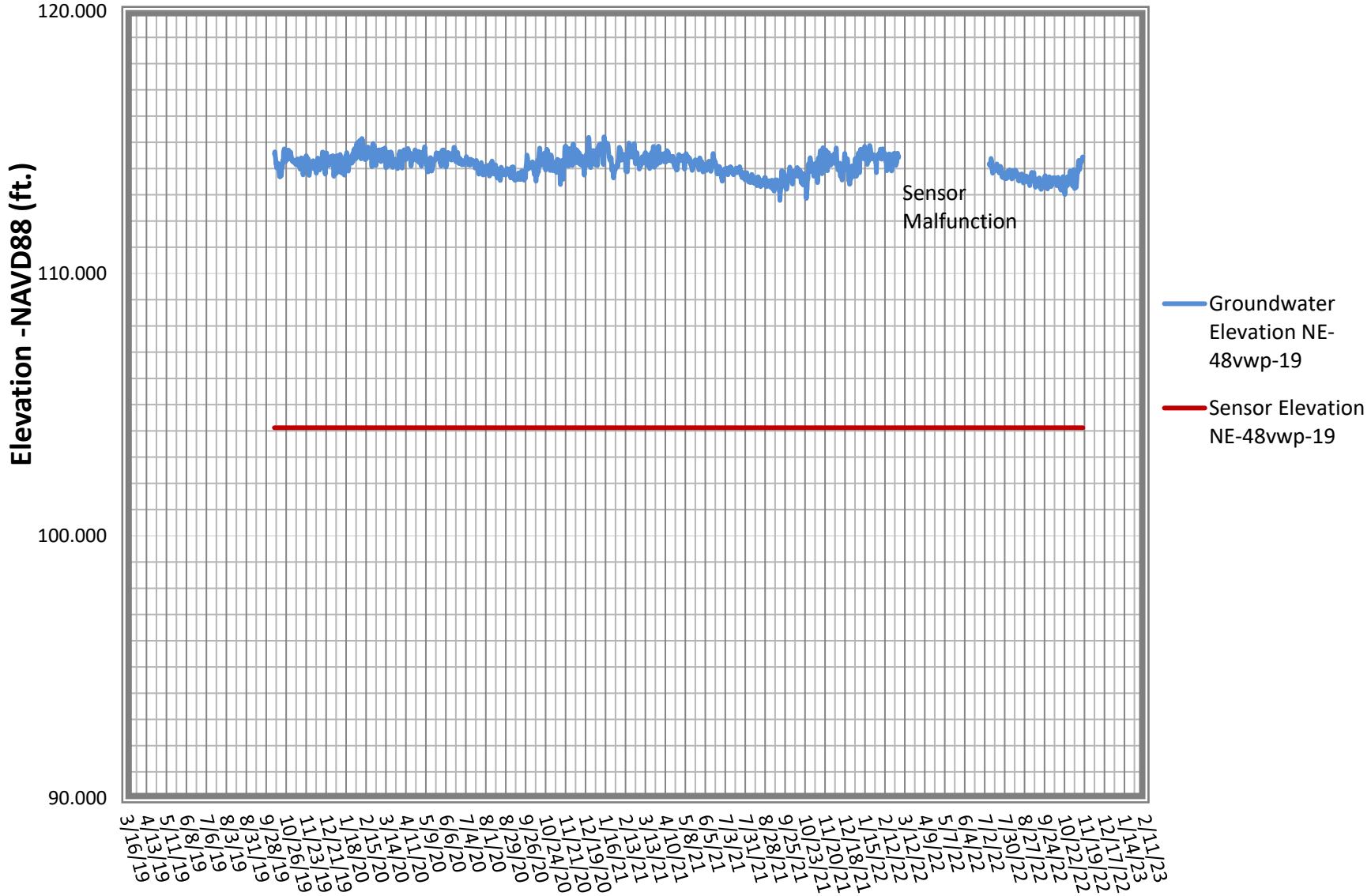
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-26. Groundwater Elevation Versus Time
NE-46p-19



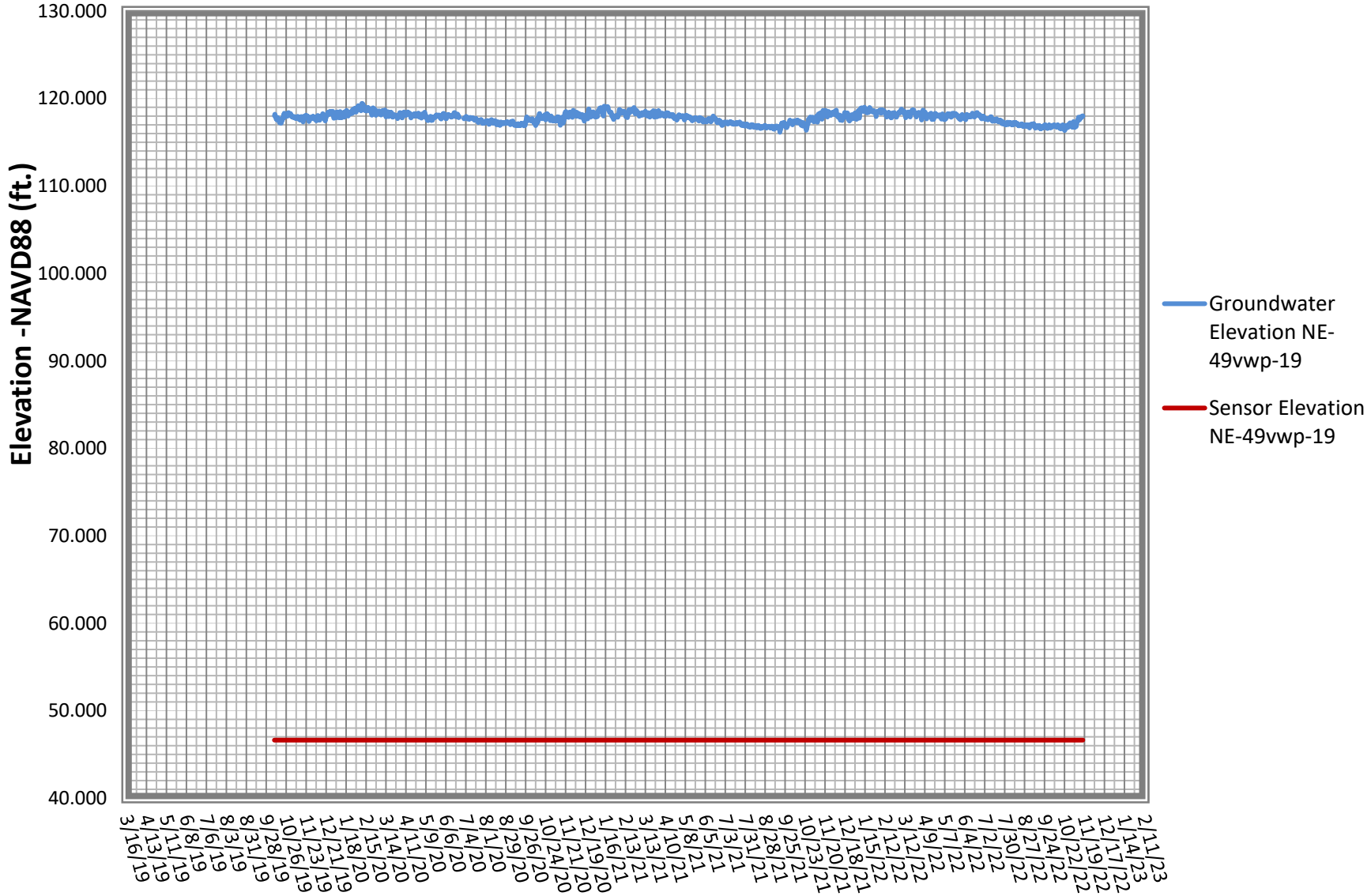
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-27. Groundwater Elevation Versus Time
NE-48vw-19



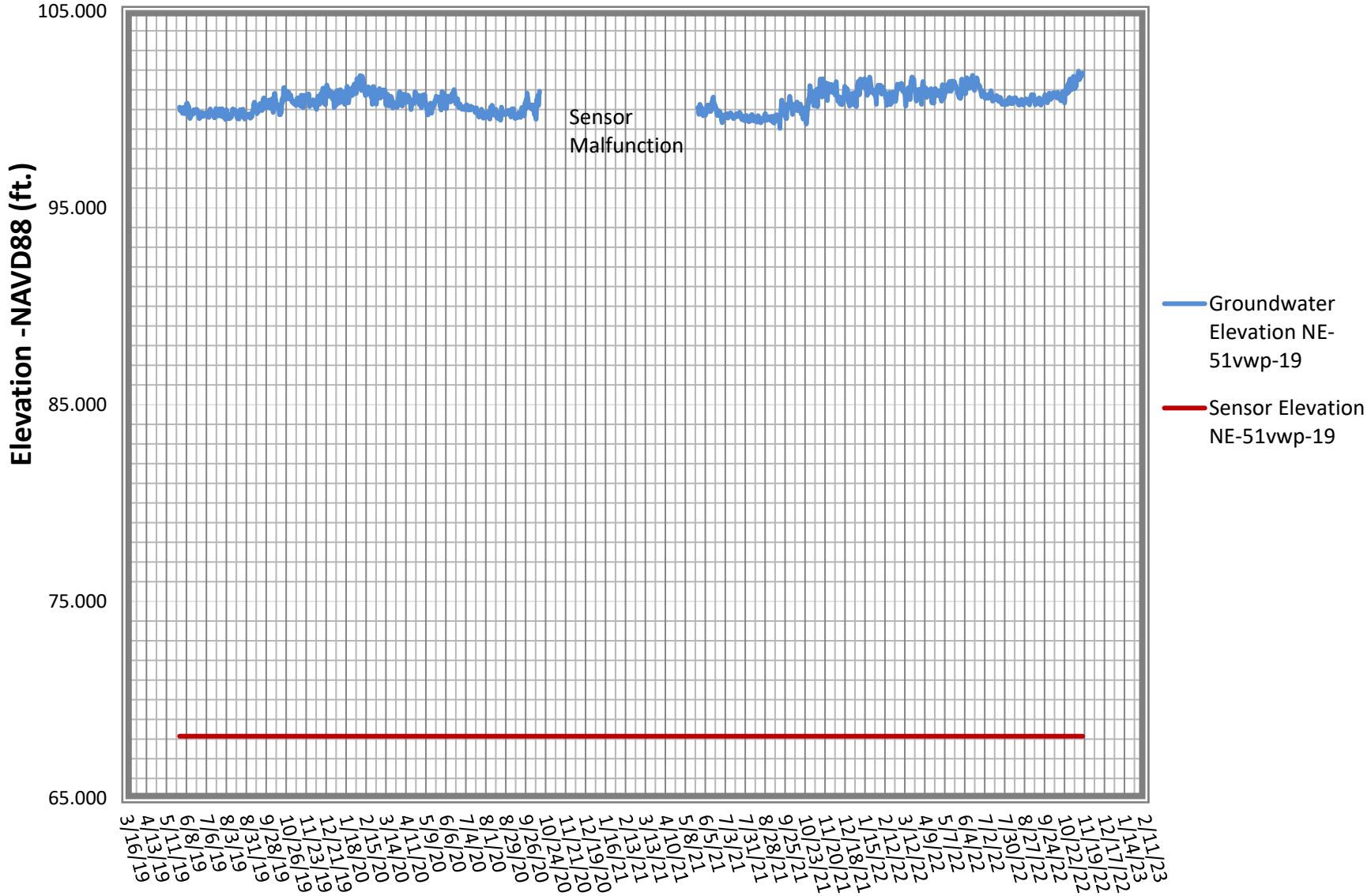
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-28. Groundwater Elevation Versus Time
NE-49vw-19



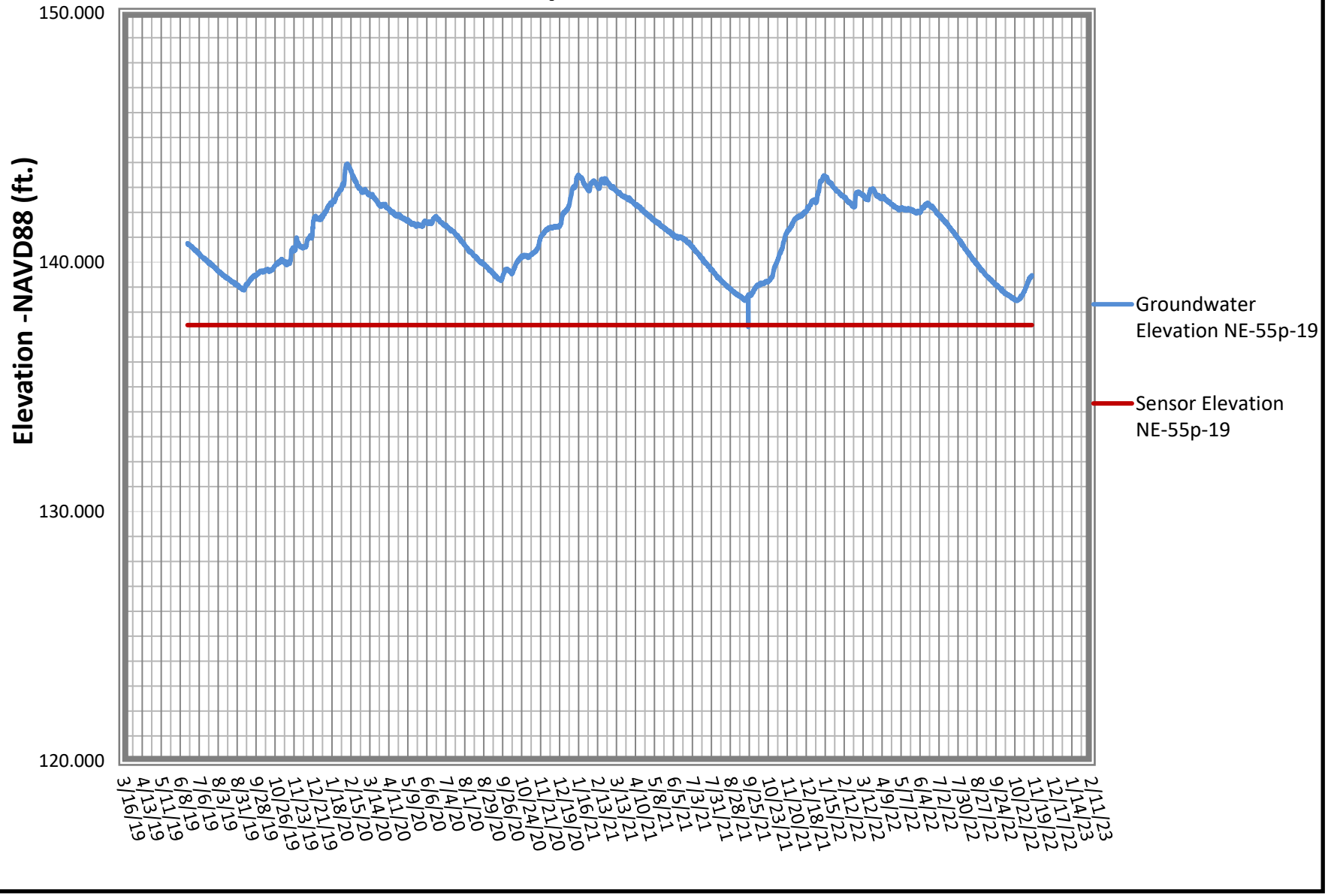
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-29. Groundwater Elevation Versus Time
NE-51vw-19



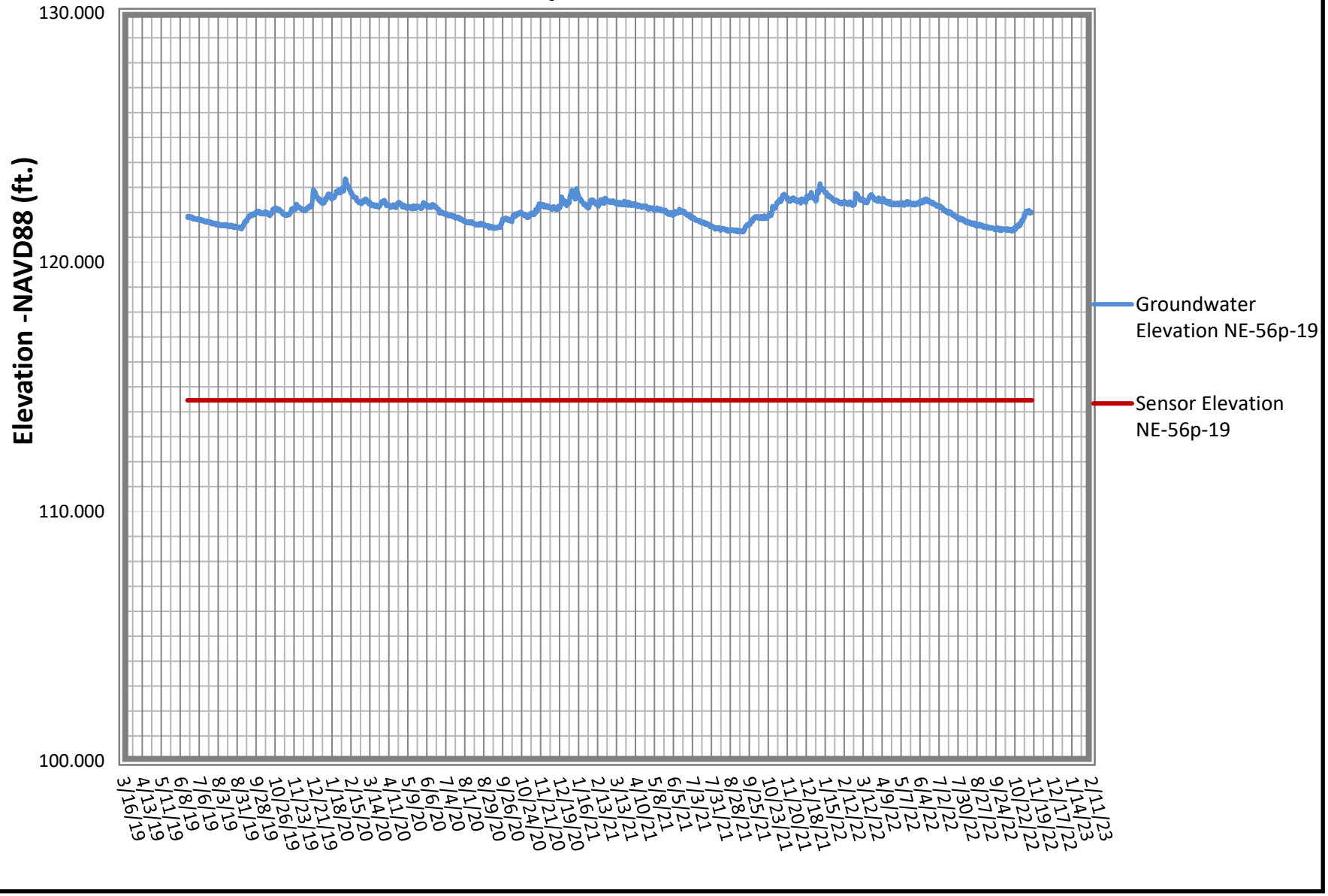
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-30. Groundwater Elevation Versus Time
NE-55p-19



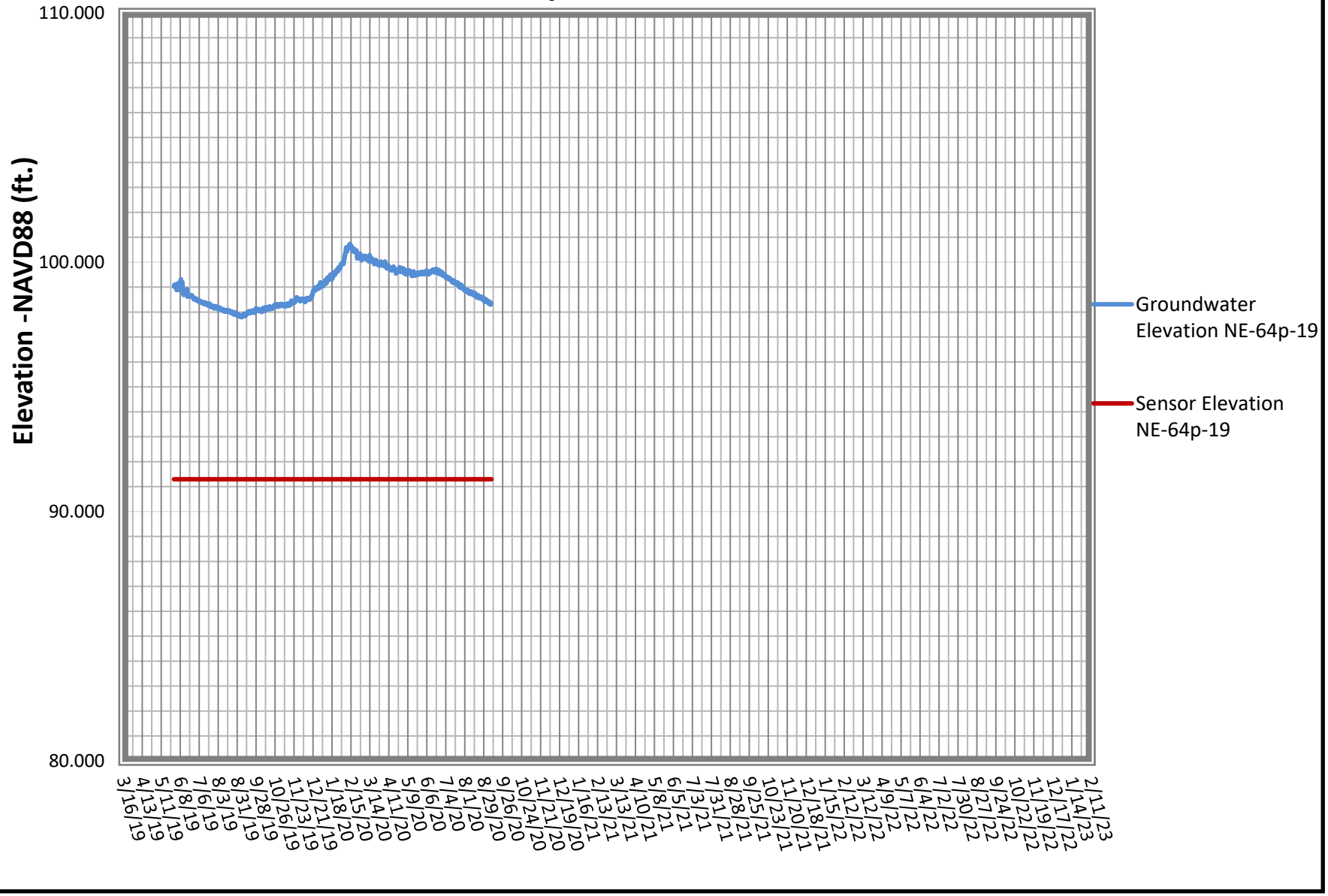
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-31. Groundwater Elevation Versus Time
NE-56p-19



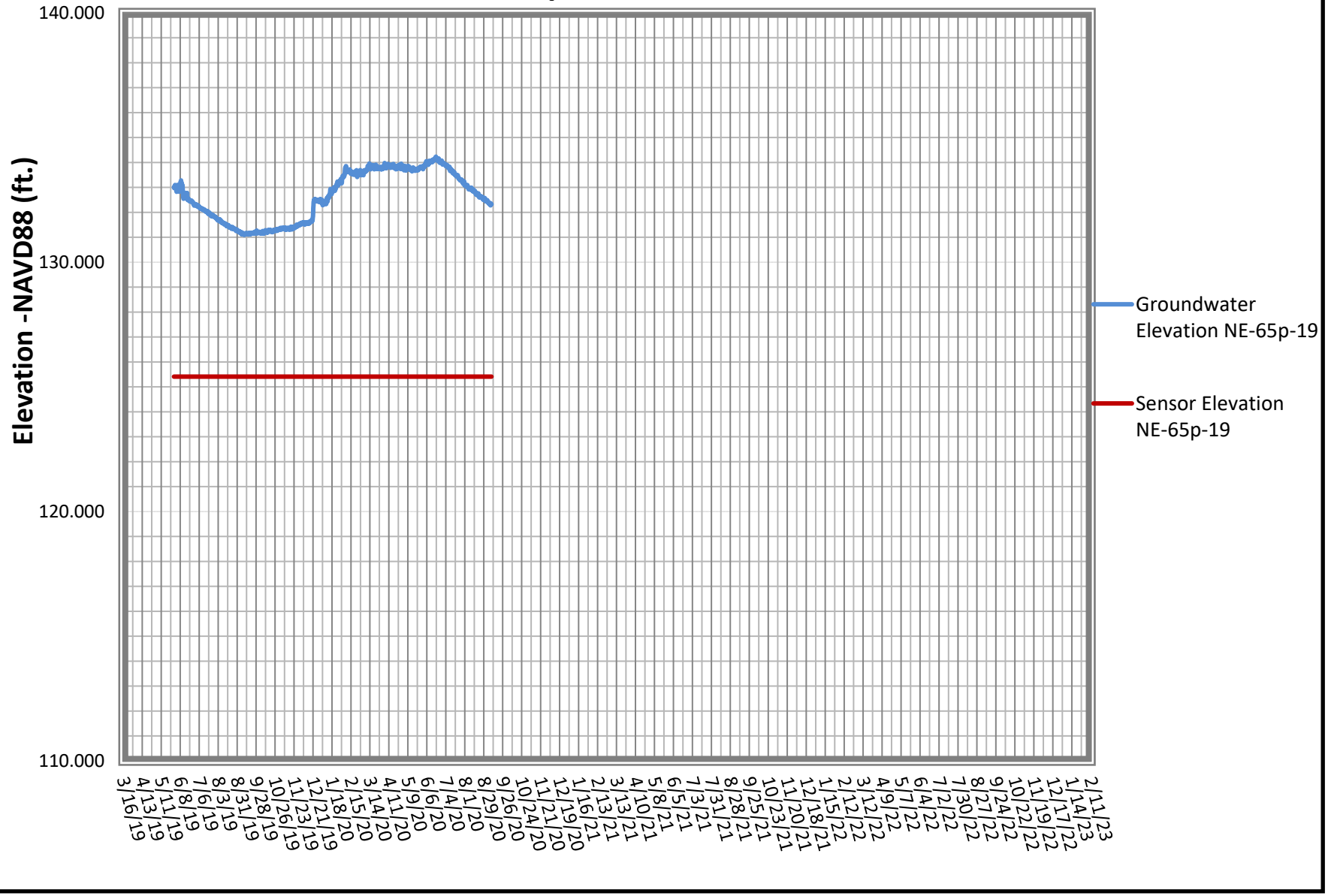
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-32. Groundwater Elevation Versus Time
NE-64p-19



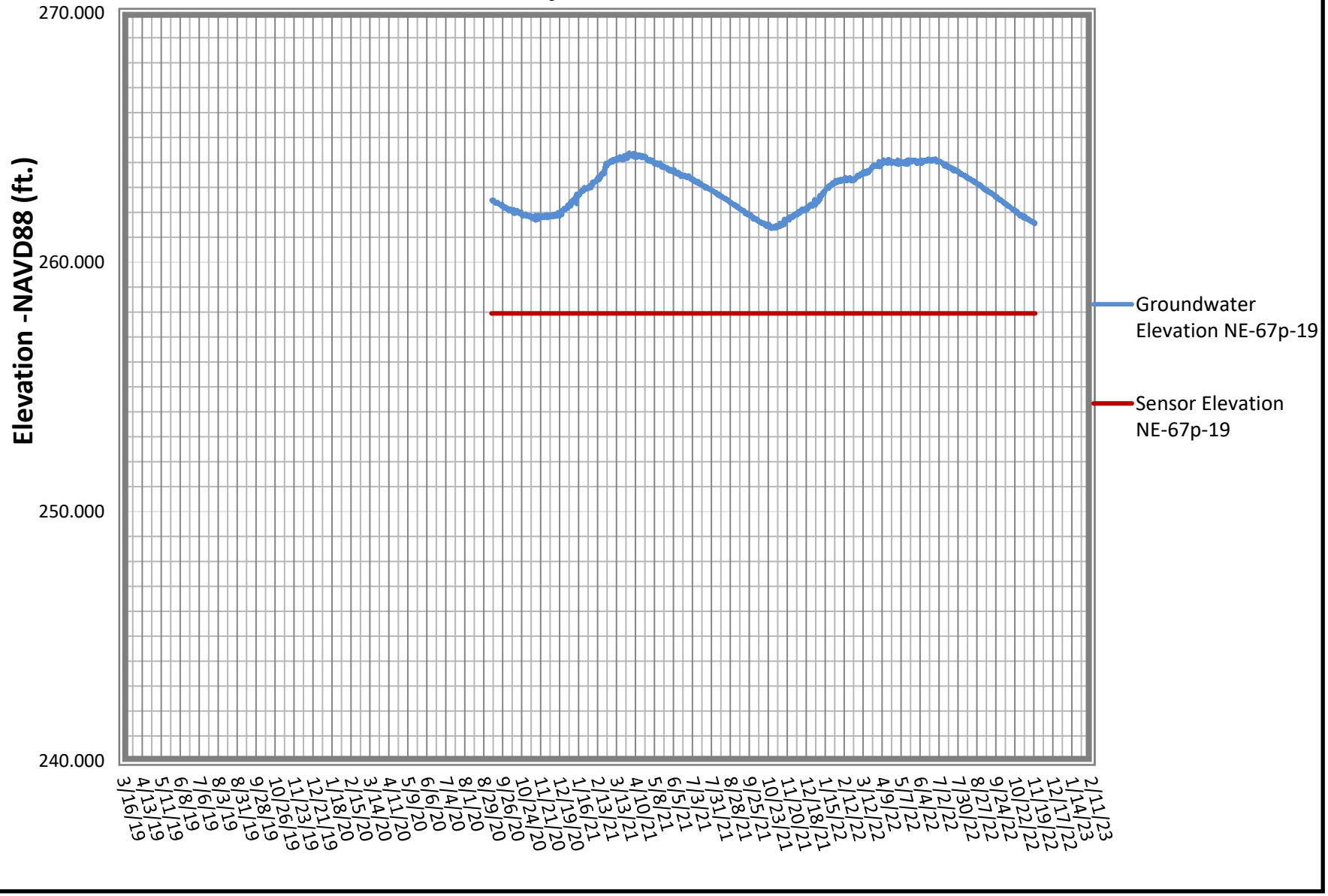
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-33. Groundwater Elevation Versus Time
NE-65p-19



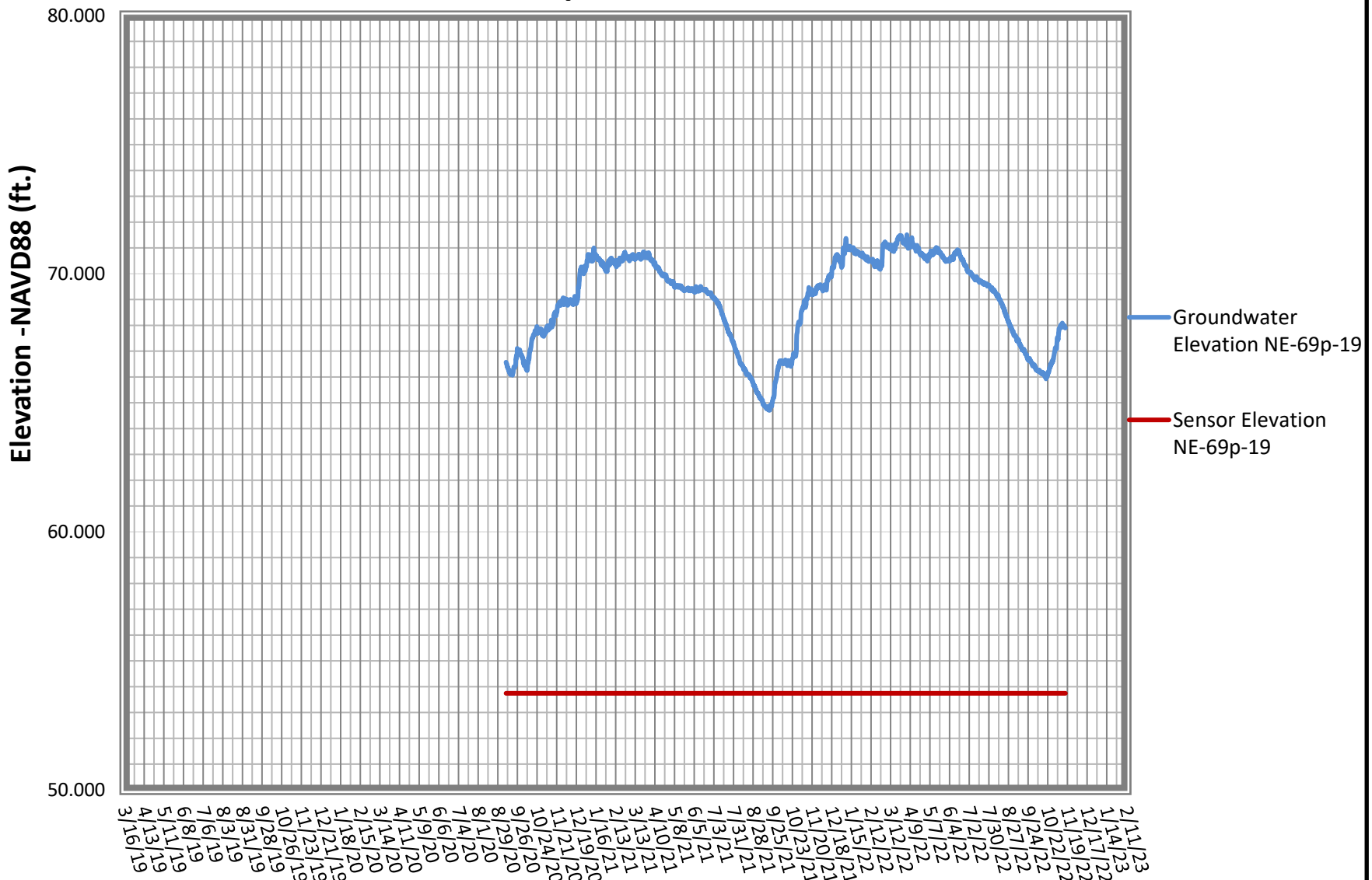
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-34. Groundwater Elevation Versus Time
NE-67p-19



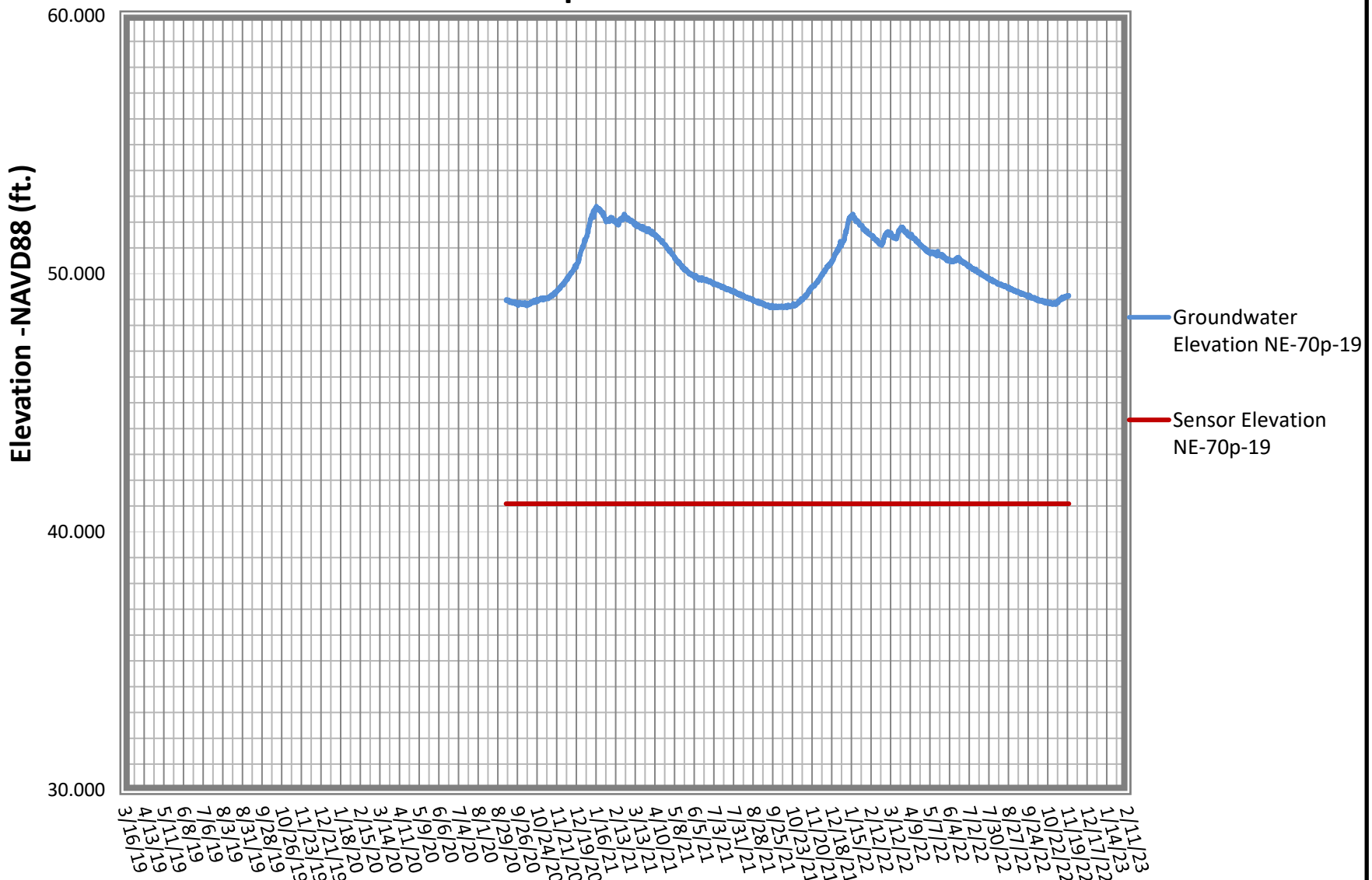
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-35. Groundwater Elevation Versus Time
NE-69p-19



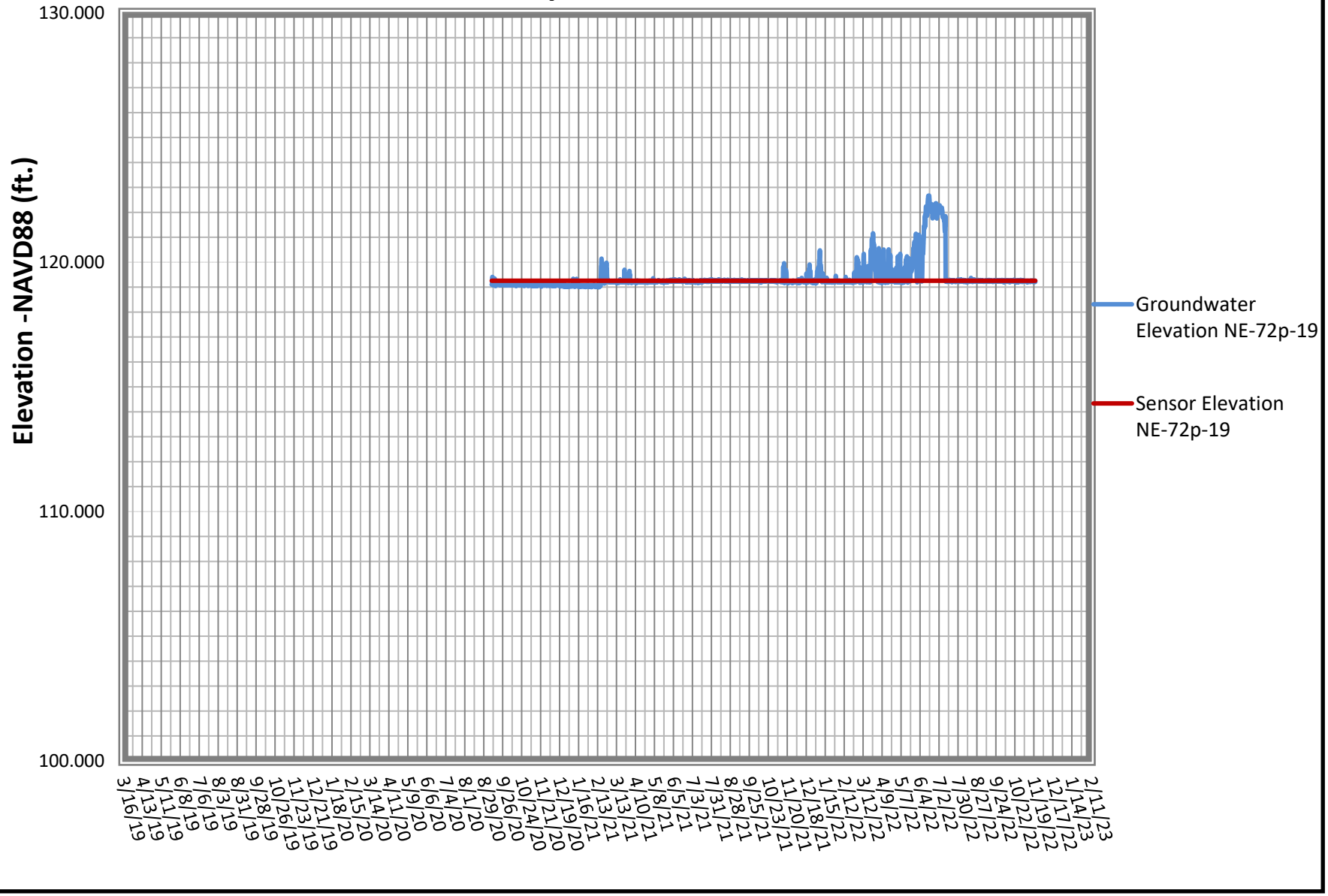
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-36. Groundwater Elevation Versus Time
NE-70p-19



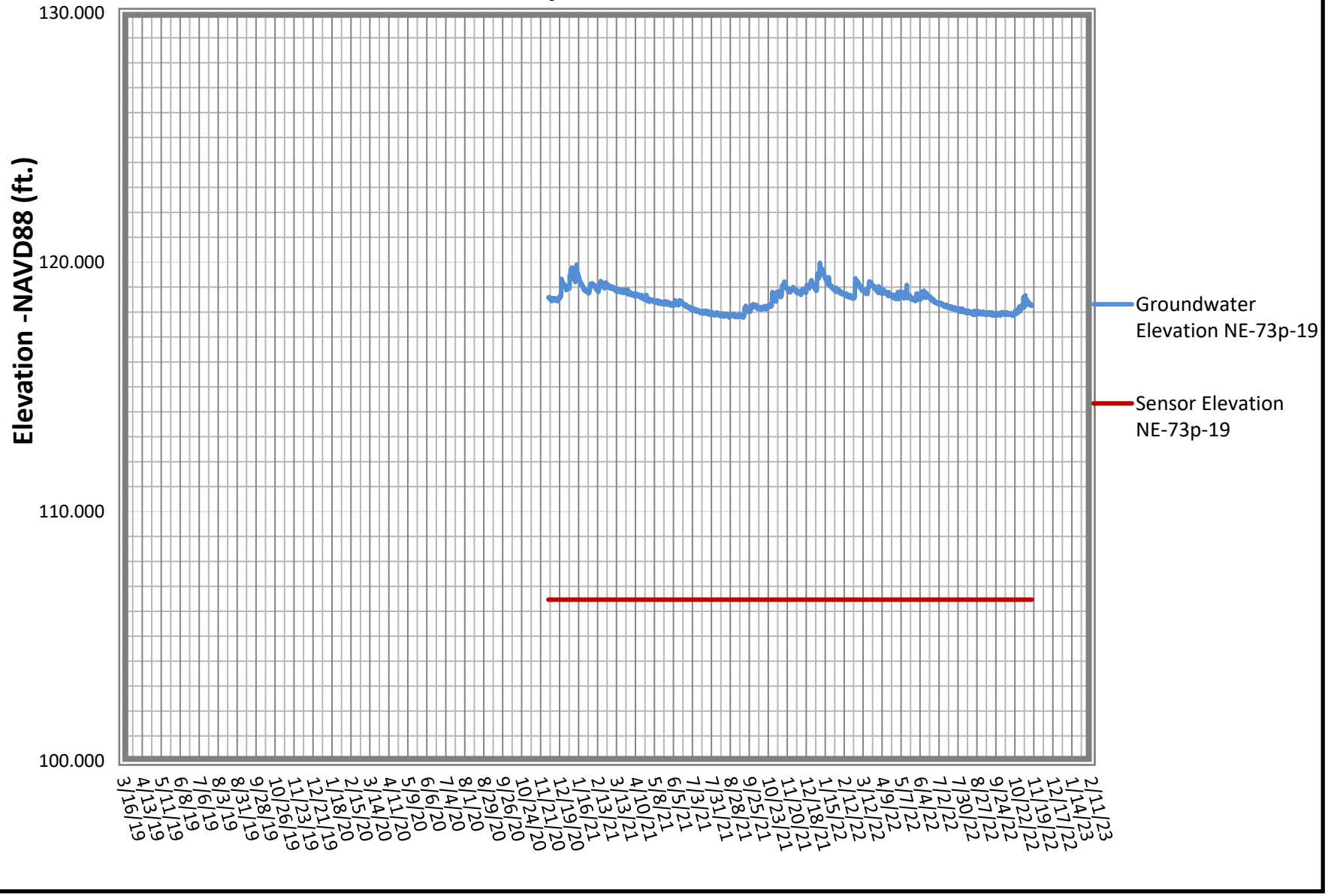
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-37. Groundwater Elevation Versus Time
NE-72p-19



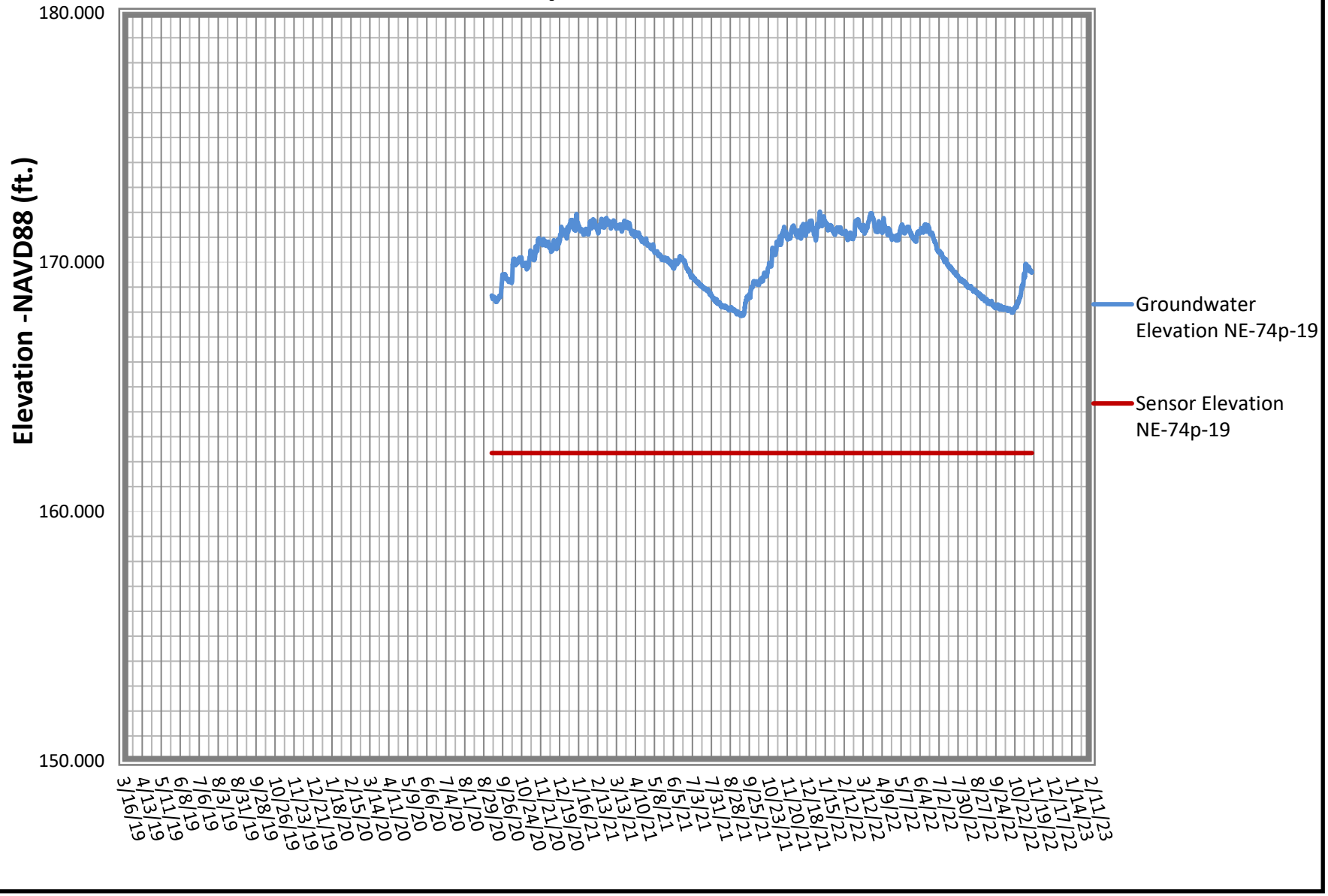
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-38. Groundwater Elevation Versus Time
NE-73p-19



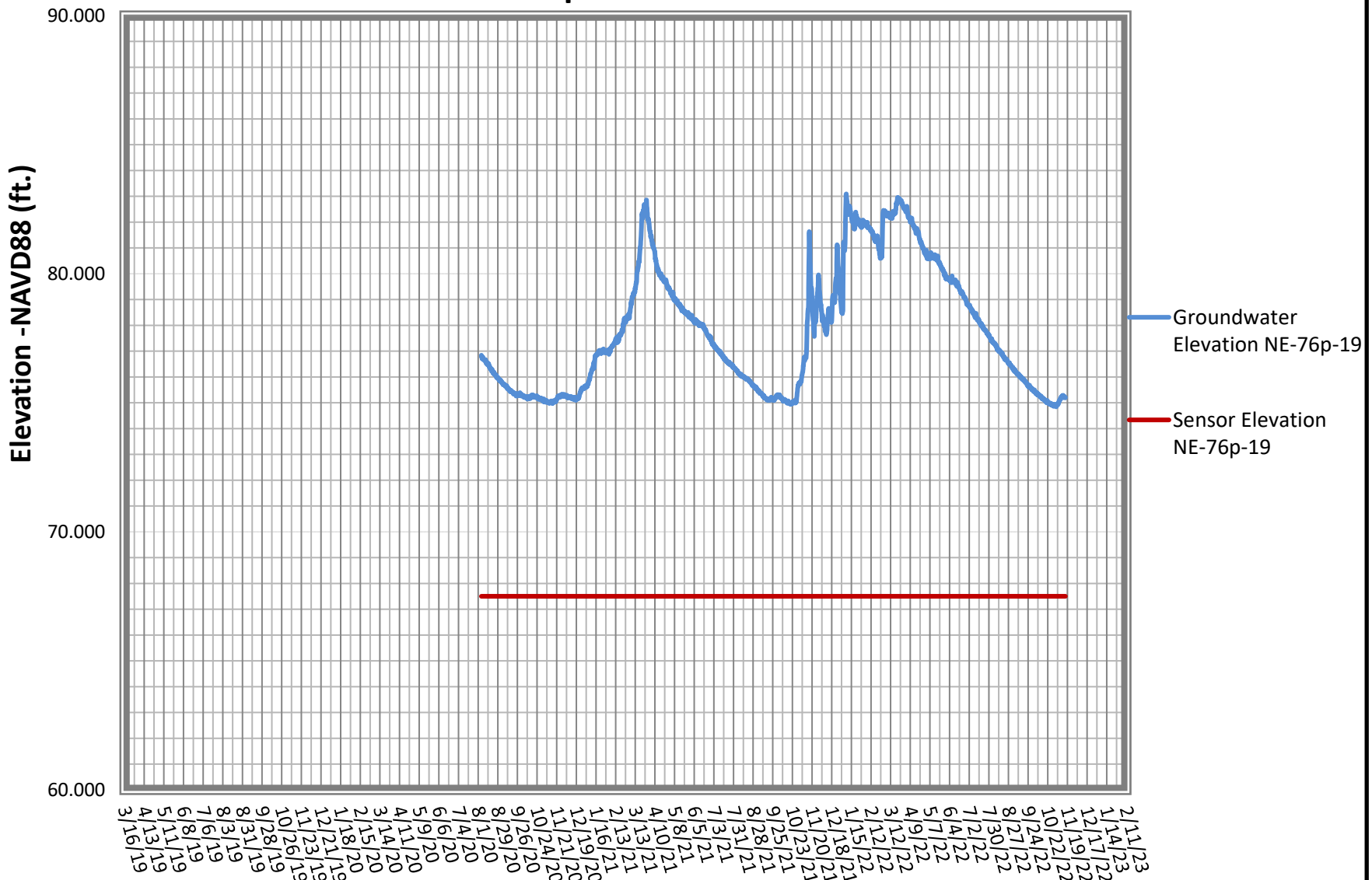
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-39. Groundwater Elevation Versus Time
NE-74p-19



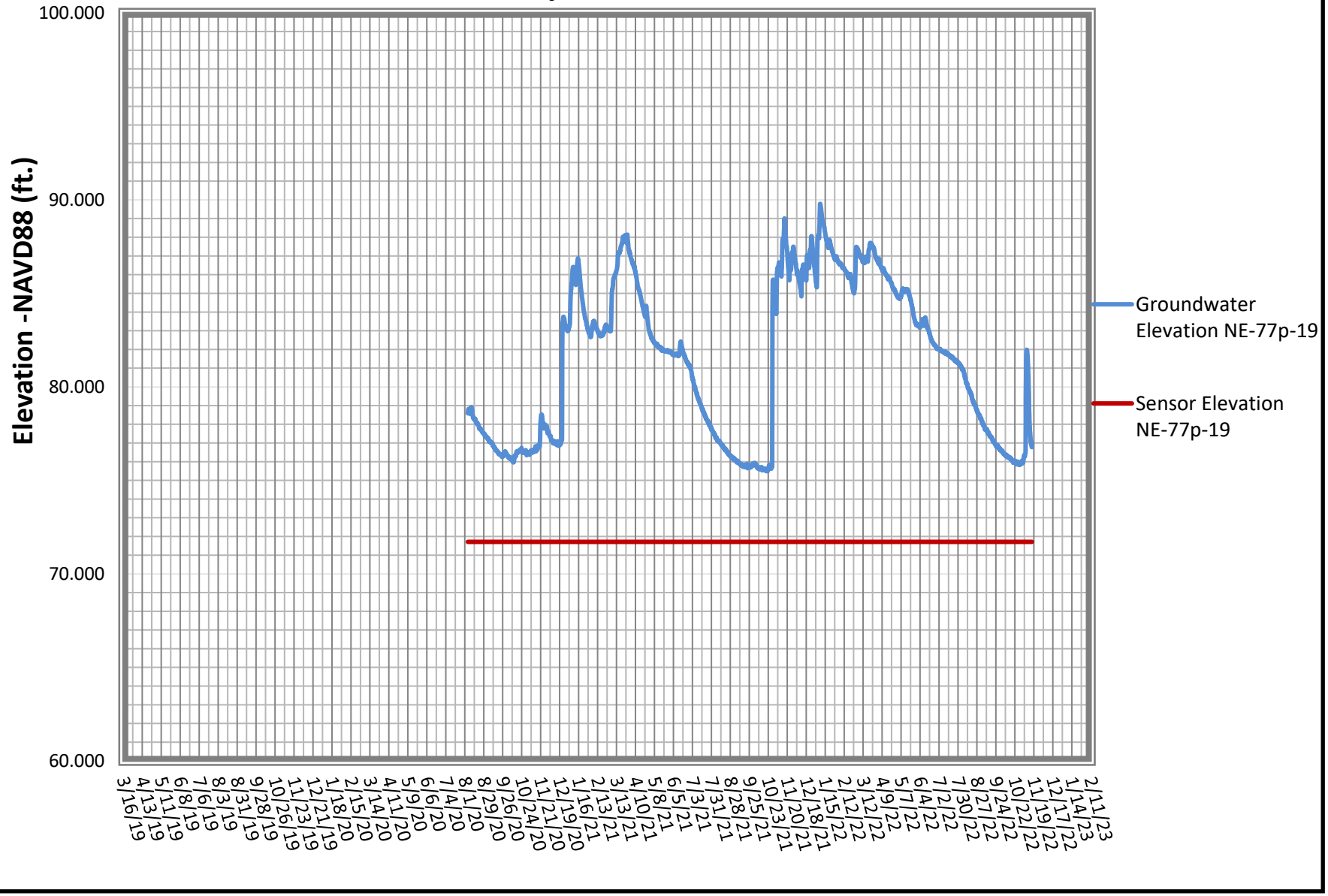
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-40. Groundwater Elevation Versus Time
NE-76p-19



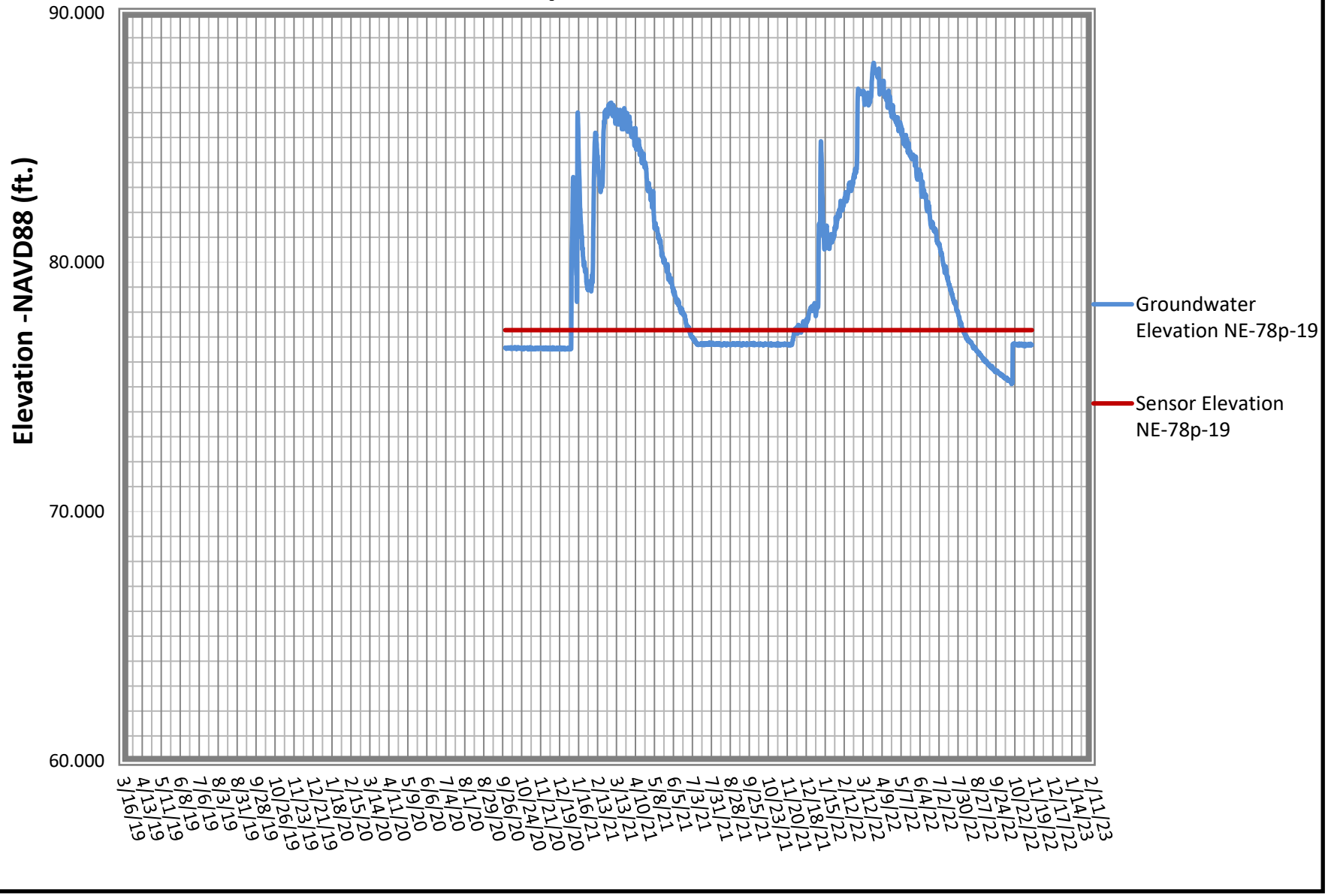
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-41. Groundwater Elevation Versus Time
NE-77p-19



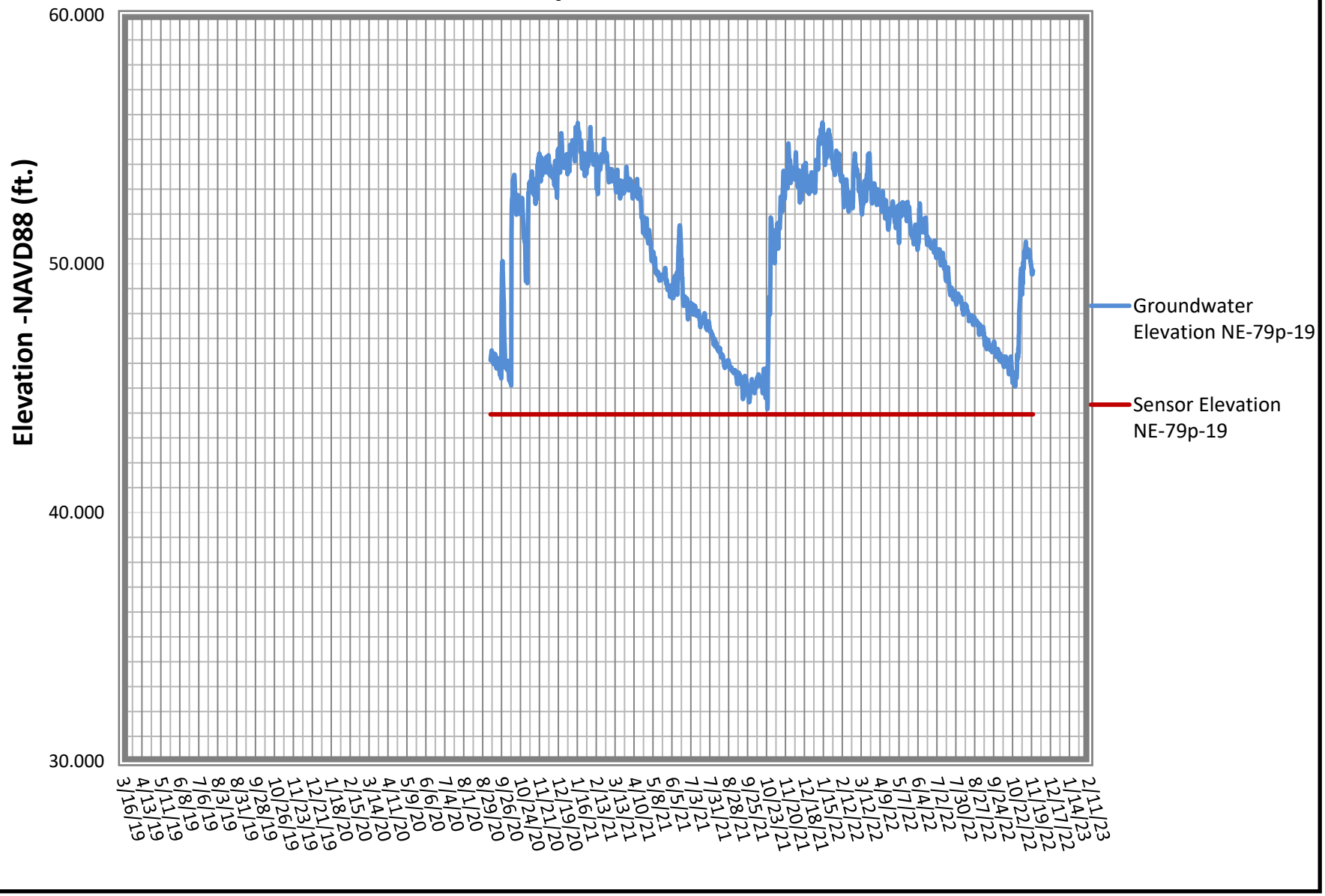
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-42. Groundwater Elevation Versus Time
NE-78p-19



WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-43. Groundwater Elevation Versus Time
NE-79p-19



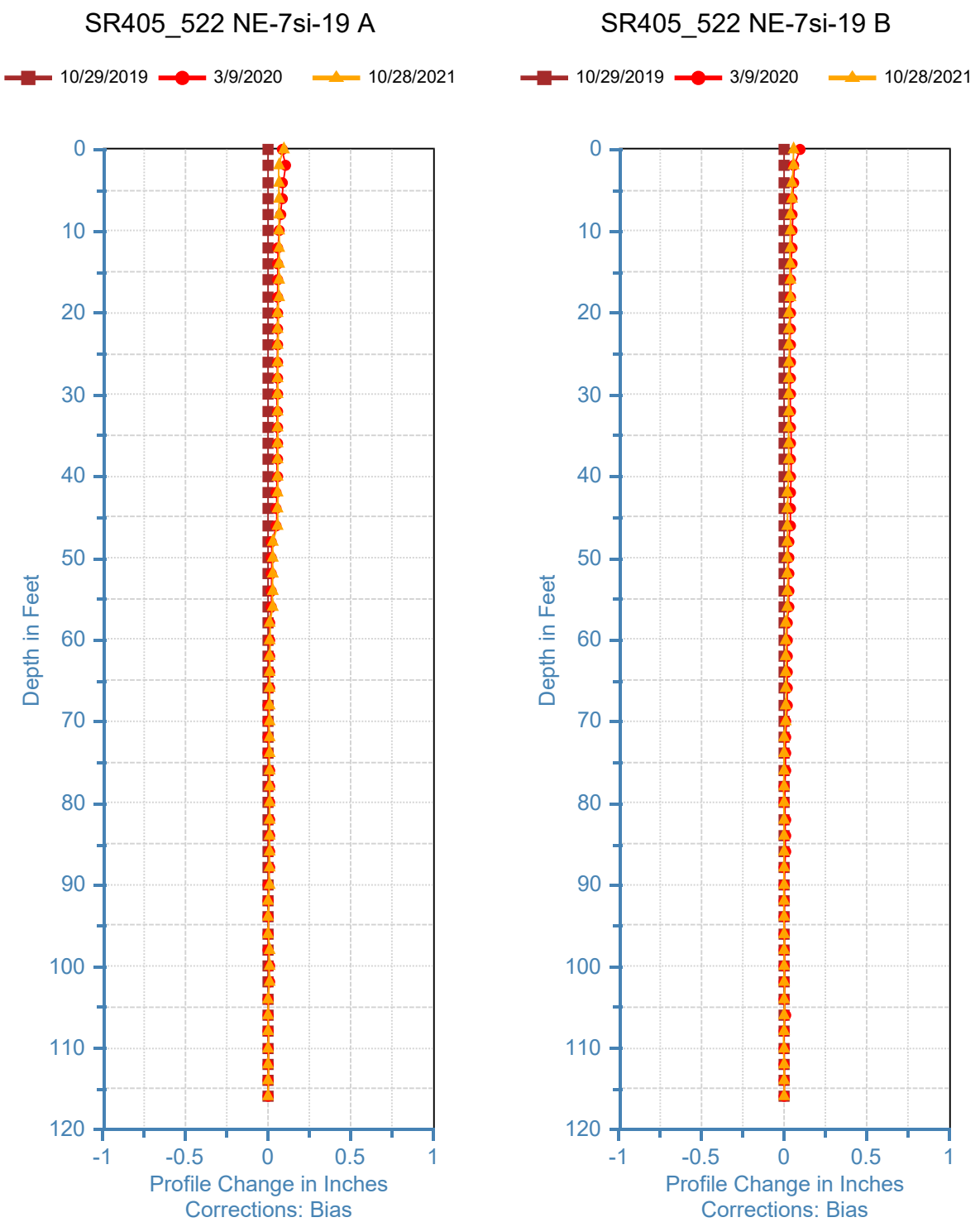
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

Figure C-44. Groundwater Elevation Versus Time
NE-80p-19



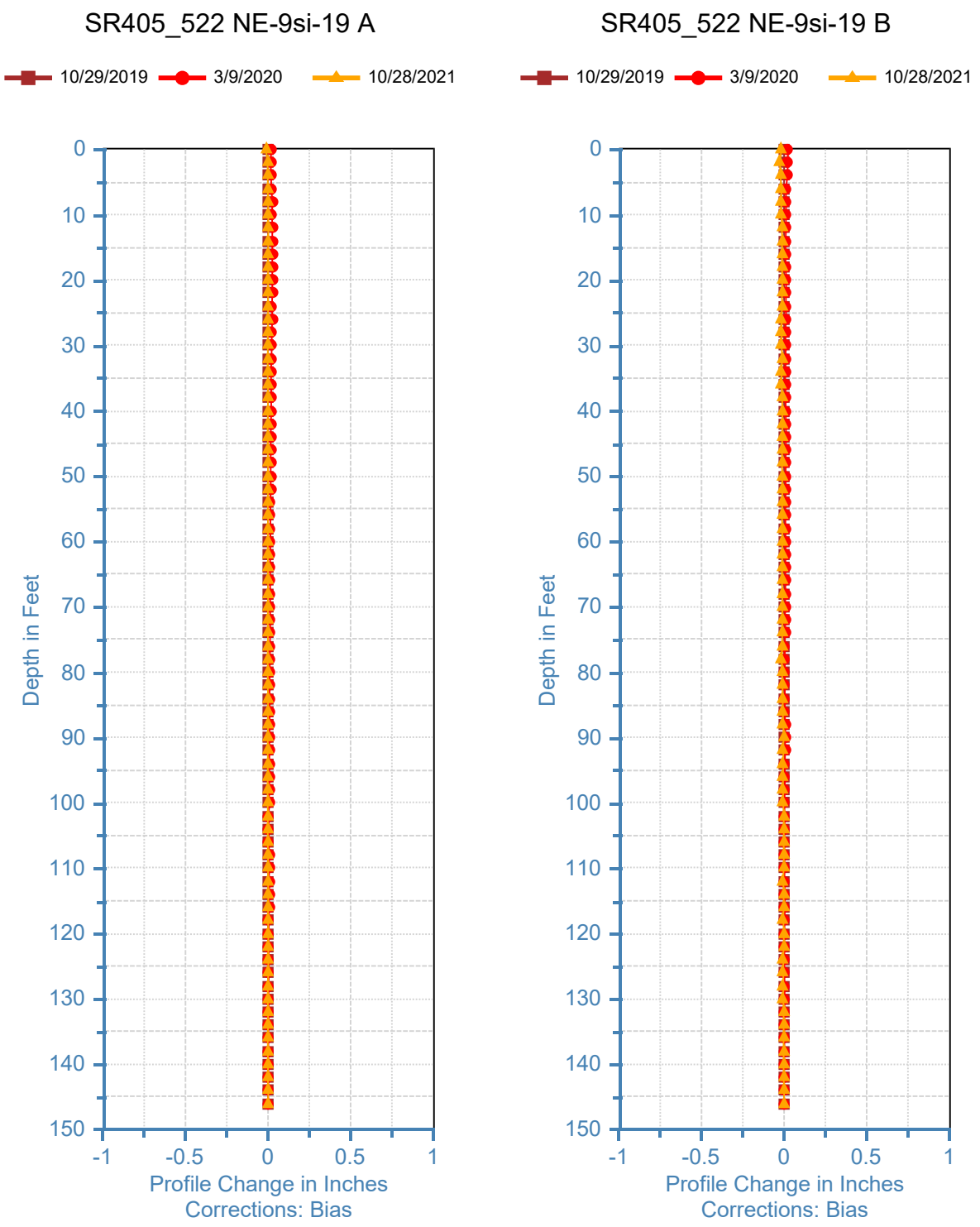
WSDOT Geotechnical Office
GDR: I-405, Brickyard to SR 527 Improvement Project

APPENDIX D – INCLINOMETER DATA



WSDOT
Geotechnical Office
Instrumentation Section
Olympia, WA

I-405_SR-522 toSR-527-Widening&ETL
XL5446
NE-7si-19
A+ Direction = N285 Deg



WSDOT
Geotechnical Office
Instrumentation Section
Olympia, WA

I-405_SR-522 toSR-527-Widening&ETL
XL5446
NE-9si-19
A+ Direction = N305 Deg