GEOTECHNICAL REPORT

US 95 WIDENING

ANN ROAD to KYLE CANYON ROAD

Package 2 E.A. 73627

January 2012

NEVADA DOT
GEOTECHNICAL ENGINEERING

MATERIALS DIVISION

STATE OF NEVADA

DEPARTMENT OF TRANSPORTATION

MATERIALS DIVISION

GEOTECHNICAL SECTION

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January 2012

LAS VEGAS, NEVADA

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INTRODUCTION

General

This report has been prepared for the proposed soundwalls along US 95 between Ann Road and Durango Drive in Las Vegas, Nevada. A site plan for the project is presented as the Project Location Area Map in Appendix A. For a more detailed description, see the construction plans.

Purpose and Scope

The purpose of this report is to provide information regarding the subsurface soil conditions at the proposed project site. This report also provides geotechnical design recommendations for the structure foundations proposed for this project. The scope of this report consists primarily of geotechnical investigation, analysis, and recommendations for both design and construction. The investigation included gathering information obtained from previous subsurface explorations, soil sampling, and analysis of field and laboratory testing data. This report includes boring logs and summaries of test results from both the field investigations and laboratory testing. These may be found in appendices B and C, respectively.

PROJECT DESCRIPTION

The project site is located in the city of Las Vegas in Clark County. US 95 runs southeast to northwest at the location of the proposed soundwalls. Preliminary plans indicate the majority of the proposed soundwalls, which total approximately 4400 feet, will be designed as concrete cantilever walls on shallow continuous footings. The soundwalls are planned for the east side of US 95 between Ann Road and Durango Drive.

GEOLOGIC CONDITIONS and SEISMICITY

The site is founded primarily in older alluvial fan deposits (Qoa)[1]. These deposits are generally tan and light to medium brown clayey sands and sandy clays with some gravel (See Photos 1 and 2). The proposed soundwall locations lie between approximately 2360 and 2560 feet of elevation and slopes gently downward to the southeast. The site is located approximately 5 miles southwest of the Las Vegas Valley Shear Zone and 8 miles east-northeast of the Keystone thrust fault.[2] These faults are no longer considered active. There are several small compaction fault scarps approximately 2 miles southeast of the site[3].

Photos 1 and 2. Soil Samples from Boreholes ASW-2 and ASW-7

FIELD INVESTIGATION

The Geotechnical Section conducted subsurface investigations at the proposed project site in June and July of 2011. Subsurface soil conditions were explored in the investigation by drilling nineteen boreholes placed near the proposed locations for soundwalls. The approximate location of each borehole is shown on the Borehole Location sheet in Appendix A. Drilling was accomplished with a Diedrich D-120 drill rig equipped for soil sampling, using 6-inch hollow stem auger on boreholes ASW-1 through ASW-19 (See Photo 3). Soil samples and standard penetration resistance values (N-Values) were obtained utilizing the Standard Penetration Test (SPT) procedure as set forth in AASHTO test number T206.

Boreholes ASW-1 through ASW-19 were drilled to depths between 6.3 feet and 26.5 feet. Surface elevations were obtained for the borehole locations by surveying from a known elevation point. Groundwater was not encountered during drilling in any of the boreholes.

The uncorrected blow counts are shown on the boring logs in Appendix B. All soil samples were classified, both visually and using laboratory data, using the Unified Soil Classification System (USCS) described in ASTM test number D2487.

Photo 3. Drill Rig Set Up on Borehole ASW-17

LABORATORY ANALYSIS

Laboratory tests were performed on the samples collected from the boreholes. The testing program consisted of sieve analyses, moisture and unit weight, Atterberg limits, consolidation tests, and chemical analyses (chlorides, resistivity, and pH). The results of this testing program show that the soils consist primarily of clayey and silty sands and gravels (See Photo 4). Very few samples of known volume were taken due to the dense, hard condition of the soils. Dry unit weights from 7 samples ranged from 78.2 pounds per cubic foot (pcf) for sample ASW-8 C1 (sandy lean clay), to 126.6 pcf for sample ASW-6 B2 (silty gravel with sand). Further information is presented in the summaries of test results in Appendix C.

Photo 4. Soil Sample ASW-7 G (Clayey Gravel with Sand)

DISCUSSION

During drilling of the 19 boreholes, 135 samples were attempted. Of these 135 attempted samples, 53% of them met with refusal, with no sample recovery. This indicates very hard, very dense soils, as well as the presence of cobbles and cemented soils (caliche), which are known to exist in the area. The very dense granular soils are well suited for spread footings for soundwalls.

Following the field investigation and laboratory testing, the soils were identified as primarily very dense clayey and silty sands and gravels (78%), and medium stiff to very hard clays (22%). Boreholes ASW-1 through ASW-19 were drilled for soundwalls that run along both the northbound and southbound lanes of US 95, between Ann Road and the interchange at CC-215.

Liquefaction is unlikely to occur due to soil density, as well as the depth of the water table and low seismic accelerations experienced in the region.

RECOMMENDATIONS

Excavation

All excavation shall be performed in accordance with the NDOT 2001 Standard Specifications for Road and Bridge Construction[4]. All permanent slopes should be constructed to lie at a maximum of 2:1 (Horiz:Vert) slope. The contractor shall be responsible for all necessary shoring for any excavation and/or construction. Variable site conditions include the possibility of encountering very soft soils, caliche, boulders, or other adverse soil conditions.

Foundations

The very dense and cemented soils at the site are well suited for shallow foundations, such as spread or strip footings. Spread footings for soundwalls placed in native soil and embankments have a factored bearing resistance[5] of 4000 psf (4 ksf).

Sound Walls

The in-situ soil parameters for the sound walls along US 95 are as follows:

Cohesion (c) = 0 psf

Soil Friction Angle (φ) = 32°

Soil Unit Weight (γ)= 110 pcf

REFERENCES

1. Geologic Map of Clark County, Nevada, Bulletin 62, Plate 1; Nevada Bureau of Mines and Geology, 1964.

2. Tectonic Map of Clark County, Nevada; Bulletin 62, Plate 5, Nevada Bureau of Mines, 1965.

3. Las Vegas NW Quadrangle Geologic Map; Nevada Bureau of Mines and Geology, 1987, Map 3Dg.

4. Standard Specifications for Road and Bridge Construction, State of Nevada Department of Transportation, 2001.

5. AASHTO LRFD Bridge Design Specifications, 5th edition, 2010.

APPENDIX A

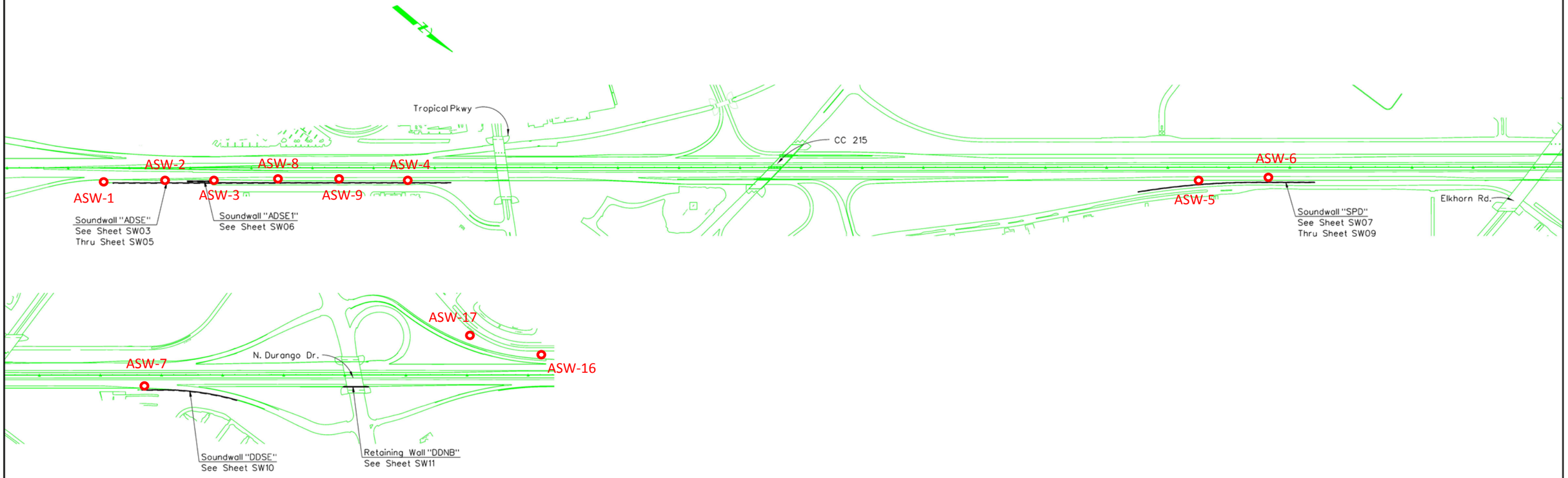
Project Location Area Map
Borehole Location Sheets

PROJECT LOCATION

CENTENNIAL HILLS

LAS

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-STP-095-2(060)	CLARK	SW02



BOREHOLE LOCATIONS

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

CIP WALL
LOCATIONS
PHASE 2A

APPENDIX B

Boring Log Key
Boring Logs

KEY TO BORING LOGS

PARTICLE SIZE LIMITS								
CLAY	SILT	SAND			GRAVEL		COBBLES	BOULDERS
		FINE	MEDIUM	COARSE	FINE	COARSE		
.002 mm		#200	#40	#10	#4	¾ inch	3 inch	12 inch

USCS GROUP	TYPICAL SOIL DESCRIPTION
GW	Well graded gravels, gravel-sand mixtures, little or no fines
GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
GC	Clayey gravels, poorly graded gravel-sand-clay mixtures
SW	Well graded sands, gravelly sands, little or no fines
SP	Poorly graded sands, gravelly sands, little or no fines
SM	Silty sands, poorly graded sand-silt mixtures
SC	Clayey sands, poorly graded sand-clay mixtures
ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity
CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
OL	Organic silts and organic silt-clays of low plasticity
MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
CH	Inorganic clays of high plasticity, fat clays
OH	Organic clays of medium to high plasticity
PT	Peat and other highly organic soils

MOISTURE CONDITION CRITERIA

Description	Criteria
Dry	Absence of moisture, dusty, dry to touch.
Moist	Damp, no visible free water.
Wet	Visible free water, usually below groundwater table.

SOIL CEMENTATION CRITERIA

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Won't break or crumble w/finger pressure

▽ ▼ Groundwater Elevation Symbols

STANDARD PENETRATION CLASSIFICATION* (after Peck, *et al.*, 1974)			
GRANULAR SOIL		CLAYEY SOIL	
BLOWS/FT N_{60}	DENSITY	BLOWS/FT N_{60}	CONSISTENCY
0 - 4	VERY LOOSE	0 - 1	VERY SOFT
5 – 10	LOOSE	2 - 4	SOFT
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF
31 - 50	DENSE	9 - 15	STIFF
OVER 50	VERY DENSE	16 - 30	VERY STIFF
		31 - 60	HARD
		OVER 60	VERY HARD

* SPT N_{60}-values are only reliable for sands, and should serve only as estimates for other materials such as gravels, silts and clays.

California Modified Sampler field blow counts ($N_{CMS\ field}$) for ($6 < N_{CMS\ field} < 50$) can be converted to $N_{SPT\ field}$ by:

$(N_{CMS\ field})(0.62) = N_{SPT\ field}$

SPT field blow counts ($N_{SPT\ field}$) can be converted to N_{60} by:

$(N_{SPT\ field})(ETR/60) = N_{60}$

ETR = Energy Transfer Ratio

Field blow counts from 140 lb hammer with 30 inch free fall

TEST ABBREVIATIONS

CD	CONSOLIDATED DRAINED	O	ORGANIC CONTENT
CH	CHEMICAL (CORROSIVENESS)	OC	CONSOLIDATION
CM	COMPACTION	PI	PLASTICITY INDEX
CU	CONSOLIDATED UNDRAINED	RQD	ROCK QUALITY DESIGNATION
D	DISPERSIVE SOILS	RV	R-VALUE
DS	DIRECT SHEAR	S	SIEVE ANALYSIS
E	EXPANSIVE SOIL	SL	SHRINKAGE LIMIT
G	SPECIFIC GRAVITY	U	UNCONFINED COMPRESSION
H	HYDROMETER	UU	UNCONSOLIDATED UNDRAINED
HC	HYDRO-COLLAPSE	UW	UNIT WEIGHT
K	PERMEABILITY	W	MOISTURE CONTENT

SOIL COLOR DESIGNATIONS ARE FROM THE MUNSELL SOIL/ROCK COLOR CHARTS.

EXAMPLE: (7.5 YR 5/3) BROWN

SAMPLER NOTATION

CMS	CALIF. MODIFIED SAMPLER[1]
CPT	CONE PENETRATION TEST
CS	CONTINUOUS SAMPLER[2]
PB	PITCHER BARREL
RC	ROCK CORE[3]
SH	SHELBY TUBE[4]
SPT	STANDARD PENETRATION TEST[5]
TP	TEST PIT

1- I.D.= 2.421 inch

2- I.D.=3.228 inch with tube; 3.50 inch w/o tube

3- NXB I.D.= 1.875 inch

4- I.D.= 2.875 inch

5- I.D.= 1.375 inch, O.D.= 2.00 inch

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/20/11
END DATE 6/20/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-1
E.A. # 73627
GROUND ELEV. 2362.68 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 142+23
OFFSET 113' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/20/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	10 29 30	59	93		GC	**CLAYEY GRAVEL with SAND** White to light tan, dry, very dense	
	4.00									
2357.7	5 5.00	B	SPT	15/0.1'	15/0.1'	0				(B) Last 10 blows - no progress. No sample recovered. Hard drilling 5.0' to 6.5'.
									5.70	
	7.50									
		C	SPT	5 5 5	10	87		CL	**SANDY LEAN CLAY** Light tan, dry to damp, stiff	
	9.00									
2352.7	10 10.00	D	SPT	15/0.1'	15/0.1'	0				(D) Last 10 blows - no progress. No sample recovered. Hard drilling 10.0' to 11.0'.
									10.70	
	12.50									
		E	SPT	4 4 3	7	80		SC	**CLAYEY SAND with GRAVEL** Light tan to tan, damp, medium stiff	(E) Drove sampler 1.6'.
	14.10									
									14.50	
2347.7	15 15.00	F	CMS	16 26 29	55	100		GC	**CLAYEY GRAVEL with SAND** Tan, dry to damp, hard	
	16.50									
									18.20	
	20.00									
2342.7	20	G	SPT	11 14 13	27	87			**CLAYEY SAND with GRAVEL** Tan, dry to damp, hard	
	21.50							SC		Hard drilling 22.0' to 23.0'.
	25.00									
2337.7	25	H	SPT	7 16 18	34	80			**CLAYEY SAND with GRAVEL** Light tan to tan, damp, hard	
	26.50								26.50	
									B.O.H.	

NV_DOT GINT FILES.GPJ NV_DOT.GDT 8/21/13

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/21/11
END DATE 6/21/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-2
E.A. # 73627
GROUND ELEV. 2366.79 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 147+27
OFFSET 126' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/21/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	3 2 3	5	50			**LEAN CLAY** Tan, dry to damp, medium stiff	(A) Drove sampler 1.6'.
	4.10									
	5.00							CL		
2361.8	5									
		B	SPT	3 7 11	18	80			**GRAVELLY LEAN CLAY with SAND** Tan, dry to damp, very stiff	
	6.50									
	7.50	C	SPT	10/0.1'	10/0.1'	0				(C) 10 blows - no progress. No sample recovered. Hard drilling 7.5' to 8.5'.
									8.20	
	10.00									
2356.8	10									
		D	SPT	9 16 17	33	87			**CLAYEY GRAVEL with SAND** Light tan, dry to damp, dense	
	11.50									
	12.50									
		E	SPT	9 13 17	30	87			**CLAYEY GRAVEL with SAND** Light tan, dry to damp, dense	
	14.00									
	15.00									
2351.8	15									
		F	SPT	19 20 25	45	93			**CLAYEY GRAVEL with SAND** Light tan, dry to damp, dense	
	16.50									
								GC		
	20.00									
2346.8	20									
		G	SPT	16 19 19	38	93			**CLAYEY GRAVEL with SAND** Light tan, dry to damp, dense	
	21.50									
	25.00									
2341.8	25									
		H	SPT	8 10 17	27	87			**CLAYEY GRAVEL with SAND** Light tan to white, dry to damp, very dense	
	26.50								26.50	
									B.O.H.	

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/21/11
END DATE 6/21/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-3
E.A. # 73627
GROUND ELEV. 2367.73 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 152+17
OFFSET 120' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/21/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	3 3 5	8	87			**SANDY LEAN CLAY** Light tan, dry to damp, medium dense	
	4.00									
	5.00									
2362.7	5 5.10	B	SPT	10/0.1'	10/0.1'	0				(B) 10 blows - no progress. No sample recovered.
	7.50							CL		
		C	SPT	5 5 7	12	56			**SANDY LEAN CLAY** Light to medium brown, damp, stiff	(C) Drove sampler 1.6'.
	9.10									
2357.7	10 10.00									
		D	SPT	9 8 13	21	67			**SANDY LEAN CLAY** Light to medium brown, damp, very stiff	
	11.50									
	12.50									
		E	SPT	14 16 16	32	87			**SANDY LEAN CLAY with GRAVEL** Light to medium brown, dry to damp, hard	
	14.00									
	15.00								14.50	
2352.7	15									
		F	SPT	18 20 29	49	80			**CLAYEY SAND with GRAVEL** Light to medium brown, dry to damp, hard	
	16.50									
								SC		
	20.00									
2347.7	20									
		G	SPT	14 16 28	44	87			**CLAYEY SAND** Light to medium brown, dry to damp, hard	
	21.50									
									23.20	
	25.00							CH		
2342.7	25									
		H	SPT	4 8 11	19	67			**SANDY FAT CLAY** Mottled white to light tan, dry, very stiff	
	26.50								26.50	
									B.O.H.	

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EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/21/11
END DATE 6/21/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-4
E.A. # 73627
GROUND ELEV. 2383.43 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 167+31
OFFSET 126' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/21/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	4 4 7	11	60			**LEAN CLAY with SAND** Light tan, dry, stiff	
	4.00									
	5.00									
2378.4	5	B	SPT	8 5 13	18	62		CL	**LEAN CLAY with SAND** Light tan, dry, stiff	(B) 5 blows - no progress.
	6.40									
	7.50									
		C	SPT	4 5 9	14	67			**LEAN CLAY with SAND** Medium brown with light brown inclusions, dry to damp, medium dense	
	9.00									
	10.00									
2373.4	10	D	SPT	10 10 13	23	80			**LEAN CLAY with SAND** Medium brown with light brown inclusions, dry to damp, medium dense	
	11.50									
	12.50								12.00	
		E	SPT	16 22 31	53	74			**CLAYEY SAND with GRAVEL** Light tan to brown, dry, very dense	
	14.00									
	15.00									
2368.4	15	F	SPT	15 21 26	47	80		SC	**CLAYEY SAND with GRAVEL** Light tan to brown, dry, dense	
	16.50									
									18.20	
	20.00									
2363.4	20	G	SPT	16 17 20	37	60		CL	**SANDY LEAN CLAY** Medium tan to light tan, dry, hard, lightly cemented at tip	
	21.50									
									23.20	
	25.00									
2358.4	25	H	SPT	8 10 16	26	87		CH	**SANDY FAT CLAY** Light to medium reddish brown, dry to damp, dense, with light tan nodules	
	26.50								26.50	
									B.O.H.	

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/22/11
END DATE 6/22/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-5
E.A. # 73627
GROUND ELEV. 2485.05 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 232+56
OFFSET 127' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/22/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	6 6 10	16	67			**SILTY SAND with GRAVEL** Light tan, dry, medium dense	
	4.00									
	5.00									
2480.1	5	B	SPT	11 12 17	29	80			**SILTY SAND with GRAVEL** Light tan, dry, dense	
	6.50									
	7.50									
		C	SPT	24 34 54	88	87			**SILTY SAND with GRAVEL** Light tan, dry, very dense	
	9.00							**SM**		
	10.00									
2475.1	10 10.30	D	SPT	50/0.3'	50/0.3'	0				(D) No sample recovered.
	12.50									
	12.60	E	SPT	15/0.1'	15/0.1'	0				(E) Last 10 blows - no progress. No sample recovered.
	15.00									
2470.1	15 15.20	F	SPT	20/0.2'	20/0.2'	0				(F) Last 10 blows - no progress. No sample recovered.
									17.60	
	20.00									
2465.1	20	G	SPT	54 50/0.3'	50/0.3'	63			**FAT CLAY** Light greenish white to light tan, dry to damp, very hard	
	20.80							**CH**		
	25.00									
2460.1	25	H	SPT	9 18 32	50	74			**FAT CLAY with SAND** Light greenish white to light tan, dry to damp, very hard	
	26.50								26.50	
									B.O.H.	

NV_DOT GINT FILES.GPJ NV_DOT.GDT 8/21/13

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/22/11
END DATE 6/22/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-6
E.A. # 73627
GROUND ELEV. 2493.05 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 237+45
OFFSET 118' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/22/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	6 11 7	18	60			**SILTY GRAVEL with SAND** Light tan to light reddish brown, dry, medium dense	
	4.00									
2488.1	5.00 5									
		B	CMS	25 56	25/0.1'	81			**SILTY GRAVEL with SAND** Light tan, dry, very dense	(B) Last 10 blows - no progress.
	6.10			25/0.1'						
	7.50 7.60	C	SPT	15/0.1'	15/0.1'	0				(C) Last 10 blows - no progress. No sample recovered.
								GM		
2483.1	10.00 10 10.20	D	SPT	15/0.1'	15/0.1'	0				(D) Last 10 blows - no progress. No sample recovered.
	12.50 12.60	E	SPT	15/0.1'	15/0.1'	0				(E) Last 10 blows - no progress. No sample recovered.
2478.1	15.00 15 15.10	F	SPT	15/0.1'	15/0.1'	0				(F) Last 10 blows - no progress. No sample recovered.
									17.50	
2473.1	20.00 20									
		G	SPT	51 66	30/0.2'	100			**SANDY FAT CLAY** Light tan, dry, very dense	
	21.20			30/0.2'				CH		
2468.1	25.00 25									
		H	SPT	24 32 40	72	74			**SANDY FAT CLAY** Light tan to medium brown, dry to damp, very hard	
	26.50								26.50	
									B.O.H.	

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/22/11
END DATE 6/22/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-7
E.A. # 73627
GROUND ELEV. 2563.96 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 273+53
OFFSET 124' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/22/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50							**GM**		
		A	SPT	24 29 24	53	73			**SILTY GRAVEL with SAND** Light to medium brown, dry, very dense	
	4.00									
	5.00								4.50	
2559.0	5									
		B	SPT	7 9 15	24	60			**POORLY GRADED GRAVEL with SILT and SAND** Medium brown, dry to damp, medium dense	
	6.50									
	7.50							**GP GM**		
		C	SPT	18 24 36	60	73			**POORLY GRADED GRAVEL with SILT and SAND** Light to medium brown, dry, very dense	
	9.00									
	10.00								9.50	
2554.0	10									
	10.70	D	SPT	27 20/0.1'	20/0.1'	86			**CLAYEY GRAVEL with SAND** Light to medium brown, dry, very dense	(D) Last 10 blows - no progress.
	15.00									
2549.0	15									
	15.20	E	SPT	25/0.2'	25/0.2'	0				(E) Last 10 blows - no progress. No sample recovered.
								GC		
	20.00									
2544.0	20									
		F	SPT	26 30 50	80	93			**CLAYEY GRAVEL with SAND** Light tan, dry to damp, very dense	
	21.50									
	25.00									
2539.0	25									
		G	SPT	18 38 50/0.4'	50/0.4'	80			**CLAYEY GRAVEL with SAND** Light tan, dry to damp, very dense	
	26.40								26.40	
									B.O.H.	

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/23/11
END DATE 6/23/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-8
E.A. # 73627
GROUND ELEV. 2374.38 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 157+30
OFFSET 112' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/23/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50							**ML**		
		A	SPT	2 3 2	5	43			**SILT** Medium brown, damp, medium stiff	(A) Drove sampler 1.6'.
	4.10									
									4.50	
2369.4	5.00 5									
		B	CMS	4 8 13	21	100			**LEAN CLAY with SAND** Medium brown to light greenish gray, damp, stiff	
	6.50									
	7.50									
		C	CMS	5 5 9	14	93			**SANDY LEAN CLAY** Medium grayish brown, damp, stiff, vesicular	
	9.00							**CL**		
2364.4	10.00 10									
		D	SPT	5 5 8	13	74			**SANDY LEAN CLAY** Light greenish gray to mottled tan and medium brown, damp, stiff	
	11.50									
									13.20	
2359.4	15.00 15									
		E	SPT	11 9 12	21	74			**CLAYEY SAND with GRAVEL** Light tan, dry to damp, medium dense	
	16.50									
								SC		
2354.4	20.00 20									
		F	SPT	16 16 15	31	74			**CLAYEY SAND with GRAVEL** Light tan to light reddish brown, dry, dense	
	21.50									
									23.20	
2349.4	25.00 25							**GC**		
		G	SPT	24 21 51	72	87			**CLAYEY GRAVEL with SAND** Light reddish brown to white, dry, very hard	
	26.50								26.50	
									B.O.H.	

NV_DOT GINT FILES.GPJ NV_DOT.GDT 8/21/13

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 6/23/11
END DATE 6/23/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-9
E.A. # 73627
GROUND ELEV. 2378.41 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 162+25
OFFSET 110' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 6/23/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	4 3 3	6	74			**LEAN CLAY** Light to medium brown, dry, loose	
	4.00									
	5.00									
2373.4	5	B	SPT	3 4 8	12	80			**LEAN CLAY** Medium brown, dry, medium dense	
	6.50							CL		
	7.50									
		C	SPT	15 18 13	31	74			**SANDY LEAN CLAY** Light tan to greenish white to white, dry, hard	
	9.00									
	10.00									
2368.4	10	D	SPT	7 15 21	36	67			**SANDY LEAN CLAY** Light greenish gray mottled with white, dry, hard, lightly cemented	
	11.50									
									13.20	
	15.00									
2363.4	15	E	SPT	16 20 19	39	67			**CLAYEY SAND with GRAVEL** Light tan, dry, dense	
	16.50									
								SC		
	20.00									
2358.4	20	F	SPT	9 17 23	40	80			**CLAYEY SAND with GRAVEL** Light tan, dry, dense	
	21.50									
									23.20	
	25.00							GC		
2353.4	25	G	SPT	2 5 10	15	60			**CLAYEY GRAVEL with SAND** Light tan to white, dry, stiff, lightly cemented	
	26.50								26.50	
									B.O.H.	

NV_DOT GINT FILES.GPJ NV_DOT.GDT 8/21/13

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/18/11
END DATE 7/18/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-10
E.A. # 73627
GROUND ELEV. 2629.16 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 336+98
OFFSET 121' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/18/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	27 44 50/0.3'	50/0.3'	85		**GM**	**<u>SILTY GRAVEL with SAND</u>** Light tan, dry, very dense	
	3.80									
2624.2	5 5.00 5.40	B	SPT	50/0.4'	50/0.4'	0				(B) No sample recovered.
									6.40	
	7.50 7.80	C	SPT	50/0.3'	50/0.3'	0				(C) No sample recovered.
2619.2	10 10.00 10.70	D	SPT	47 50/0.2'	50/0.2'	0			**<u>SILTY CLAYEY GRAVEL with SAND</u>** Light tan, dry to damp, very dense	
	12.50 12.60	E	SPT	15/0.1'	15/0.1'	0		**GC** **GM**		(E) Last 10 blows - no progress. No sample recovered.
2614.2	15 15.00 15.10	F	SPT	15/0.1'	15/0.1'	0				(F) Last 10 blows - no progress. No sample recovered.
									17.50	
2609.2	20 20.00 20.10	G	SPT	15/0.1'	15/0.1'	0				(G) Last 10 blows - no progress. No sample recovered.
2604.2	25 25.00 25.40	H	SPT	50/0.4'	50/0.4'	0			25.40	(H) No sample recovered.
									B.O.H.	

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/19/11
END DATE 7/19/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-11
E.A. # 73627
GROUND ELEV. 2635.80 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 341+99
OFFSET 120' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/19/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.00									
	3.00 3.10	A	SPT	20/0.1'	20/0.1'	0				(A) Last 10 blows - no progress. No sample recovered.
2630.8	5 5.00 5.10	B	SPT	20/0.1'	20/0.1'	0				(B) Last 10 blows - no progress. No sample recovered.
	7.50 7.90	C	SPT	50/0.4'	50/0.4'	100		SC	**CLAYEY SAND with GRAVEL** Light tan, dry, very dense	
2625.8	10 10.00 10.20	D	SPT	20/0.2'	20/0.2'	0				(D) Last 10 blows - no progress. No sample recovered.
	12.50 12.60	E	SPT	15/0.1'	15/0.1'	0				(E) Last 10 blows - no progress. No sample recovered.
	13.50									
2620.8	15 15.00 15.10	F	SPT	15/0.1'	15/0.1'	0				(F) Last 10 blows - no progress. No sample recovered.
2615.8	20 20.00 20.20	G	SPT	20/0.2'	20/0.2'	0				(G) Last 10 blows - no progress. No sample recovered.
2610.8	25 25.00 25.10	H	SPT	15/0.1'	15/0.1'	0			25.10 **B.O.H.**	(H) Last 10 blows - no progress. No sample recovered.

NV_DOT GINT FILES.GPJ NV_DOT.GDT 8/21/13

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/19/11
END DATE 7/19/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-12
E.A. # 73627
GROUND ELEV. 2656.44 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 348+51
OFFSET 164' Left
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/19/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	25 20 18	38	60			**CLAYEY GRAVEL with SAND** White to tan, dry to damp, dense	
	4.00									
	5.00									
2651.4	5									
		B	SPT	12 11 19	30	80			**CLAYEY GRAVEL with SAND** White to tan, dry to damp, dense	
	6.50									
	7.50									
		C	SPT	8 10 21	31	60			**CLAYEY GRAVEL with SAND** Light tan, damp, dense	
	9.00									
	10.00									
2646.4	10									
		D	SPT	11 8 12	20	73			**CLAYEY GRAVEL with SAND** Tan, damp, medium dense	
	11.50									
	12.50							**GC**		
		E	SPT	17 19 27	46	80			**CLAYEY GRAVEL with SAND** Tan, damp, dense	
	14.00									
	15.00									
2641.4	15									
		F	SPT	13 16 20	36	87			**CLAYEY GRAVEL with SAND** Tan, damp, dense	
	16.50									
	20.00									
2636.4	20									
		G	SPT	6 16 18	34	33			**CLAYEY GRAVEL with SAND** Tan, damp, dense	(G) Rock in sampler shoe.
	21.50									
									23.20	
								SC SM		
	25.00									
2631.4	25									
	25.40	H	SPT	50/0.4'	50/0.4'	100			25.40 **SILTY CLAYEY SAND with GRAVEL** Tan, damp, very dense	
									B.O.H.	

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING

START DATE 7/19/11
END DATE 7/19/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-13
E.A. # 73627
GROUND ELEV. 2646.20 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 344+06
OFFSET 168' Left
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/19/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50							**GC**		
		A	SPT	20 23 19	42	87			**CLAYEY GRAVEL with SAND** Light tan, dry to damp, dense	
	4.00									
	5.00								4.50	
2641.2	5									
		B	SPT	4 4 10/0.3'	10/0.3'	80		**GP** **GC**	**POORLY GRADED GRAVEL with CLAY and SAND** Light tan, dry to damp, very dense	(B) Last 5 blows - no progress.
	6.30								6.30	
									B.O.H.	Drilled 25 minutes up to 500 psi down pressure - very little progress.
2636.2	10									
2631.2	15									
2626.2	20									
2621.2	25									

NV_DOT GINT FILES.GPJ NV_DOT.GDT 8/21/13

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/19/11
END DATE 7/19/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-14
E.A. # 73627
GROUND ELEV. 2635.24 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 315+49
OFFSET 156' Left
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/19/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	4.00	A	SPT	15/0.1'	15/0.1'	0		SC		(A) Last 10 blows - no progress. No sample recovered.
2630.2	5 5.00									
	5.50	B	SPT	42	10/0	80			**CLAYEY SAND with GRAVEL** White to light tan, dry, very dense	
				10/0						
									7.00 **B.O.H.**	Drilled 20 minutes up to 300 psi down pressure - very little progress.
2625.2	10									
2620.2	15									
2615.2	20									
2610.2	25									

NV_DOT GINT FILES.GPJ NV_DOT.GDT 8/21/13

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/19/11
END DATE 7/19/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-15
E.A. # 73627
GROUND ELEV. 2630.61 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 310+52
OFFSET 168' Left
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/19/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
2625.6	5 5.00	A	SPT	25 28 49	77	73		GP GM	**POORLY GRADED GRAVEL with SILT and SAND** White to light tan, dry, very dense	
	6.50									
	7.50	B	SPT	15/0.1'	15/0.1'	0				(B) Last 10 blows - no progress. No sample recovered.
2620.6	10 10.00	C	SPT	11/0.1'	11/0.1'	0				(C) Last 10 blows - no progress. No sample recovered.
									11.30	
	12.50	D	SPT	15/0.1'	15/0.1'	0				(D) Last 10 blows - no progress. No sample recovered.
2615.6	15 15.00	E	SPT	20/0.3'	20/0.3'	0		SP SC		(E) Last 10 blows - no progress. No sample recovered.
2610.6	20 20.00	F	SPT	50/0.3'	50/0.3'	100			**POORLY GRADED SAND with SILTY CLAY and GRAVEL** White to light tan, dry, very dense	
2605.6	25 25.00	G	SPT	15/0.1'	15/0.1'	0			25.10 **B.O.H.**	(G) Last 10 blows - no progress. No sample recovered.

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/20/11
END DATE 7/20/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-16
E.A. # 73627
GROUND ELEV. 2624.81 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 305+66
OFFSET 167' Left
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/20/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	12 18 30	48	73			**SILTY GRAVEL with SAND** Light to medium reddish brown, dry, dense to very dense	
	4.00									
	5.00							GM		
2619.8	5									
		B	SPT	18 37 37	74	73			**SILTY GRAVEL with SAND** Light to medium tan, dry to damp, very dense	
	6.50									
	7.50	C	SPT	15/0.1'	15/0.1'	0				(C) Last 10 blows - no progress. No sample recovered.
									8.80	
	10.00									
2614.8	10	D	SPT	15/0.1'	15/0.1'	0				(D) Last 10 blows - no progress. No sample recovered.
	12.50	E	SPT	15/0.1'	15/0.1'	0				(E) Last 10 blows - no progress. No sample recovered.
	15.00									
2609.8	15	F	SPT	15/0.1'	15/0.1'	0				(F) Last 10 blows - no progress. No sample recovered.
	20.00									
2604.8	20	G	SPT	15/0.1'	15/0.1'	0				(G) Last 10 blows - no progress. No sample recovered.
	25.00									
2599.8	25	H	SPT	15/0.1'	15/0.1'	0			25.10	(H) Last 10 blows - no progress. No sample recovered.
									B.O.H.	

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/20/11
END DATE 7/20/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-17
E.A. # 73627
GROUND ELEV. 2619.93 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 300+86
OFFSET 274' Left
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/20/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	3 14 15	29	73			**SILTY CLAYEY SAND with GRAVEL** Light to medium brown, dry, dense	
	4.00									
	5.00							**SC** **SM**		
2614.9	5 5.20	B	SPT	15/0.1'	15/0.1'	0				(B) Last 10 blows - no progress. No sample recovered.
	7.50 7.70	C	SPT	30/0.2'	30/0.2'	0				(C) Last 10 blows - no progress. No sample recovered.
									8.80	
2609.9	10.00 10 10.10	D	SPT	15/0.1'	15/0.1'	0				(D) Last 10 blows - no progress. No sample recovered.
	12.50 12.70	E	SPT	30/0.2'	30/0.2'	0				(E) Last 10 blows - no progress. No sample recovered.
2604.9	15.00 15 15.10	F	SPT	15/0.1'	15/0.1'	0				(F) Last 10 blows - no progress. No sample recovered.
2599.9	20.00 20 20.10	G	SPT	10/0.1'	10/0.1'	0				(G) Last 10 blows - no progress. No sample recovered.
2594.9	25.00 25 25.10	H	SPT	10/0.1'	10/0.1'	0			25.10 **B.O.H.**	(H) Last 10 blows - no progress. No sample recovered.

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/20/11
END DATE 7/20/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-18
E.A. # 73627
GROUND ELEV. 2660.34 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 353+29
OFFSET 170' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/20/2011

ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50							**GC GM**		
	2.90	A	SPT	50/0.4'	50/0.4'	100			**SILTY CLAYEY GRAVEL with SAND** Light tan, dry, very dense	
									4.00	
2655.3	5.00	B	SPT	17 21 21	42	87		**GP GC**	**POORLY GRADED GRAVEL with CLAY and SAND** Light to medium brown, dry to damp, dense	
	6.50									
	7.50	C	SPT	15/0.1'	15/0.1'	0				(C) Last 10 blows - no progress. No sample recovered.
									8.80	
2650.3	10.00	D	SPT	10/0.1'	10/0.1'	0				(D) Last 10 blows - no progress. No sample recovered.
	12.50									
	13.30	E	SPT	47 50/0.3'	50/0.3'	0		**GC**	**CLAYEY GRAVEL with SAND** White to light tan, dry, very dense	
2645.3	15.00	F	SPT	10/0.1'	10/0.1'	0				(F) Last 10 blows - no progress. No sample recovered.
									17.50	
2640.3	20.00	G	SPT	10/0.1'	10/0.1'	0				(G) Last 10 blows - no progress. No sample recovered.
2635.3	25.00 25.30	H	SPT	30/0.3'	30/0.3'	0			25.30 **B.O.H.**	(H) Last 10 blows - no progress. No sample recovered.

EXPLORATION LOG

NEVADA DEPARTMENT OF TRANSPORTATION — GEOTECHNICAL ENGINEERING

START DATE 7/21/11
END DATE 7/21/11
JOB DESCRIPTION US 95 Soundwalls
LOCATION North of Ann Road
BORING ASW-19
E.A. # 73627
GROUND ELEV. 2647.57 (ft)
HAMMER DROP SYSTEM Automatic

GROUNDWATER LEVEL		
DATE	DEPTH ft	ELEV. ft

STATION "XP" 346+83
OFFSET 119' Right
ENGINEER Boomhower
EQUIPMENT Diedrich D-120
OPERATOR Pypkowski
DRILLING METHOD 6" H.S.A.
BACKFILLED Yes DATE 7/21/2011

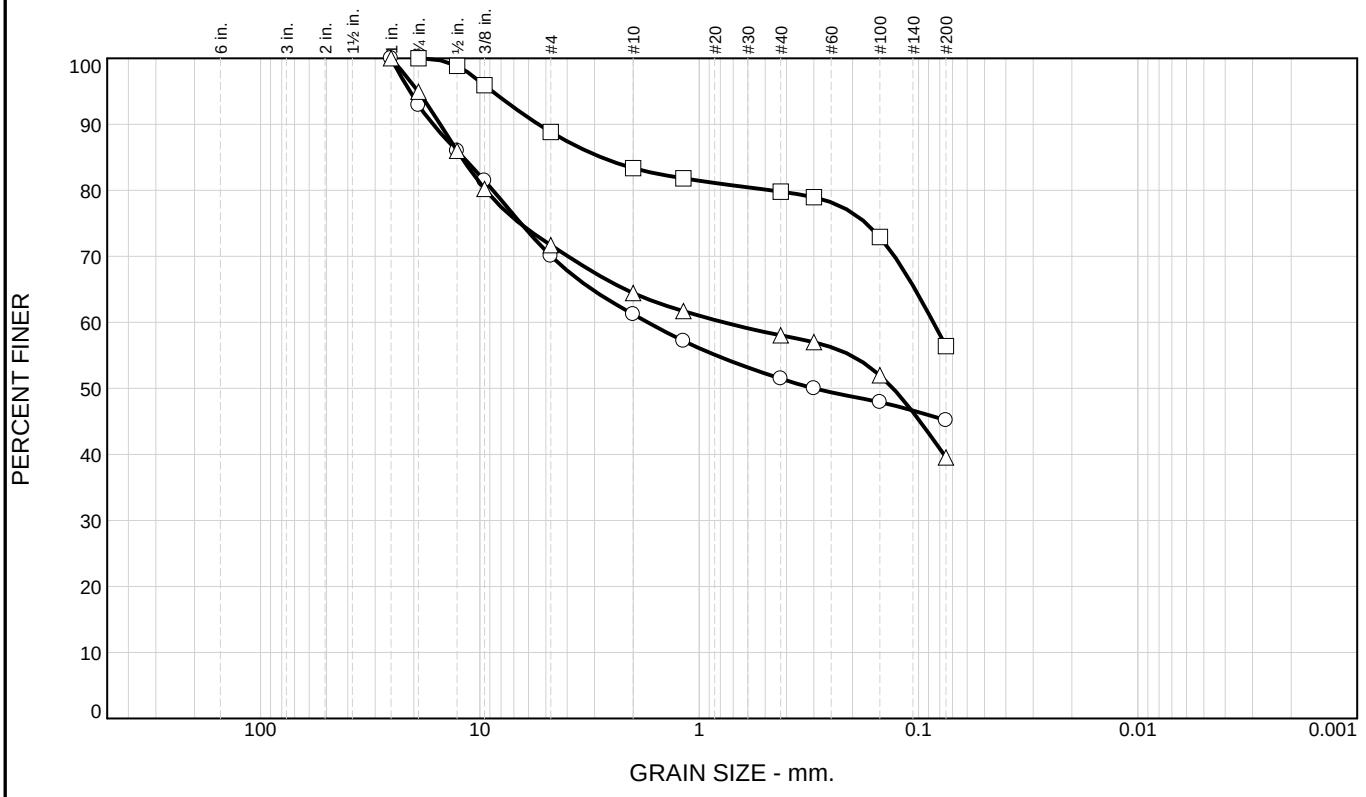
ELEV. (ft)	DEPTH (ft)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT 6 inch Increments	BLOW COUNT Last 1 foot	Percent Recov'd	LAB TESTS	USCS Group	MATERIAL DESCRIPTION	REMARKS
									Light tan sandy gravel, dry	
	2.50									
		A	SPT	7 9 14	23	73			**SILTY GRAVEL with SAND** Light to medium brown, dry to damp, very stiff	
	4.00									
	5.00							**GM**		
2642.6	5 5.10	B	SPT	10/0.1'	10/0.1'	0				(B) Last 10 blows - no progress. No sample recovered.
	7.50									Very hard drilling at 5.1'.
	7.60	C	SPT	10/0.1'	10/0.1'	0				(C) Last 10 blows - no progress. No sample recovered.
									8.80	
	10.00									
2637.6	10 10.10	D	SPT	10/0.1'	10/0.1'	0				(D) Last 10 blows - no progress. No sample recovered.
	12.50									
	12.60	E	SPT	10/0.1'	10/0.1'	0				(E) Last 10 blows - no progress. No sample recovered.
	15.00									
2632.6	15 15.10	F	SPT	20/0.1'	20/0.1'	0				(F) Last 10 blows - no progress. No sample recovered.
	20.00									
2627.6	20 20.10	G	SPT	10/0.1'	10/0.1'	0				(G) Last 10 blows - no progress. No sample recovered.
	25.00									
2622.6	25 25.10	H	SPT	10/0.1'	10/0.1'	0			25.10 **B.O.H.**	(H) Last 10 blows - no progress. No sample recovered.

NV_DOT GINT FILES.GPJ NV_DOT.GDT 8/21/13

APPENDIX C

Soil Particle Size Distribution Sheets
Consolidation Test Report Sheets
Test Result Summary Sheets

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	29.9	24.9	45.2		GC	A-6(4)	20	37
□	0.0	11.2	32.4	56.4		CL	A-6(8)	15	36
△	0.0	28.3	32.2	39.5		SC	A-6(2)	14	30

SIEVE inches size	PERCENT FINER ○	□	△
1"	100.0		100.0
3/4"	92.9	100.0	94.9
1/2"	86.0	98.9	86.0
3/8"	81.5	95.9	80.2
GRAIN SIZE			
D_{60}	1.7169	0.0856	0.7718
D_{30}			
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	70.1	88.8	71.7
#10	61.2	83.4	64.4
#16	57.2	81.8	61.7
#40	51.5	79.8	58.0
#50	50.0	79.0	57.0
#100	47.9	72.9	52.0
#200	45.2	56.4	39.5

Material Description
○ clayey gravel with sand
□ sandy lean clay
△ clayey sand with gravel

REMARKS:
○
□
△

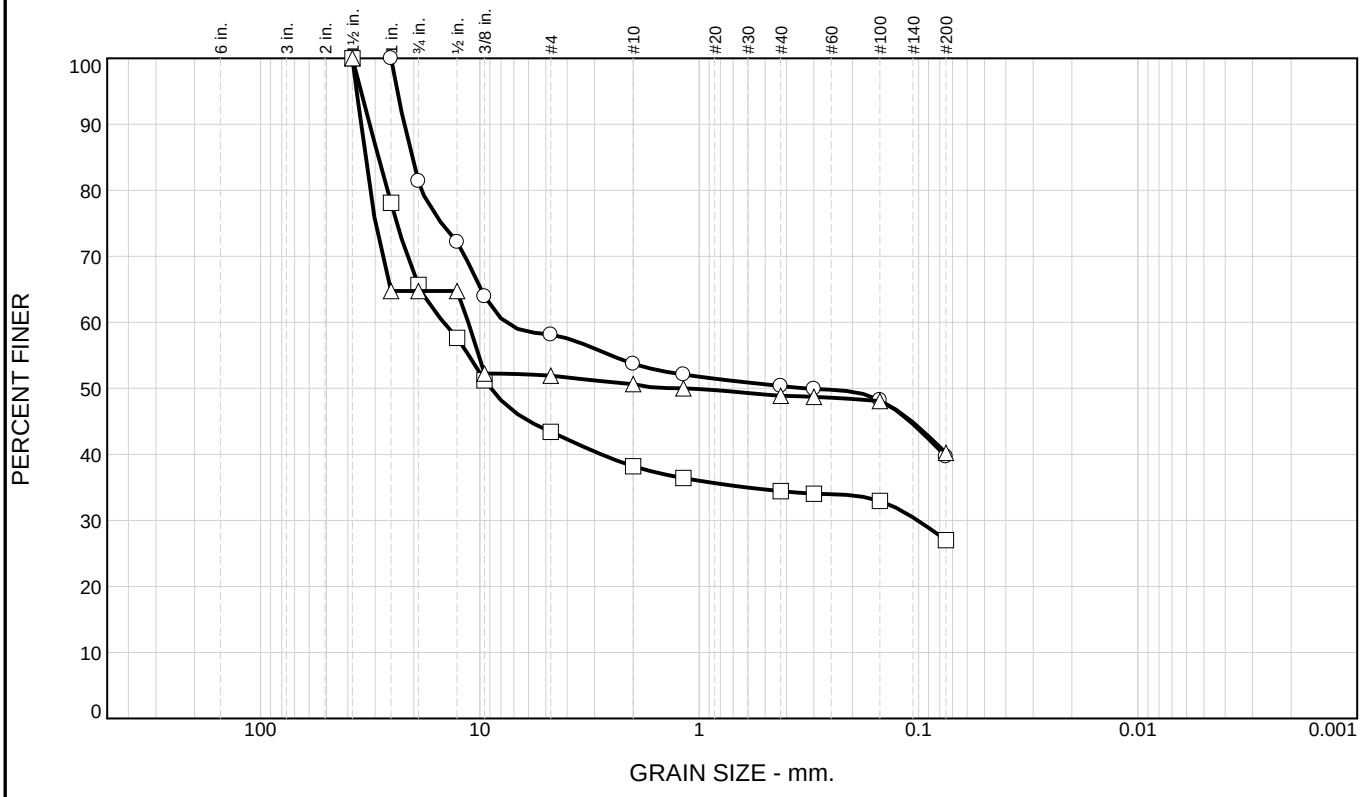
○ Source of Sample: ASW-1 Depth: 2.5 - 4.0' Sample Number: A
□ Source of Sample: ASW-1 Depth: 7.5 - 9.0' Sample Number: C
△ Source of Sample: ASW-1 Depth: 12.5 - 14.1' Sample Number: E

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	41.9	18.4	39.7		GC	A-6(2)	16	30
□	0.0	56.6	16.4	27.0					
△	0.0	48.1	11.7	40.2		GC-GM	A-4(0)	20	26

SIEVE inches size	PERCENT FINER ○	□	△
1.5"		100.0	100.0
1"	100.0	78.1	64.7
3/4"	81.4	65.7	64.7
1/2"	72.2	57.6	64.7
3/8"	63.9	51.2	52.2
	GRAIN SIZE		
D_{60}	7.6247	14.5871	11.2999
D_{30}		0.1009	
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	58.1	43.4	51.9
#10	53.7	38.2	50.6
#16	52.1	36.4	50.0
#40	50.4	34.4	48.9
#50	49.9	34.0	48.7
#100	48.2	32.9	48.1
#200	39.7	27.0	40.2

Material Description
○ clayey gravel with sand

□ SIEVE ONLY

△ silty clayey gravel

REMARKS:
○

□

△

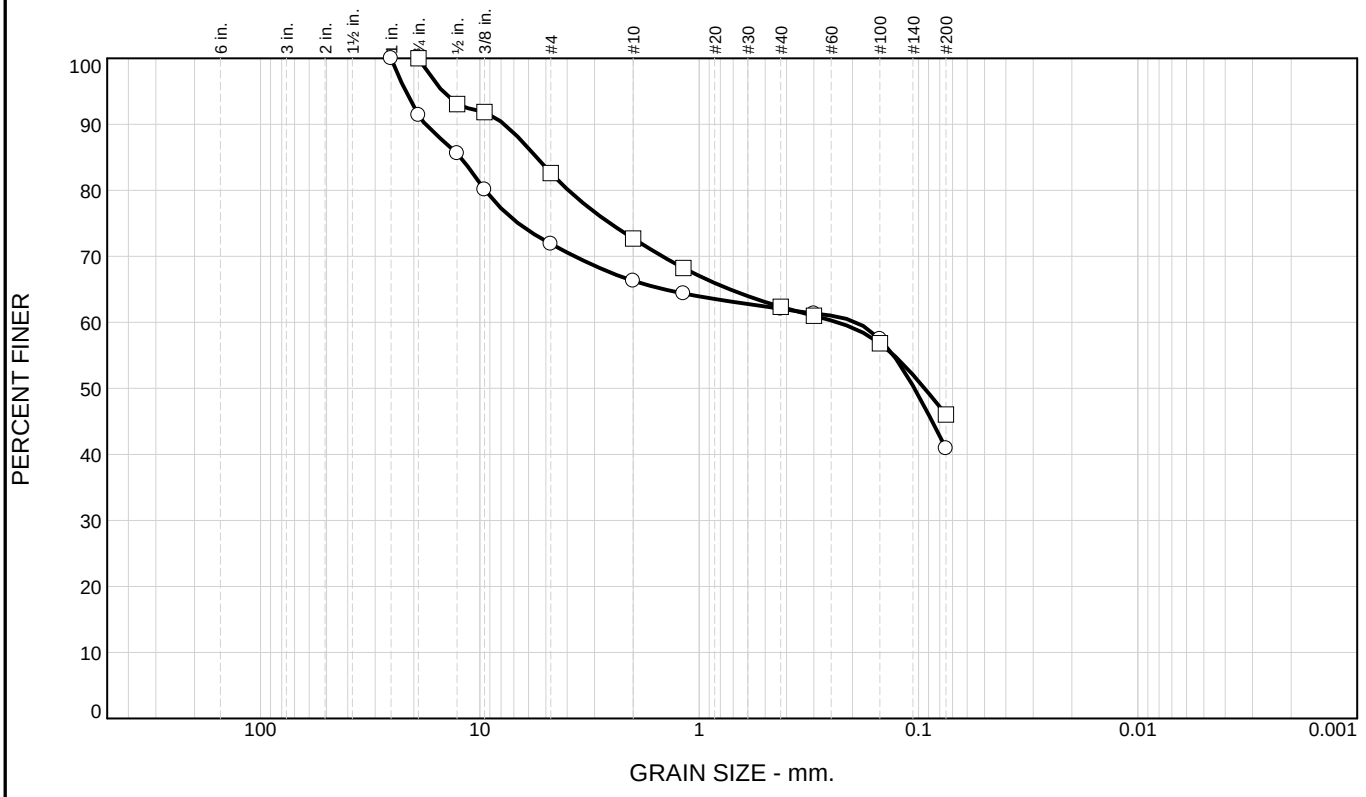
○ Source of Sample: ASW-1 Depth: 15.2 - 15.7' Sample Number: F1
□ Source of Sample: ASW-1 Depth: 15.7 - 16.2' Sample Number: F2
△ Source of Sample: ASW-1 Depth: 16.2 - 16.5' Sample Number: F3

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	28.1	31.0	40.9		SC	A-6(4)	16	36
□	0.0	17.4	36.6	46.0		SC	A-7-6(13)	28	68

SIEVE inches size	○	□
1"	100.0	
3/4"	91.4	100.0
1/2"	85.6	93.1
3/8"	80.1	91.9
GRAIN SIZE		
D_{60}	0.1924	0.2334
D_{30}		
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	71.9	82.6
#10	66.3	72.7
#16	64.4	68.2
#40	62.1	62.4
#50	61.3	61.0
#100	57.5	56.8
#200	40.9	46.0

Material Description

○ clayey sand with gravel

□ clayey sand with gravel

REMARKS:

○

□

○ Source of Sample: ASW-1 Depth: 20.0 - 21.5' Sample Number: G

□ Source of Sample: ASW-1 Depth: 25.0 - 26.5' Sample Number: H

NEVADA DEPARTMENT OF TRANSPORTATION

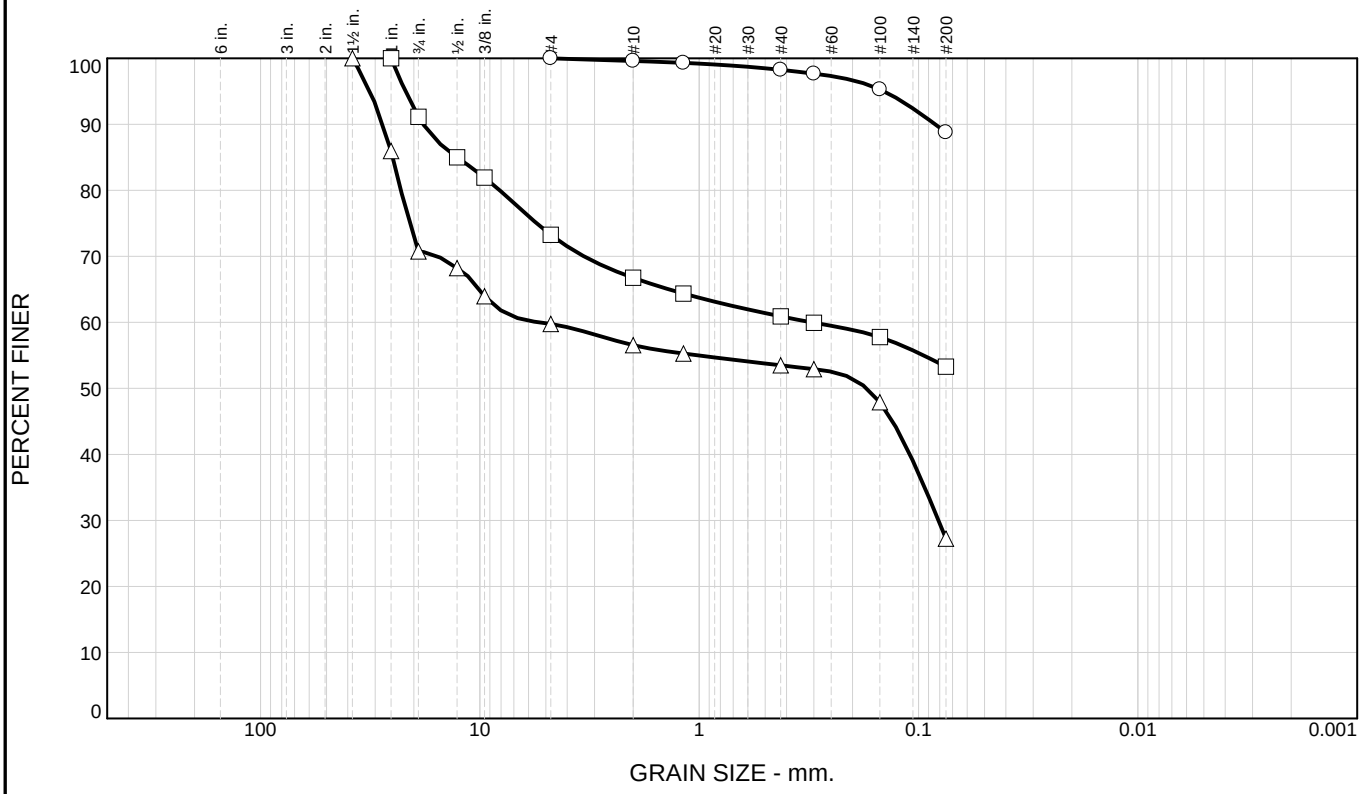
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	0.0	11.2	88.8		CL	A-4(9)	22	32
□	0.0	26.7	20.0	53.3		CL	A-6(4)	19	31
△	0.0	40.2	32.6	27.2		GC	A-2-4(0)	16	23

SIEVE inches size	PERCENT FINER ○	□	△
1.5"			100.0
1"		100.0	86.0
3/4"		91.1	70.8
1/2"		85.0	68.2
3/8"		81.9	64.0
GRAIN SIZE			
D_{60}		0.3072	5.3405
D_{30}			0.0811
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	100.0	73.3	59.8
#10	99.6	66.8	56.5
#16	99.3	64.4	55.3
#40	98.3	60.9	53.5
#50	97.7	59.9	52.9
#100	95.3	57.8	47.9
#200	88.8	53.3	27.2

Material Description
○ lean clay

□ gravelly lean clay with sand

△ clayey gravel with sand

REMARKS:
○

□

△

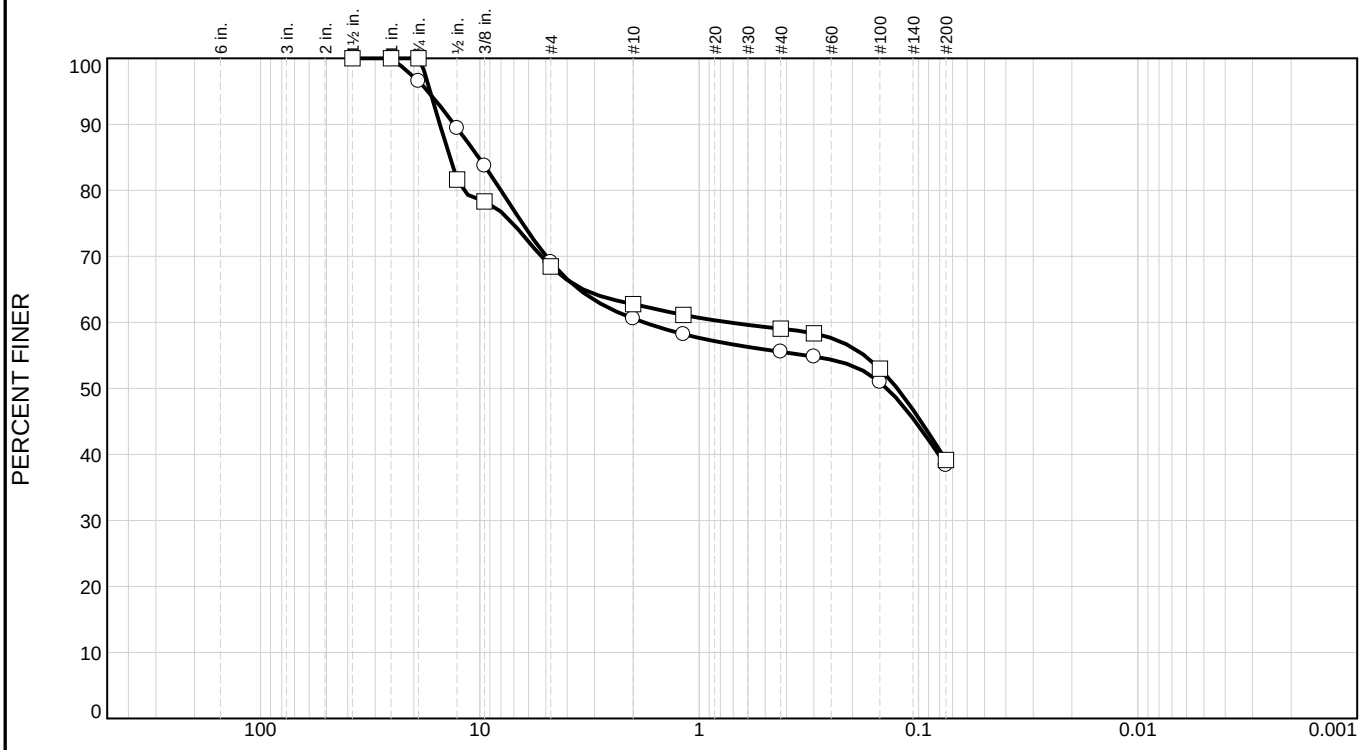
○ Source of Sample: ASW-2 Depth: 2.5 - 4.1' Sample Number: A
□ Source of Sample: ASW-2 Depth: 5.0 - 6.5' Sample Number: B
△ Source of Sample: ASW-2 Depth: 10.0 - 11.5' Sample Number: D

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	30.9	30.7	38.4					
□	0.0	31.5	29.4	39.1		GC	A-6(1)	14	27

SIEVE inches size	○	□
1.5"		100.0
1"	100.0	100.0
3/4"	96.5	100.0
1/2"	89.4	81.6
3/8"	83.7	78.3
GRAIN SIZE		
D_{60}	1.7895	0.7336
D_{30}		
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	69.1	68.5
#10	60.6	62.8
#16	58.2	61.1
#40	55.5	59.0
#50	54.8	58.3
#100	51.0	53.0
#200	38.4	39.1

Material Description
○ SIEVE ONLY

□ clayey gravel with sand

REMARKS:
○

□

○ Source of Sample: ASW-2 Depth: 12.5 - 14.0' Sample Number: E

□ Source of Sample: ASW-2 Depth: 15.0 - 16.5' Sample Number: F

NEVADA DEPARTMENT OF TRANSPORTATION

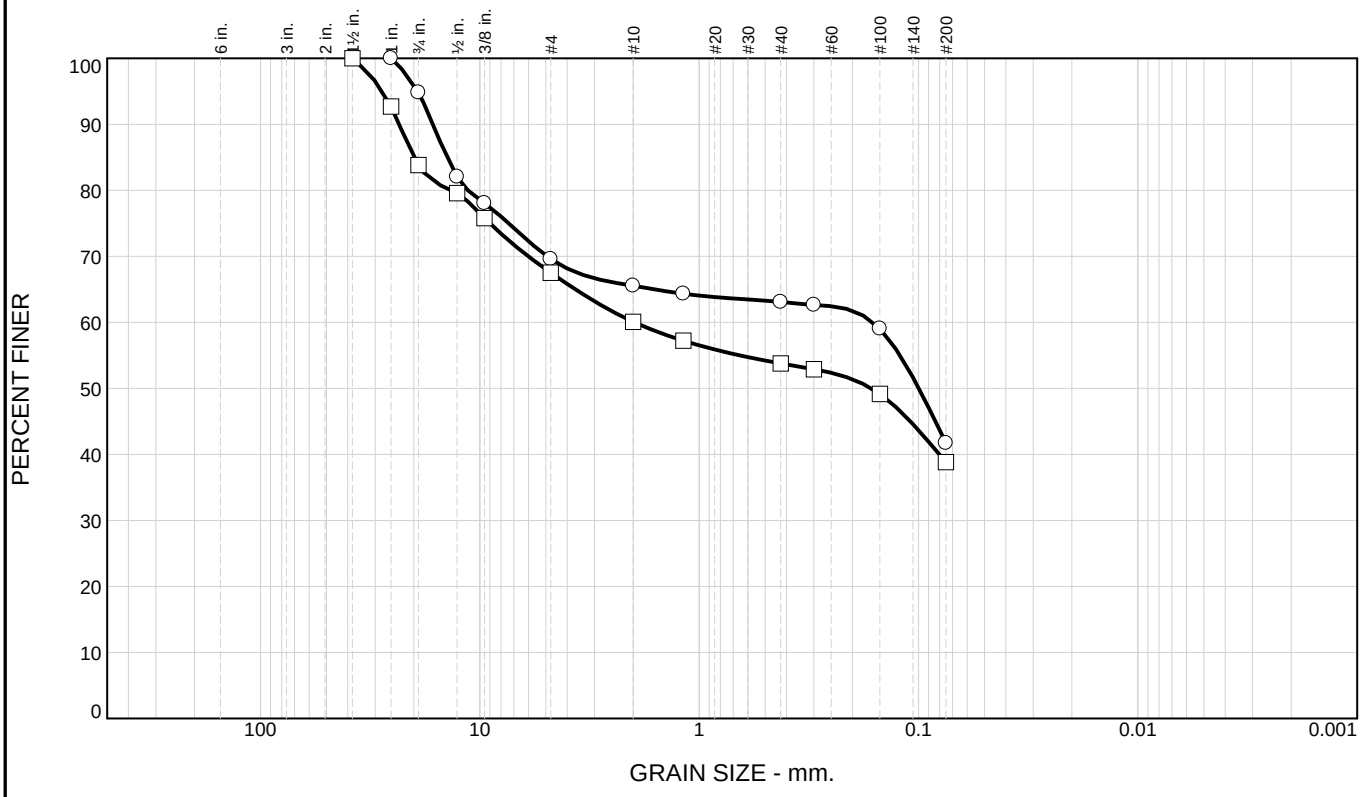
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	30.4	27.9	41.7					
□	0.0	32.5	28.7	38.8		GC	A-7-5(12)	36	90

SIEVE inches size	○	□
1.5"		100.0
1"	100.0	92.7
3/4"	94.8	83.8
1/2"	82.1	79.6
3/8"	78.1	75.8
GRAIN SIZE		
D_{60}	0.1612	1.9747
D_{30}		
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	69.6	67.5
#10	65.5	60.1
#16	64.3	57.2
#40	63.1	53.8
#50	62.6	52.9
#100	59.0	49.2
#200	41.7	38.8

Material Description
○ SIEVE ONLY

□ clayey gravel with sand

REMARKS:
○

□

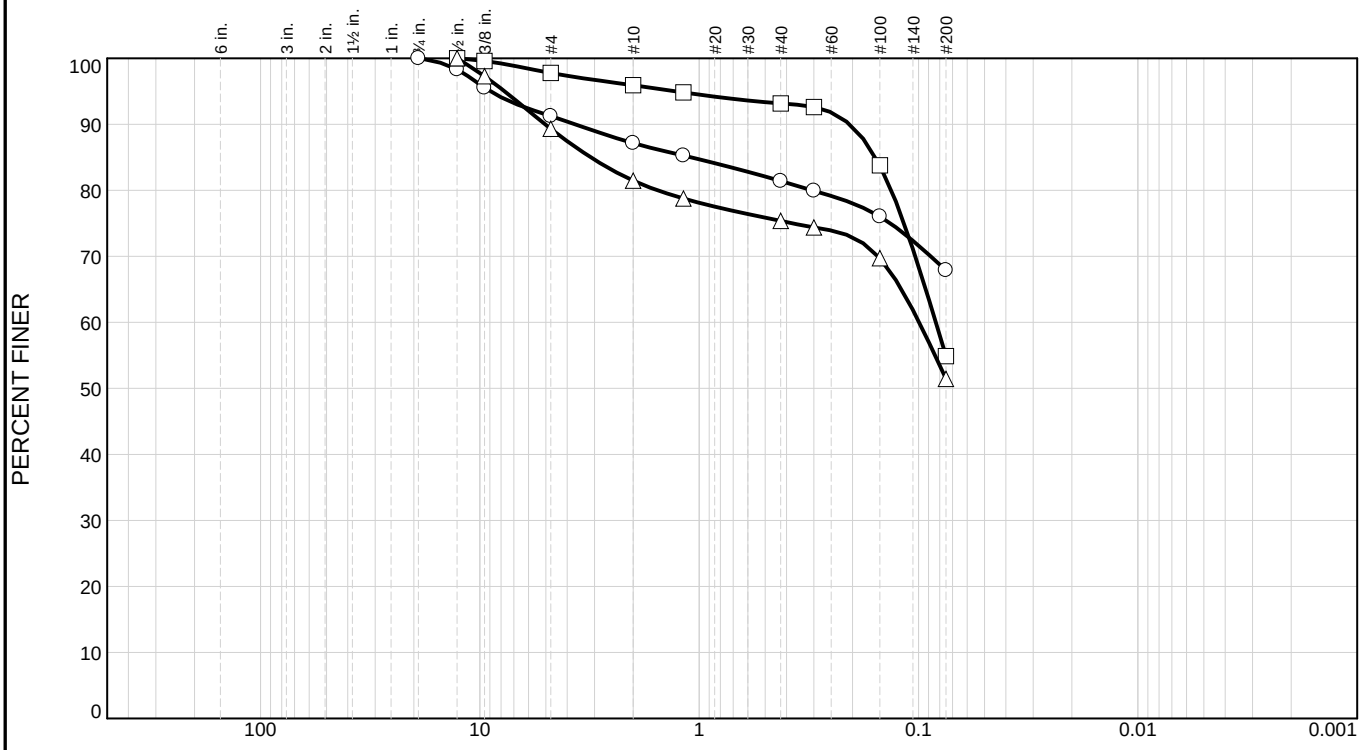
○ Source of Sample: ASW-2 Depth: 20.0 - 21.5' Sample Number: G
□ Source of Sample: ASW-2 Depth: 25.0 - 26.5' Sample Number: H

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	8.8	23.3	67.9		CL	A-4(4)	20	29
□	0.0	2.2	42.9	54.9		CL	A-6(6)	15	32
△	0.0	10.7	37.9	51.4		CL	A-6(4)	14	28

SIEVE inches size	PERCENT FINER ○	□	△
3/4"	100.0		
1/2"	98.3	100.0	100.0
3/8"	95.5	99.6	97.3
GRAIN SIZE			
D_{60}		0.0833	0.0992
D_{30}			
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	91.2	97.8	89.3
#10	87.2	95.9	81.5
#16	85.3	94.8	78.8
#40	81.4	93.2	75.4
#50	79.9	92.6	74.4
#100	76.0	83.8	69.7
#200	67.9	54.9	51.4

Material Description
○ sandy lean clay
□ sandy lean clay
△ sandy lean clay

REMARKS:
○
□
△

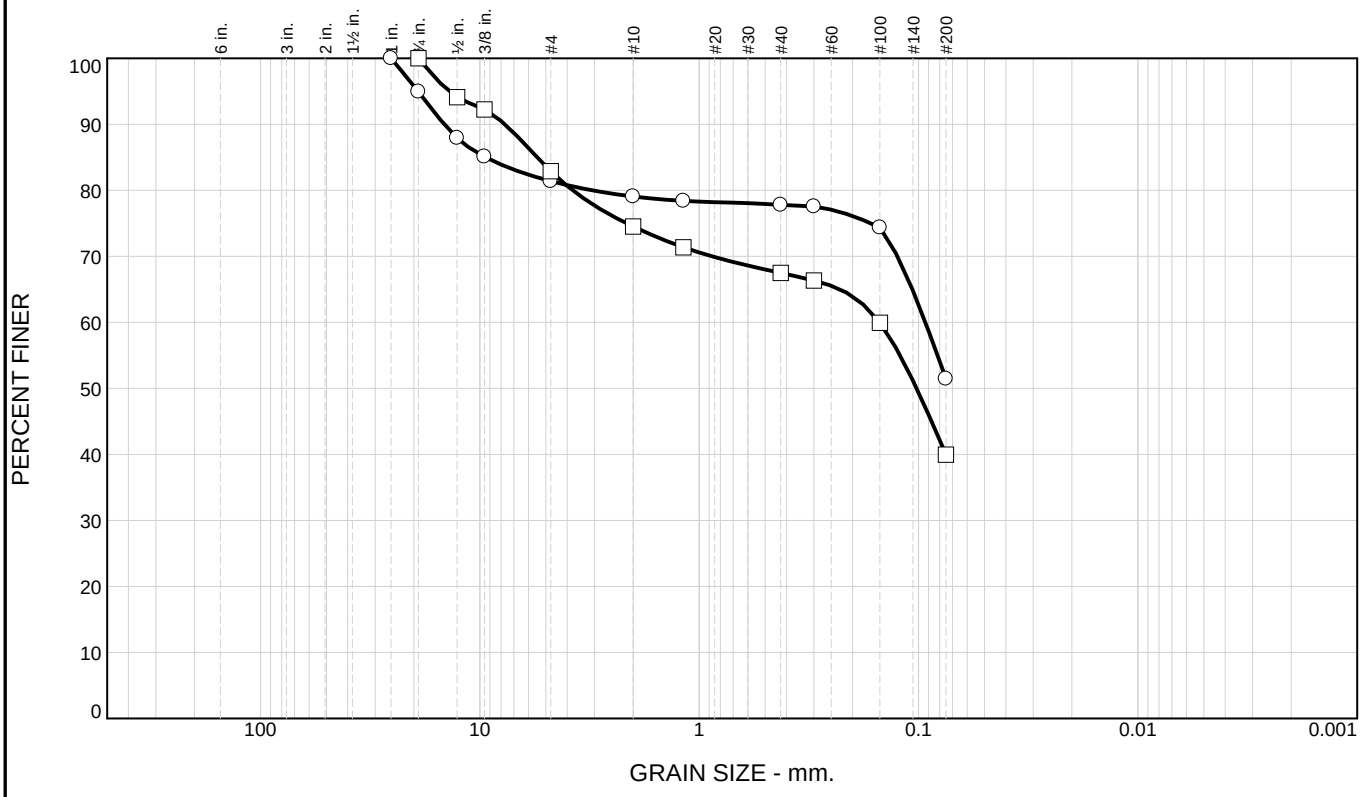
○ Source of Sample: ASW-3 Depth: 2.5 - 4.0' Sample Number: A
□ Source of Sample: ASW-3 Depth: 7.5 - 9.1' Sample Number: C
△ Source of Sample: ASW-3 Depth: 10.0 - 11.5' Sample Number: D

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	18.6	29.9	51.5		CL	A-4(1)	17	24
□	0.0	17.1	42.9	40.0					

SIEVE inches size	○	□
1"	100.0	
3/4"	94.9	100.0
1/2"	87.9	94.1
3/8"	85.1	92.3
GRAIN SIZE		
D_{60}	0.0930	0.1505
D_{30}		
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	81.4	82.9
#10	79.1	74.5
#16	78.4	71.4
#40	77.8	67.5
#50	77.6	66.3
#100	74.4	59.9
#200	51.5	40.0

Material Description

○ sandy lean clay with gravel

□ SIEVE ONLY

REMARKS:

○

□

○ Source of Sample: ASW-3 Depth: 12.5 - 14.0' Sample Number: E

□ Source of Sample: ASW-3 Depth: 15.0 - 16.5' Sample Number: F

NEVADA DEPARTMENT OF TRANSPORTATION

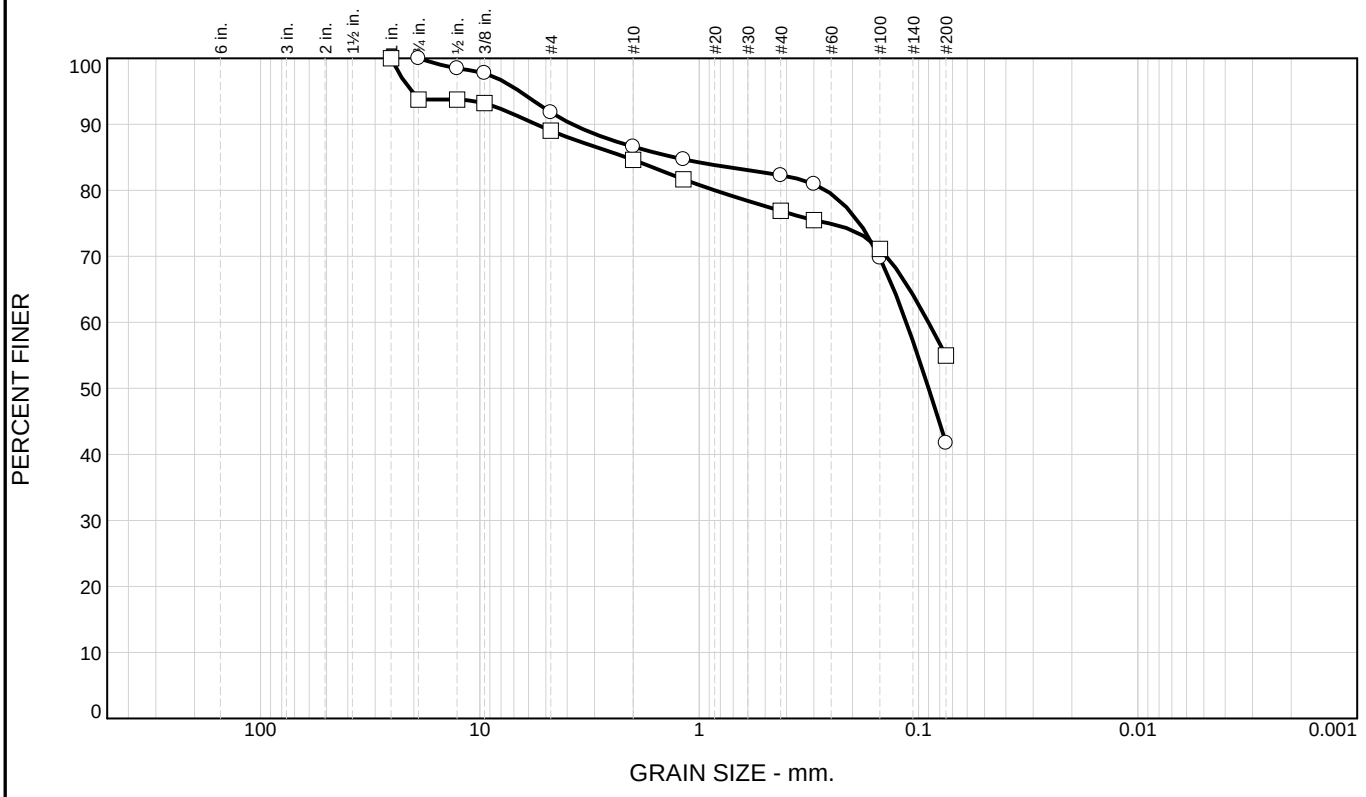
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	8.2	50.1	41.7		SC	A-6(2)	18	31
□	0.0	11.0	34.0	55.0		CH	A-7-6(12)	25	51

SIEVE inches size	○	□
1"		100.0
3/4"	100.0	93.8
1/2"	98.5	93.8
3/8"	97.8	93.2
GRAIN SIZE		
D_{60}	0.1136	0.0901
D_{30}		
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	91.8	89.0
#10	86.6	84.6
#16	84.7	81.7
#40	82.3	76.9
#50	81.0	75.5
#100	69.8	71.1
#200	41.7	55.0

Material Description
○ clayey sand

□ sandy fat clay

REMARKS:
○

□

○ Source of Sample: ASW-3 Depth: 20.0 - 21.5' Sample Number: G

□ Source of Sample: ASW-3 Depth: 25.0 - 26.5' Sample Number: H

NEVADA DEPARTMENT OF TRANSPORTATION

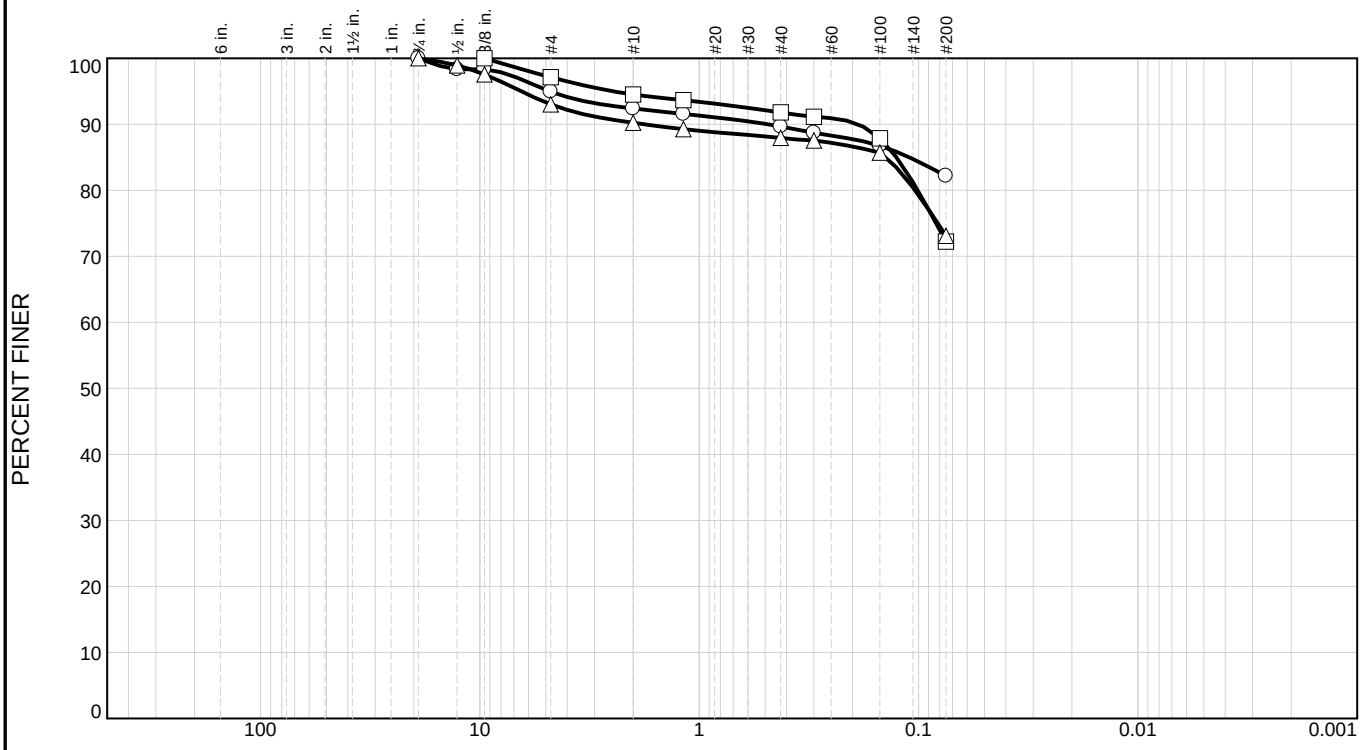
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	5.0	12.8	82.2		CL	A-6(12)	24	38
□	0.0	2.9	24.9	72.2		CL	A-6(10)	16	33
△	0.0	7.0	19.9	73.1		CL	A-6(8)	19	32

SIEVE inches size	PERCENT FINER ○	□	△
3/4"	100.0		100.0
1/2"	98.3		98.9
3/8"	98.3	100.0	97.6
GRAIN SIZE			
D_{60}			
D_{30}			
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	95.0	97.1	93.0
#10	92.4	94.5	90.2
#16	91.6	93.7	89.3
#40	89.7	91.8	87.9
#50	88.7	91.1	87.6
#100	86.8	87.9	85.7
#200	82.2	72.2	73.1

Material Description
○ lean clay with sand
□ lean clay with sand
△ lean clay with sand

REMARKS:
○
□
△

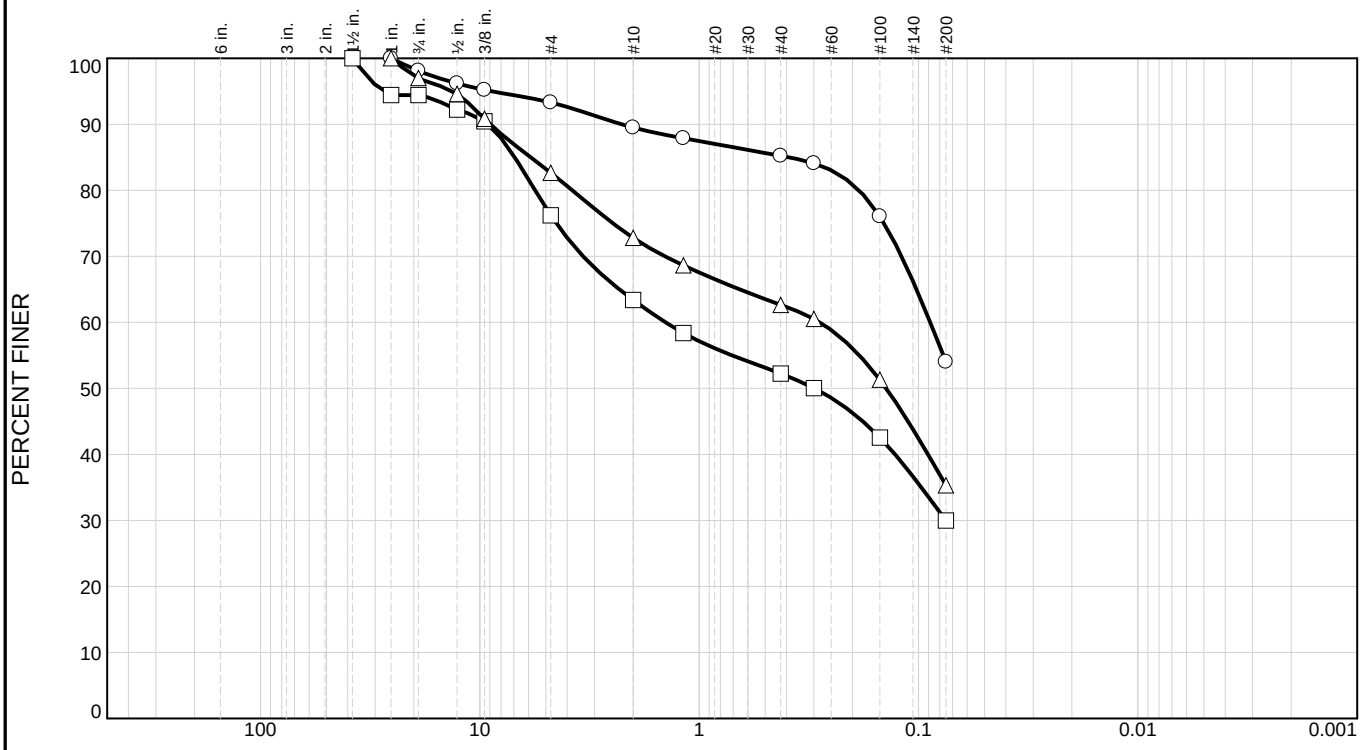
○ Source of Sample: ASW-4 Depth: 2.5 - 4.0' Sample Number: A
□ Source of Sample: ASW-4 Depth: 5.0 - 6.4' Sample Number: B
△ Source of Sample: ASW-4 Depth: 7.5 - 9.0' Sample Number: C

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	6.7	39.3	54.0					
□	0.0	23.8	46.2	30.0		SC	A-2-6(0)	19	32
△	0.0	17.3	47.4	35.3					

SIEVE inches size	PERCENT FINER ○	□	△
1.5"		100.0	
1"	100.0	94.4	100.0
3/4"	98.1	94.4	97.0
1/2"	96.2	92.2	94.6
3/8"	95.2	90.5	90.8
	GRAIN SIZE		
D_{60}	0.0884	1.4247	0.2815
D_{30}		0.0751	
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	93.3	76.2	82.7
#10	89.5	63.4	72.8
#16	87.9	58.4	68.6
#40	85.2	52.2	62.6
#50	84.1	50.0	60.5
#100	76.0	42.6	51.3
#200	54.0	30.0	35.3

Material Description
○ SIEVE ONLY
□ clayey sand with gravel
△ SIEVE ONLY

REMARKS:
○
□
△

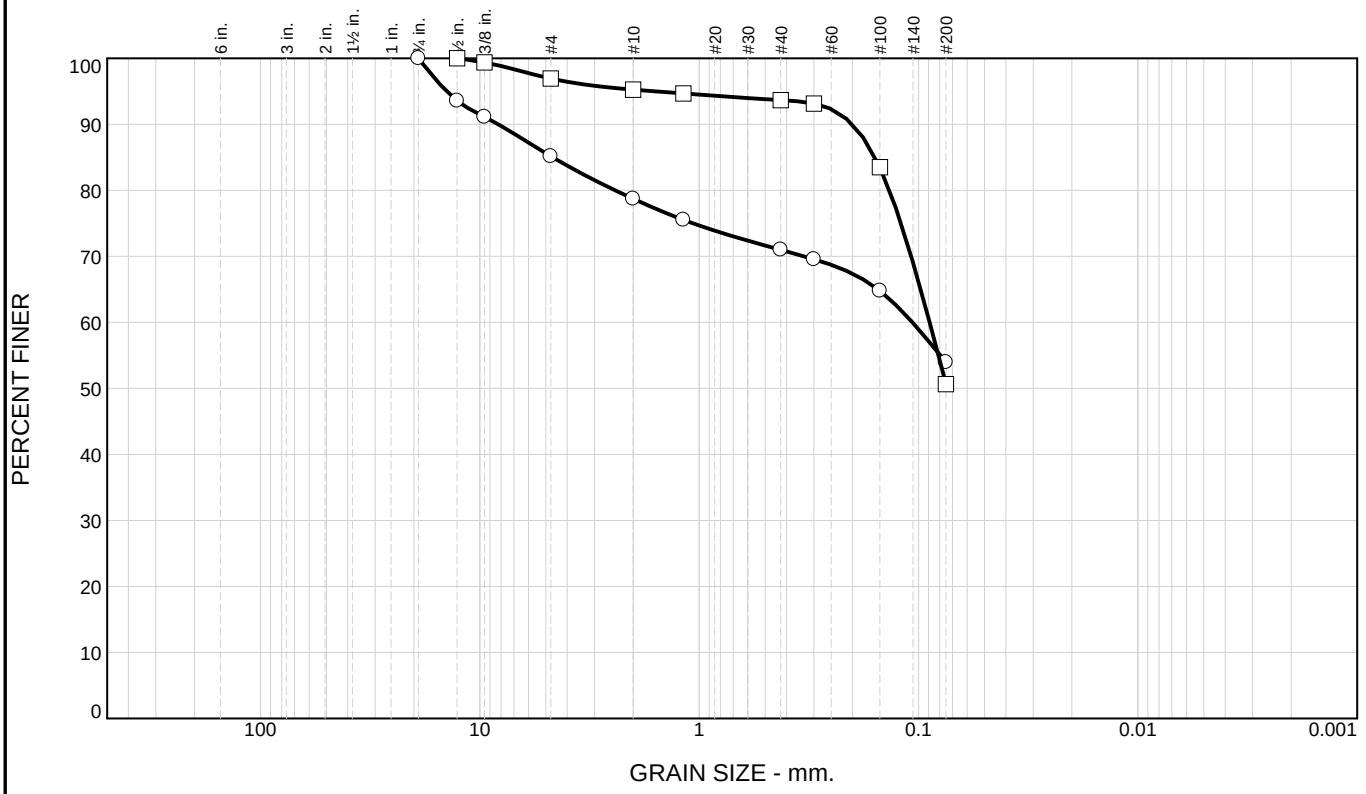
○ Source of Sample: ASW-4 Depth: 10.0 - 11.5' Sample Number: D
□ Source of Sample: ASW-4 Depth: 12.5 - 14.0' Sample Number: E
△ Source of Sample: ASW-4 Depth: 15.0 - 16.5' Sample Number: F

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	14.8	31.2	54.0		CL	A-6(6)	17	35
□	0.0	3.1	46.3	50.6		CH	A-7-6(12)	24	56

SIEVE inches size	○	□	
3/4"	100.0		
1/2"	93.6	100.0	
3/8"	91.1	99.4	
GRAIN SIZE			
D_{60}	0.1065	0.0889	
D_{30}			
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	○	□
#4	85.2	96.9
#10	78.7	95.3
#16	75.5	94.7
#40	71.0	93.7
#50	69.6	93.1
#100	64.8	83.5
#200	54.0	50.6

Material Description
○ sandy lean clay

□ sandy fat clay

REMARKS:
○

□

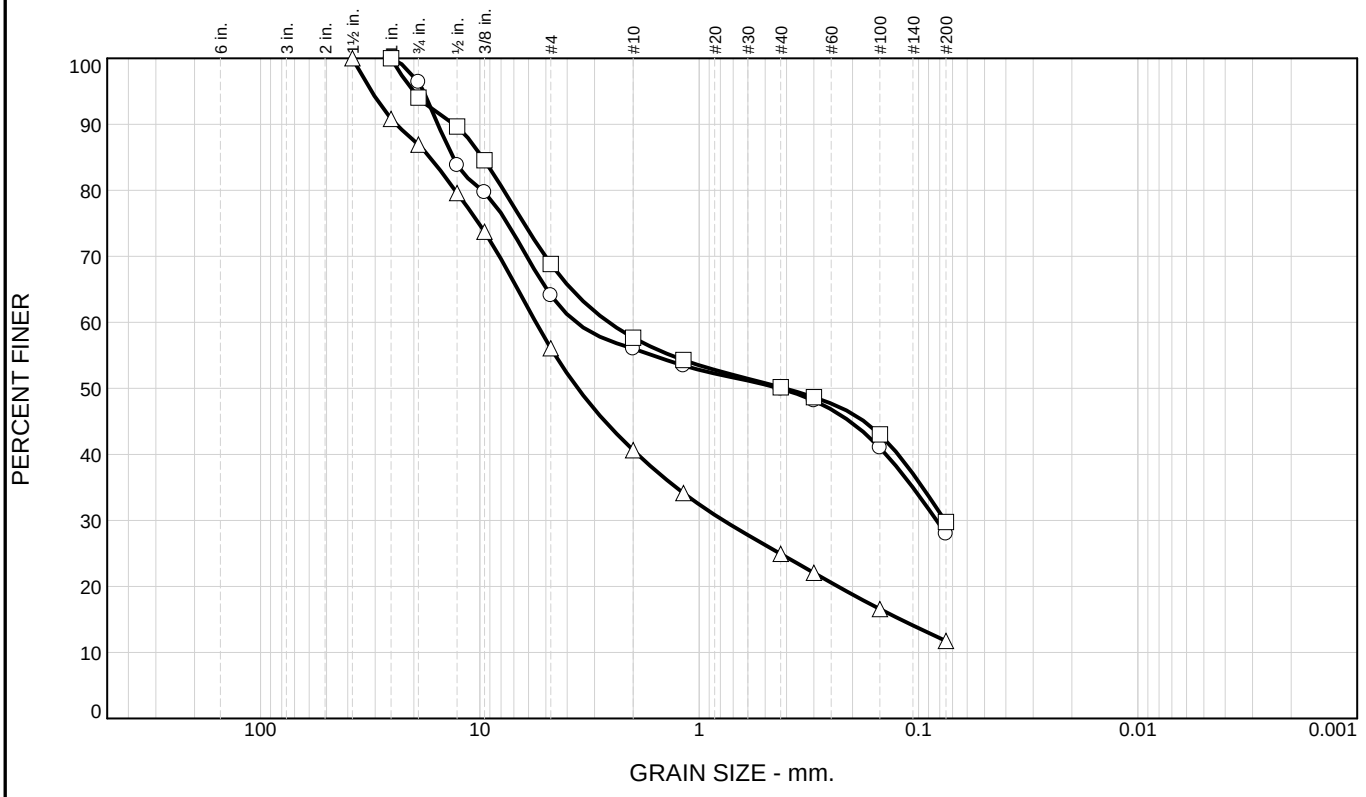
○ Source of Sample: ASW-4 Depth: 20.0 - 21.5' Sample Number: G
□ Source of Sample: ASW-4 Depth: 25.0 - 26.5' Sample Number: H

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	35.9	36.1	28.0		SM	A-2-4(0)	NP	18
□	0.0	31.2	39.0	29.8		SM	A-2-4(0)	16	18
△	0.0	43.9	44.4	11.7					

SIEVE inches size	PERCENT FINER ○	□	△
1.5"			100.0
1"	100.0	100.0	90.8
3/4"	96.4	94.1	86.9
1/2"	83.8	89.7	79.6
3/8"	79.7	84.5	73.7
	GRAIN SIZE		
D_{60}	3.6420	2.5861	5.5580
D_{30}	0.0827	0.0758	0.7750
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	64.1	68.8	56.1
#10	56.0	57.7	40.6
#16	53.5	54.3	34.1
#40	50.0	50.2	24.9
#50	48.2	48.7	22.1
#100	41.0	43.0	16.6
#200	28.0	29.8	11.7

Material Description
○ silty sand with gravel
□ silty sand with gravel
△ SIEVE ONLY

REMARKS:
○
□
△

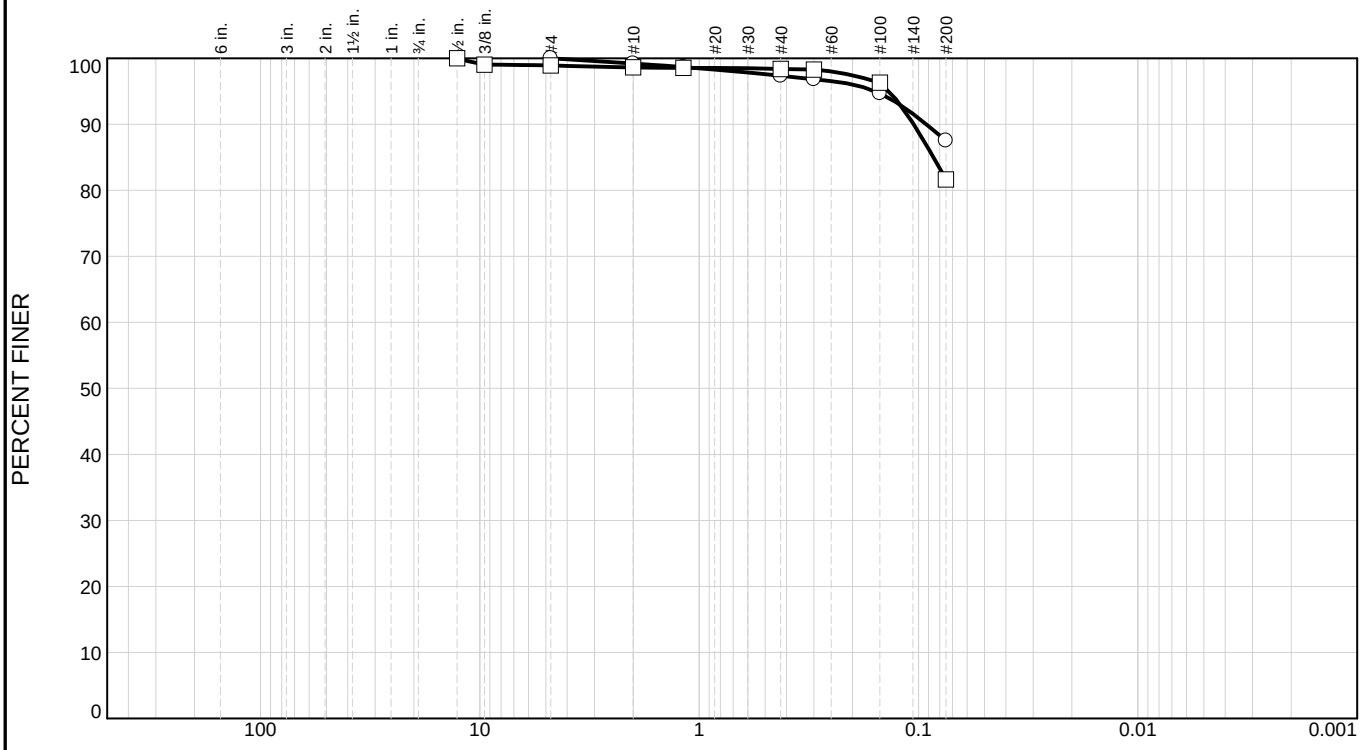
○ Source of Sample: ASW-5 Depth: 2.5 - 4.0' Sample Number: A
□ Source of Sample: ASW-5 Depth: 5.0 - 6.5' Sample Number: B
△ Source of Sample: ASW-5 Depth: 7.5 - 9.0' Sample Number: C

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	0.0	12.5	87.5		CH	A-7-5(58)	31	88
□	0.0	1.1	17.2	81.7		CH	A-7-6(34)	16	57

SIEVE inches size	○	□
1/2"		100.0
3/8"		99.0
GRAIN SIZE		
D_{60}		
D_{30}		
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	100.0	98.9
#10	99.2	98.6
#16	98.7	98.5
#40	97.3	98.4
#50	96.8	98.3
#100	94.7	96.3
#200	87.5	81.7

Material Description
○ fat clay

□ fat clay with sand

REMARKS:
○

□

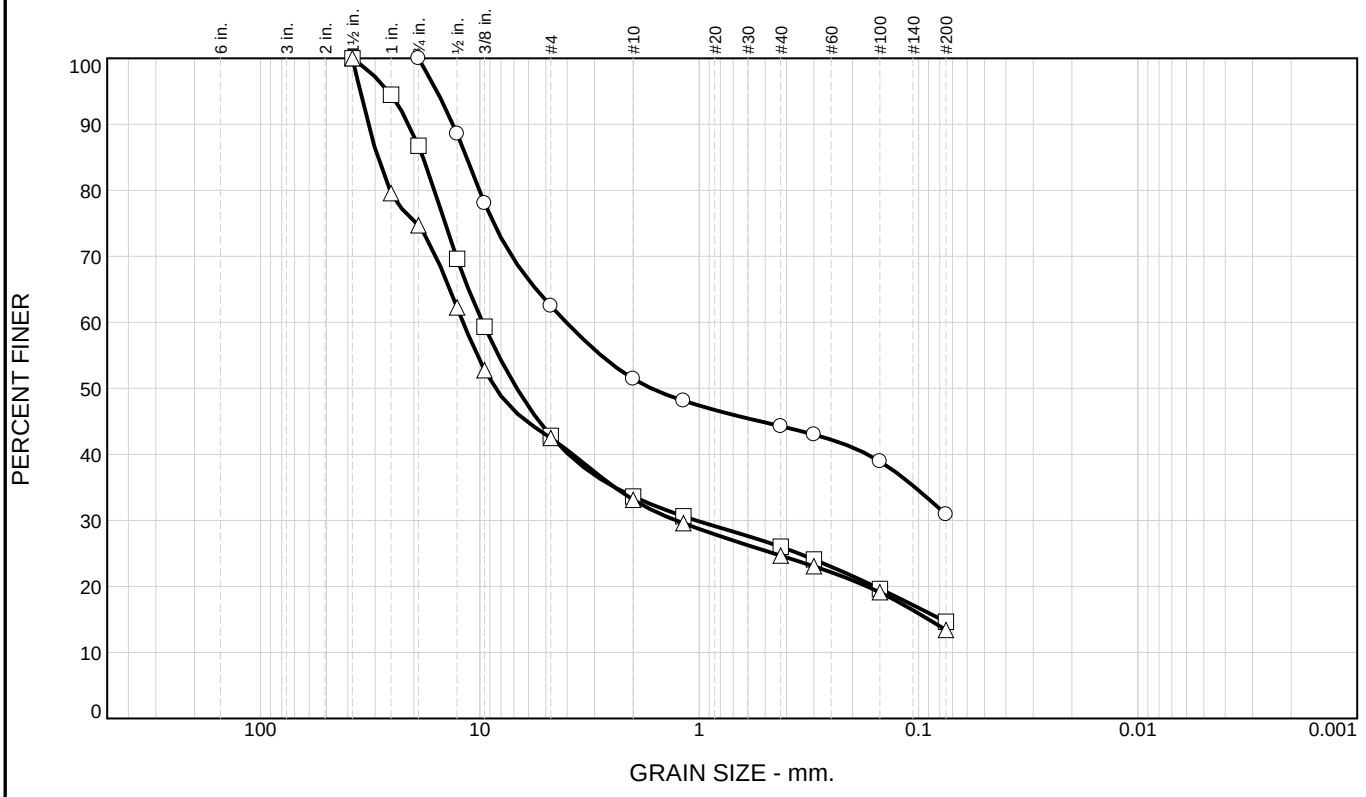
○ Source of Sample: ASW-5 Depth: 20.0 - 20.8' Sample Number: G
□ Source of Sample: ASW-5 Depth: 25.0 - 26.5' Sample Number: H

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	37.5	31.6	30.9		GM	A-2-4(0)	19	20
□	0.0	57.2	28.2	14.6					
△	0.0	57.5	29.1	13.4					

SIEVE inches size	PERCENT FINER ○	□	△
1.5"		100.0	100.0
1"		94.5	79.6
3/4"	100.0	86.8	74.7
1/2"	88.6	69.6	62.3
3/8"	78.1	59.3	52.8
	GRAIN SIZE		
D_{60}	4.0359	9.7251	11.9297
D_{30}		1.0329	1.2746
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	62.5	42.8	42.5
#10	51.5	33.6	33.1
#16	48.1	30.6	29.6
#40	44.3	26.0	24.7
#50	43.0	24.1	23.0
#100	39.0	19.6	19.1
#200	30.9	14.6	13.4

Material Description
○ silty gravel with sand

□ SIEVE ONLY

△ SIEVE ONLY

REMARKS:
○

□

△

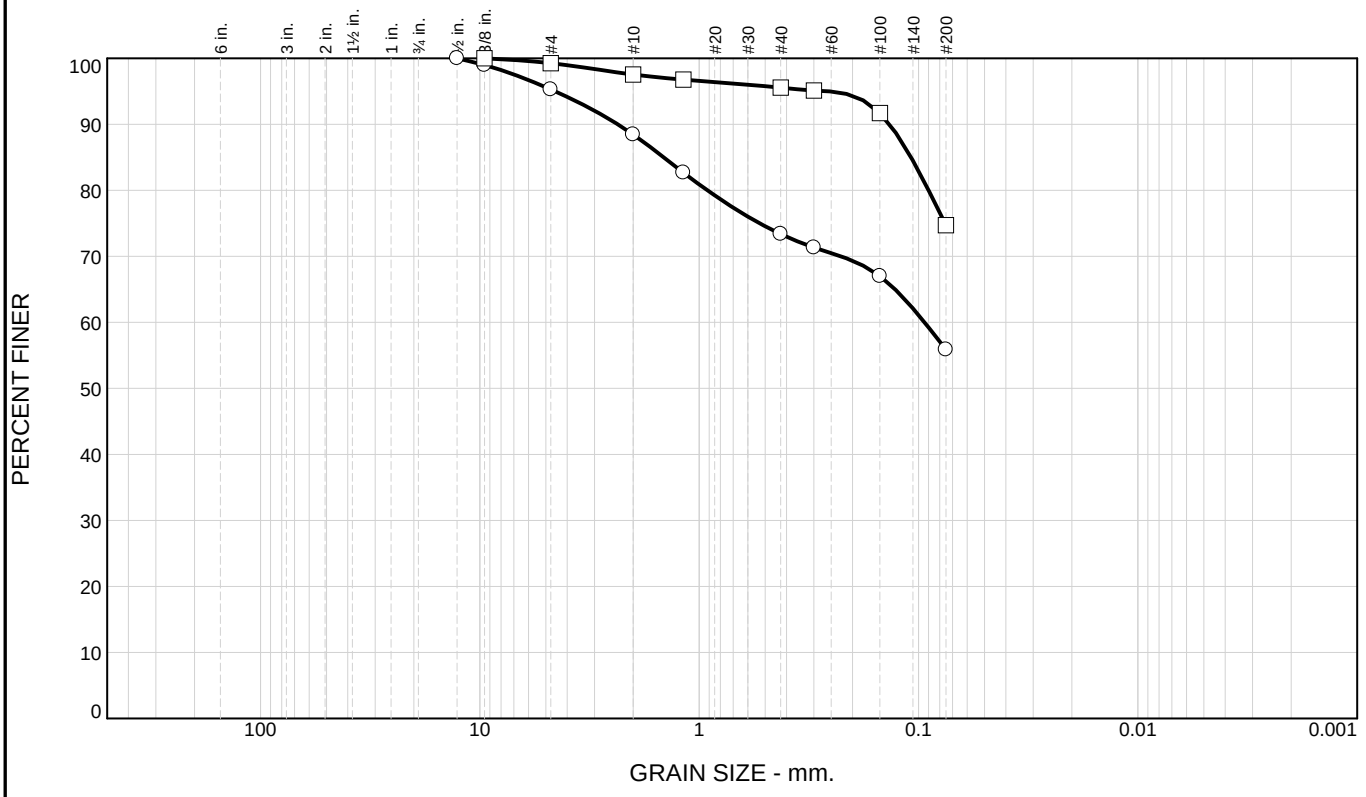
○ Source of Sample: ASW-6 Depth: 2.5 - 4.0' Sample Number: A
□ Source of Sample: ASW-6 Depth: 5.2 - 5.4' Sample Number: B1
△ Source of Sample: ASW-6 Depth: 5.4 - 5.9' Sample Number: B2

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	4.7	39.4	55.9		CH	A-7-6(11)	26	50
□	0.0	0.7	24.6	74.7		CH	A-7-6(34)	26	69

SIEVE inches size	○	□	
	PERCENT FINER		
1/2"	100.0		
3/8"	99.0	100.0	
	GRAIN SIZE		
D_{60}	0.0938		
D_{30}			
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	○	□
	PERCENT FINER	
#4	95.3	99.3
#10	88.5	97.5
#16	82.7	96.8
#40	73.4	95.6
#50	71.3	95.1
#100	67.0	91.7
#200	55.9	74.7

Material Description

○ sandy fat clay

□ fat clay

REMARKS:

○

□

○ Source of Sample: ASW-6 Depth: 20.0 - 21.2' Sample Number: G

□ Source of Sample: ASW-6 Depth: 25.0 - 26.5' Sample Number: H

NEVADA DEPARTMENT OF TRANSPORTATION

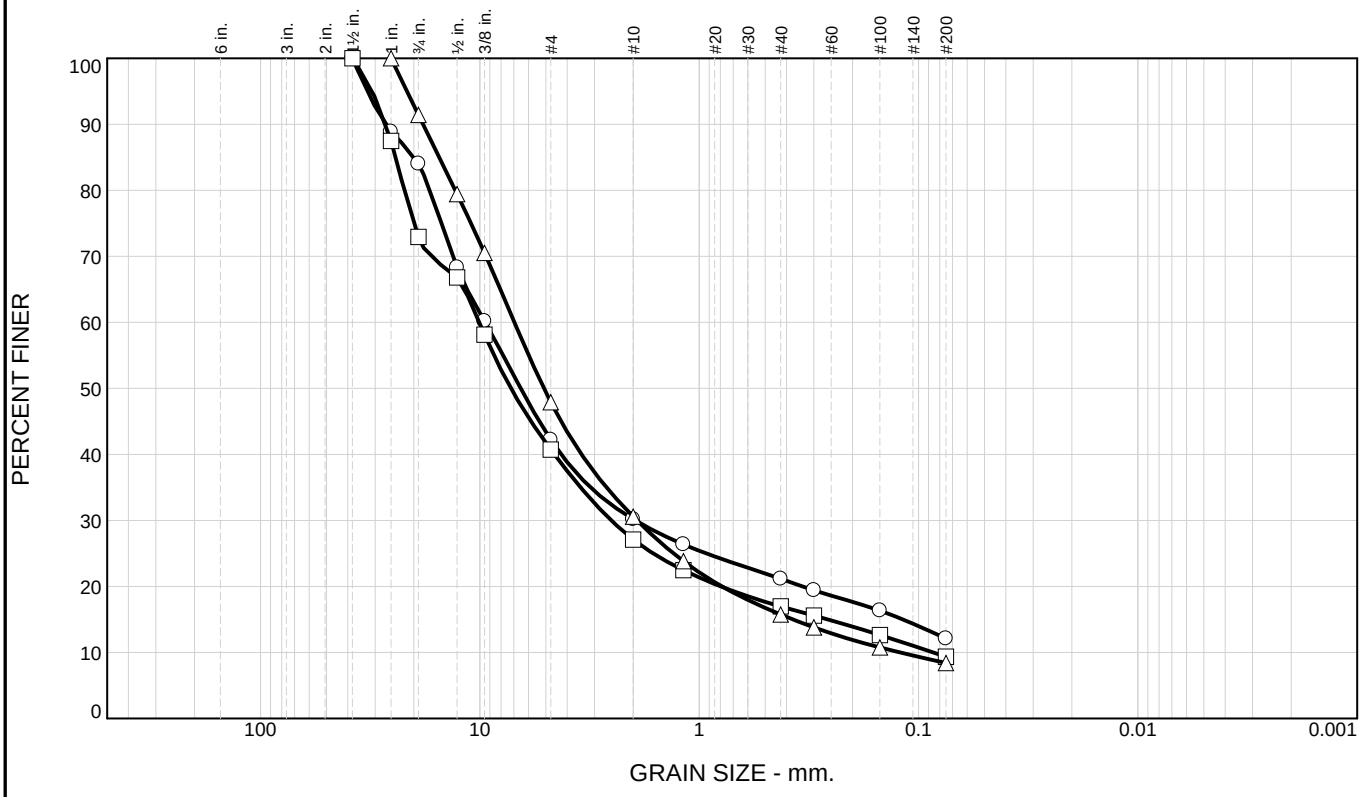
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	57.8	30.1	12.1					
□	0.0	59.3	31.3	9.4		GP-GM	A-1-a	17	19
△	0.0	52.1	39.5	8.4					

SIEVE inches size	PERCENT FINER ○	□	△
1.5"	100.0	100.0	
1"	88.9	87.5	100.0
3/4"	84.0	72.9	91.4
1/2"	68.3	66.8	79.4
3/8"	60.2	58.1	70.5
GRAIN SIZE			
D_{60}	9.4625	10.0600	6.9602
D_{30}	1.9564	2.5179	1.9228
D_{10}		0.0858	0.1215
COEFFICIENTS			
C_c		7.35	4.37
C_u		117.31	57.29

SIEVE number size	PERCENT FINER ○	□	△
#4	42.2	40.7	47.9
#10	30.2	27.1	30.6
#16	26.4	22.5	23.8
#40	21.2	17.0	15.8
#50	19.4	15.6	13.8
#100	16.3	12.6	10.8
#200	12.1	9.4	8.4

Material Description
○ SIEVE ONLY

□ poorly graded gravel with silt and sand

△ SIEVE ONLY

REMARKS:
○

□

△

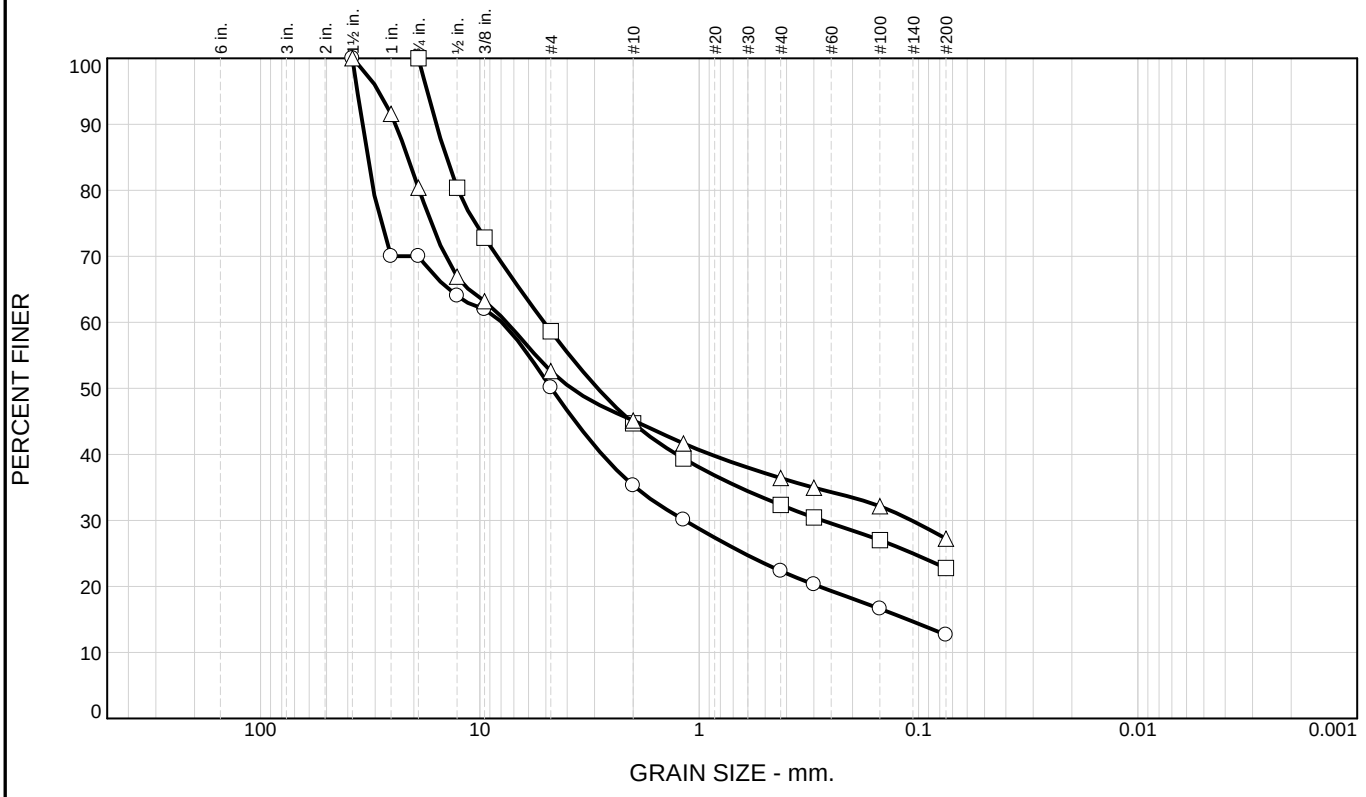
○ Source of Sample: ASW-7 Depth: 2.5 - 4.0' Sample Number: A
□ Source of Sample: ASW-7 Depth: 5.0 - 6.5' Sample Number: B
△ Source of Sample: ASW-7 Depth: 7.5 - 9.0' Sample Number: C

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	49.9	37.4	12.7		GC	A-2-4(0)	23	31
□	0.0	41.3	35.9	22.8		GC	A-2-7(1)	28	50
△	0.0	47.4	25.4	27.2		GC	A-2-7(2)	34	62

SIEVE inches size	PERCENT FINER ○	□	△
1.5"	100.0		100.0
1"	70.0		91.6
3/4"	70.0	100.0	80.4
1/2"	64.0	80.4	66.9
3/8"	62.0	72.8	63.2
GRAIN SIZE			
D_{60}	7.9361	5.0957	7.5402
D_{30}	1.1649	0.2747	0.1074
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	50.1	58.7	52.6
#10	35.3	44.7	45.1
#16	30.1	39.4	41.7
#40	22.3	32.4	36.4
#50	20.3	30.4	35.0
#100	16.6	27.0	32.1
#200	12.7	22.8	27.2

Material Description
○ clayey gravel with sand
□ clayey gravel with sand
△ clayey gravel with sand

REMARKS:
○
□
△

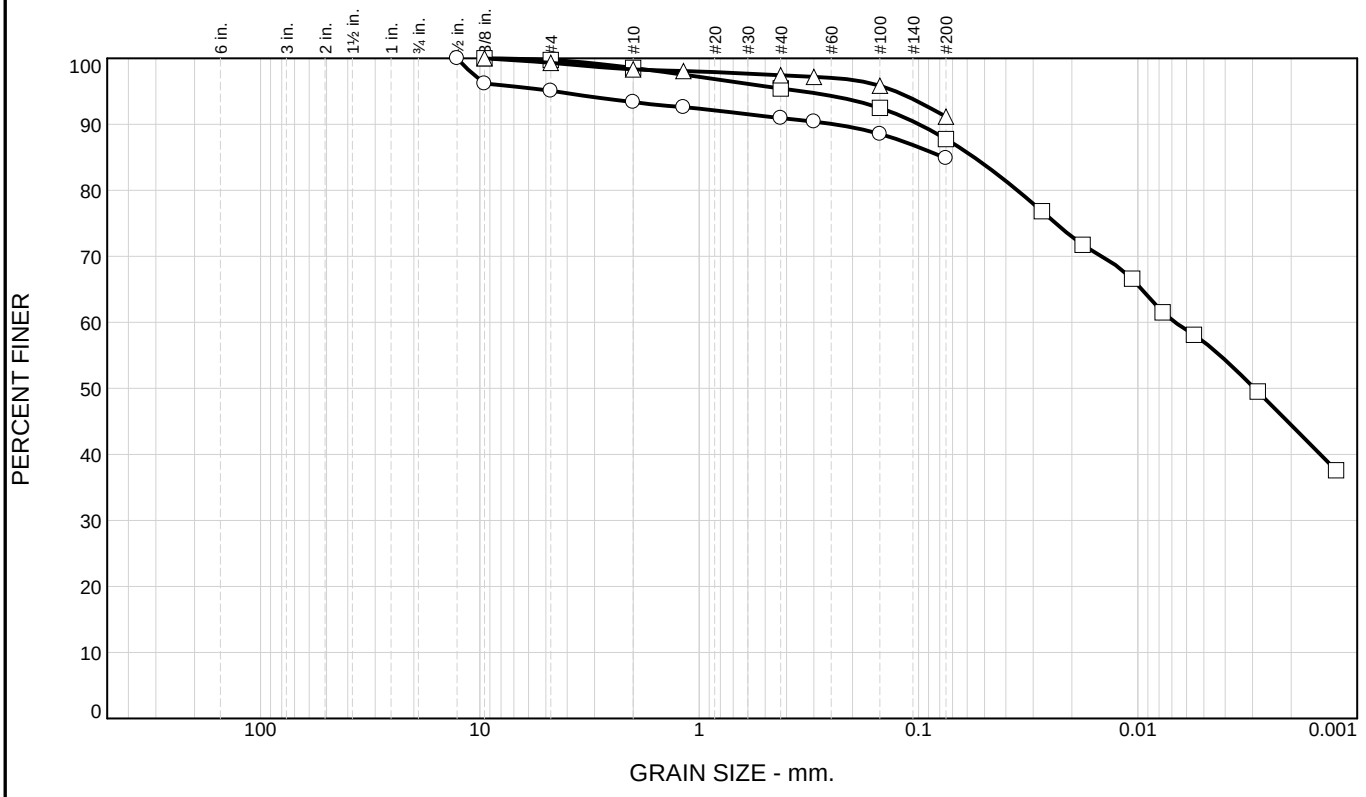
○ Source of Sample: ASW-7 Depth: 10.0 - 10.7' Sample Number: D
□ Source of Sample: ASW-7 Depth: 20.0 - 21.5' Sample Number: F
△ Source of Sample: ASW-7 Depth: 25.0 - 26.4' Sample Number: G

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	4.9	10.2	84.9		ML	A-7-5(13)	30	43
□	0.0	0.3	11.9	43.4	44.4	CL	A-6(13)	20	35
△	0.0	0.7	8.1	91.2		CL	A-6(18)	17	37

SIEVE inches size	PERCENT FINER ○	□	△
1/2"	100.0		
3/8"	96.2	100.0	100.0
GRAIN SIZE			
D_{60}		0.0068	
D_{30}			
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	95.1	99.7	99.3
#10	93.4	98.5	98.3
#16	92.6		98.1
#40	91.0	95.4	97.4
#50	90.4		97.2
#100	88.5	92.5	95.9
#200	84.9	87.8	91.2

Material Description
○ silt
□ lean clay
△ lean clay

REMARKS:
○
□
△

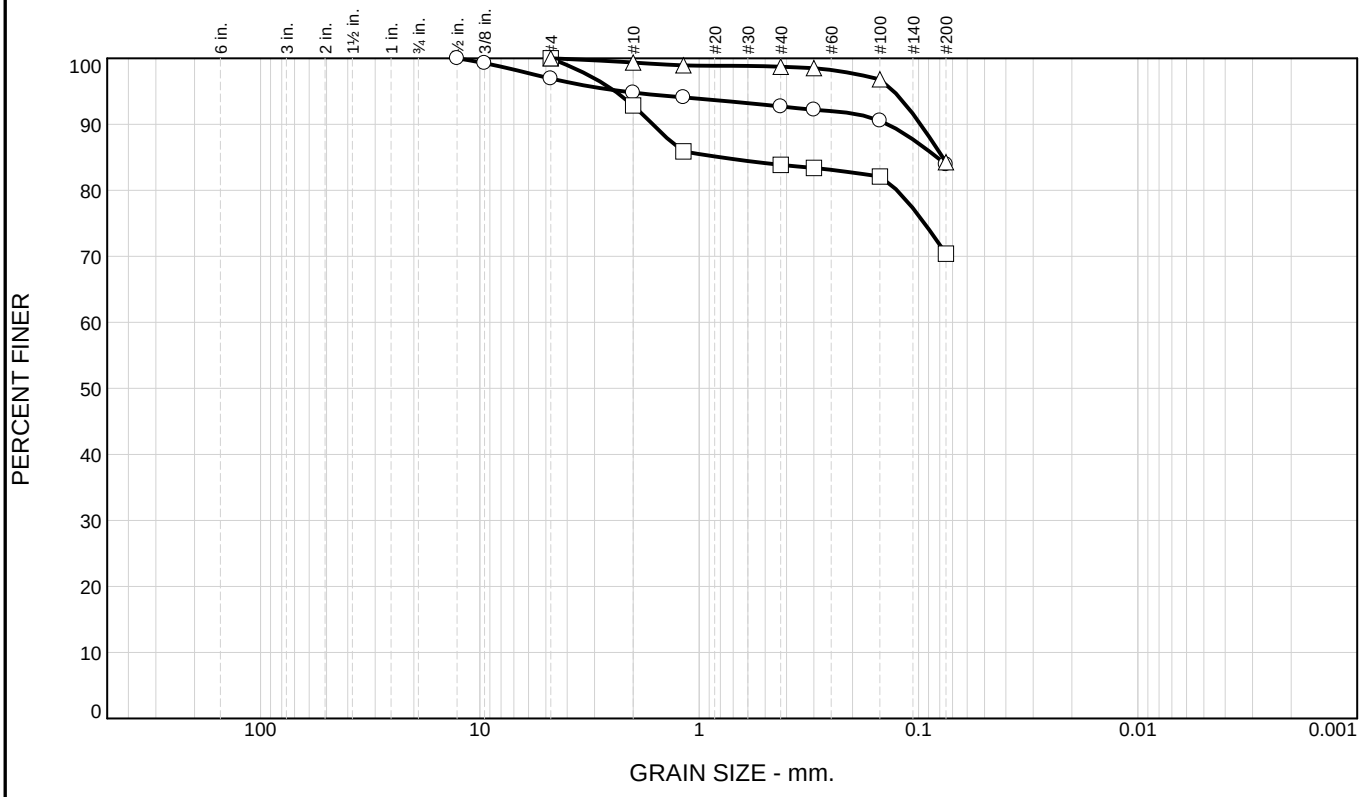
○ Source of Sample: ASW-8 Depth: 2.5 - 4.1' Sample Number: A
□ Source of Sample: ASW-8 Depth: 5.0 - 5.3' Sample Number: B1
△ Source of Sample: ASW-8 Depth: 5.3 - 5.8' Sample Number: B2

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	3.1	13.0	83.9		CL	A-6(15)	17	36
□	0.0	0.0	29.6	70.4		CL	A-7-6(20)	16	48
△	0.0	0.0	15.7	84.3		CL	A-7-6(19)	18	41

SIEVE inches size	PERCENT FINER ○	□	△
1/2"	100.0		
3/8"	99.3		
GRAIN SIZE			
D_{60}			
D_{30}			
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	96.9	100.0	100.0
#10	94.8	92.9	99.4
#16	94.1	85.9	98.9
#40	92.7	83.9	98.7
#50	92.2	83.4	98.5
#100	90.5	82.1	96.8
#200	83.9	70.4	84.3

Material Description
○ lean clay with sand
□ lean clay with sand
△ lean clay with sand

REMARKS:
○
□
△

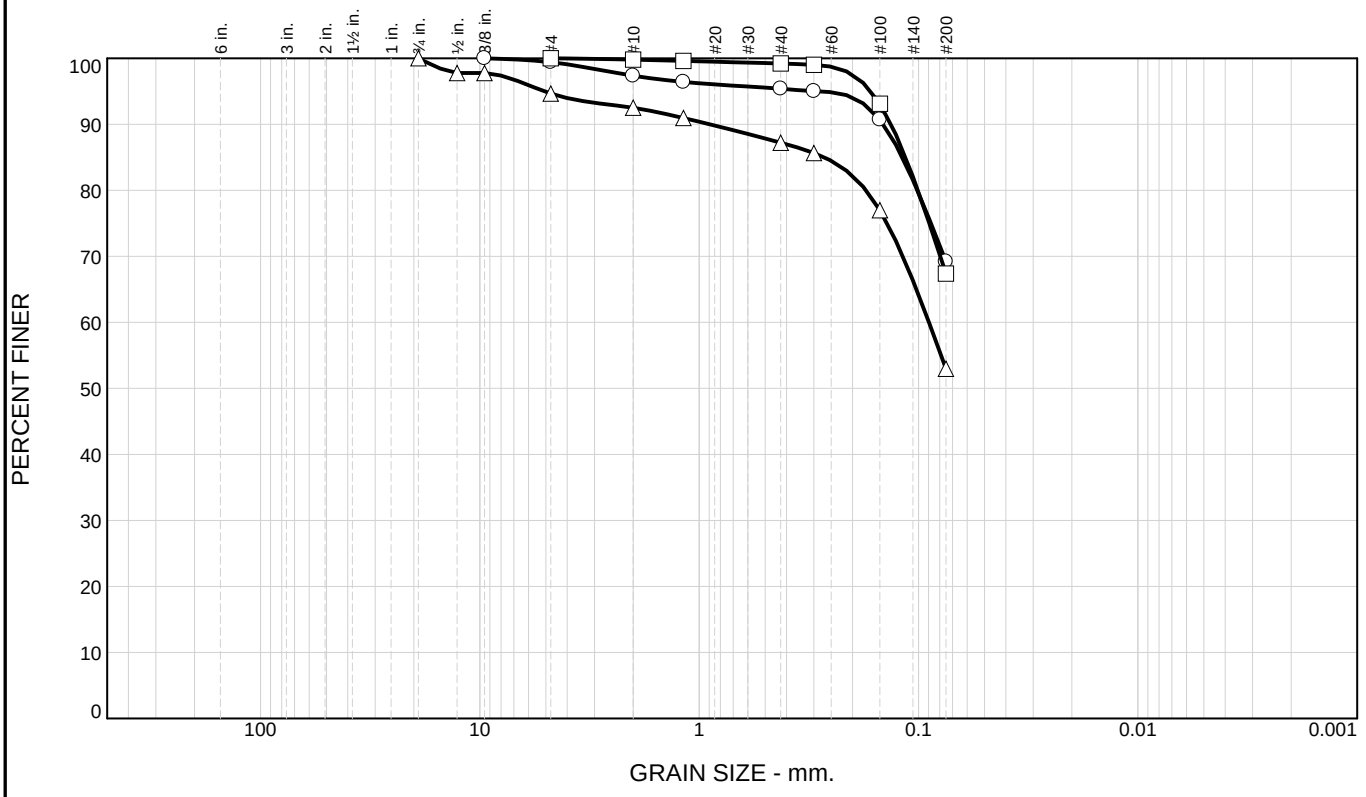
○ Source of Sample: ASW-8 Depth: 5.8 - 6.3' Sample Number: B3
□ Source of Sample: ASW-8 Depth: 6.3 - 6.5' Sample Number: B4
△ Source of Sample: ASW-8 Depth: 7.8 - 8.3' Sample Number: C1

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	0.6	30.2	69.2		CL	A-6(14)	17	40
□	0.0	0.0	32.6	67.4		CL	A-6(14)	15	39
△	0.0	5.3	41.7	53.0		CL	A-7-6(10)	16	42

SIEVE inches size	PERCENT FINER ○	□	△
3/4"			100.0
1/2"			97.8
3/8"	100.0		97.8
GRAIN SIZE			
D_{60}			0.0896
D_{30}			
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	99.4	100.0	94.7
#10	97.4	99.8	92.5
#16	96.4	99.6	91.0
#40	95.4	99.2	87.2
#50	95.0	99.0	85.7
#100	90.7	93.1	77.0
#200	69.2	67.4	53.0

Material Description
○ sandy lean clay
□ sandy lean clay
△ sandy lean clay

REMARKS:
○
□
△

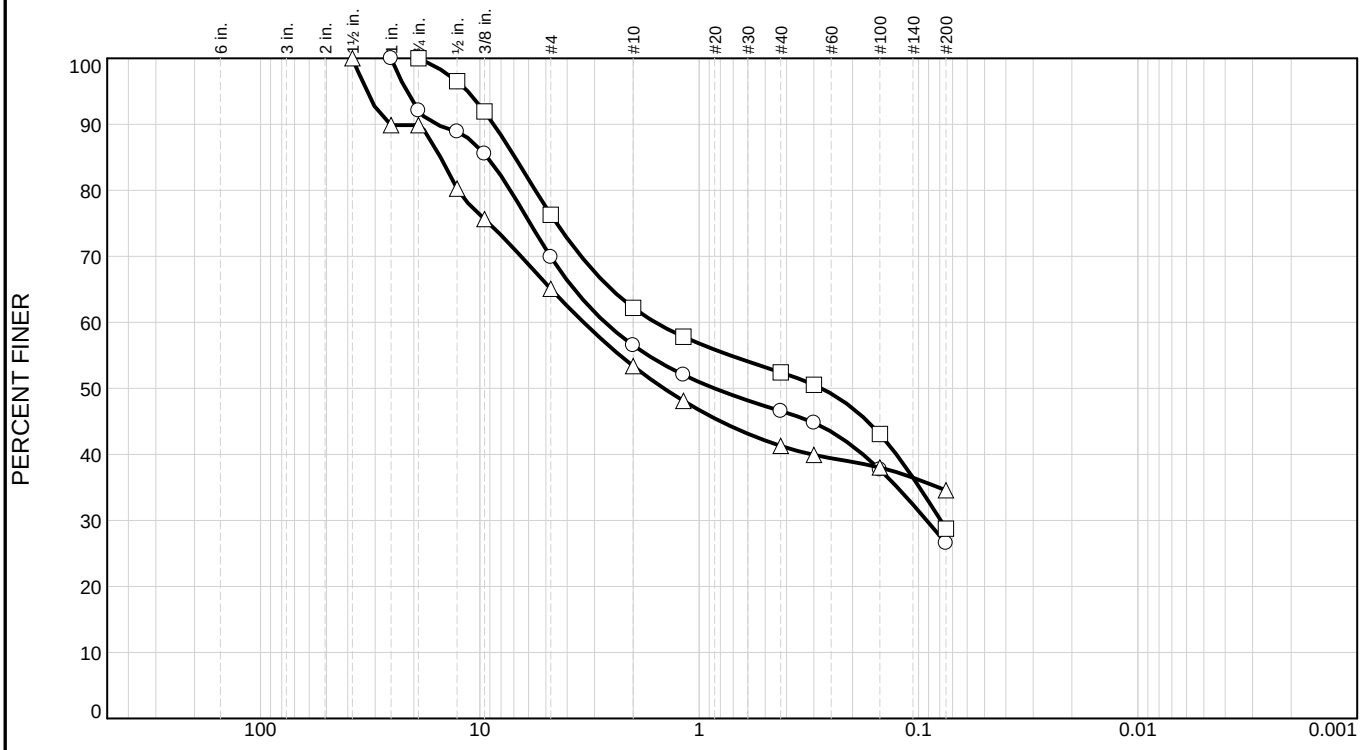
○ Source of Sample: ASW-8 Depth: 8.3 - 8.8' Sample Number: C2
□ Source of Sample: ASW-8 Depth: 8.8 - 9.0' Sample Number: C3
△ Source of Sample: ASW-8 Depth: 10.0 - 11.5' Sample Number: D

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	30.1	43.3	26.6					
□	0.0	23.7	47.5	28.8		SC	A-2-6(1)	17	36
△	0.0	34.9	30.5	34.6		GC	A-2-7(2)	22	44

SIEVE inches size	PERCENT FINER ○	□	△
1.5"			100.0
1"	100.0		89.9
3/4"	92.1	100.0	89.9
1/2"	88.9	96.5	80.3
3/8"	85.6	91.9	75.6
	GRAIN SIZE		
D_{60}	2.6901	1.5873	3.3673
D_{30}	0.0917	0.0792	
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	69.9	76.3	65.1
#10	56.5	62.2	53.4
#16	52.1	57.8	48.1
#40	46.6	52.4	41.3
#50	44.8	50.5	39.9
#100	37.7	43.1	38.0
#200	26.6	28.8	34.6

Material Description
○ SIEVE ONLY

□ clayey sand with gravel

△ clayey gravel with sand

REMARKS:
○

□

△

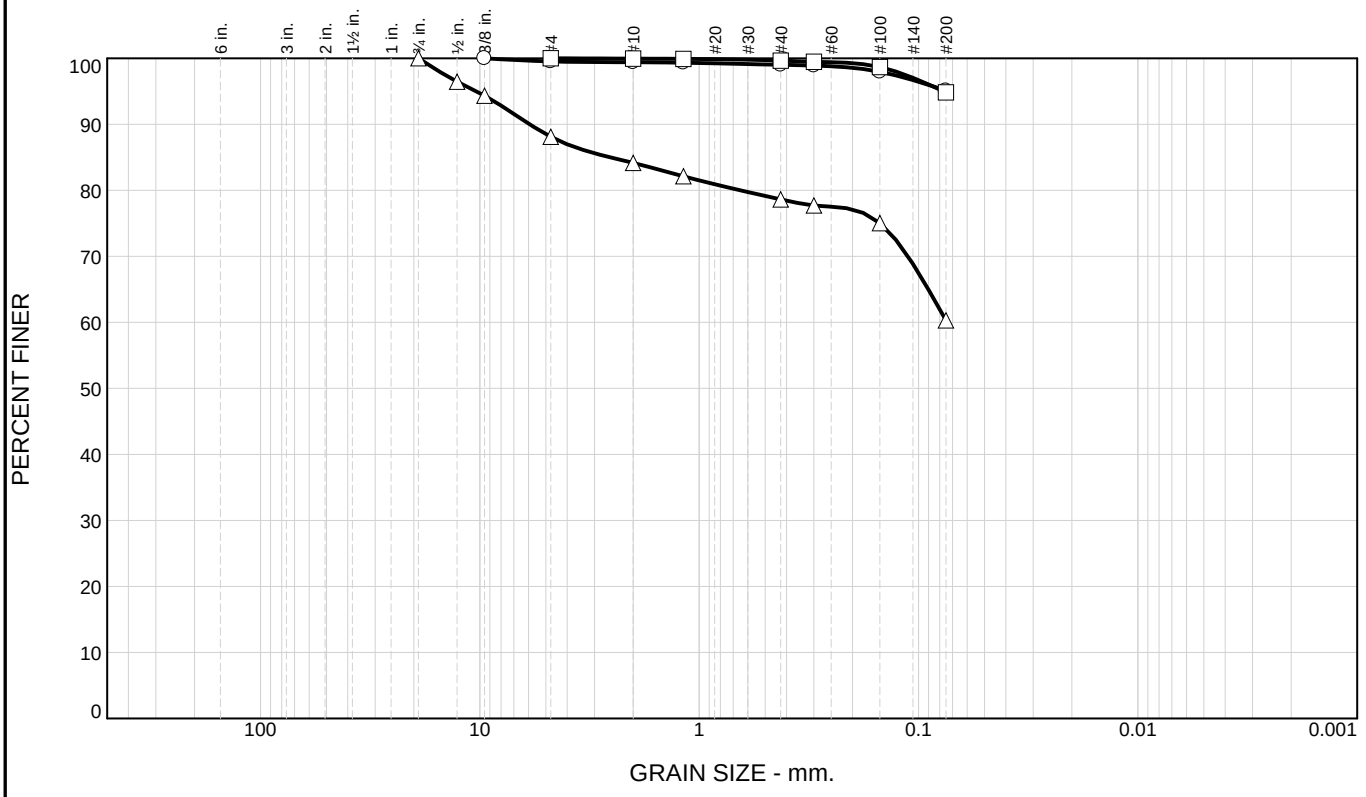
○ Source of Sample: ASW-8 Depth: 15.0 - 16.5' Sample Number: E
□ Source of Sample: ASW-8 Depth: 20.0 - 21.5' Sample Number: F
△ Source of Sample: ASW-8 Depth: 25.0 - 26.5' Sample Number: G

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	0.5	4.4	95.1					
□	0.0	0.0	5.2	94.8		CL	A-6(19)	19	38
△	0.0	11.9	27.8	60.3		CL	A-6(7)	15	32

SIEVE inches size	PERCENT FINER ○	□	△
3/4"			100.0
1/2"			96.5
3/8"	100.0		94.3
GRAIN SIZE			
D_{60}			
D_{30}			
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	99.5	100.0	88.1
#10	99.4	100.0	84.2
#16	99.3	99.9	82.1
#40	99.0	99.6	78.6
#50	98.9	99.5	77.7
#100	98.0	98.7	75.0
#200	95.1	94.8	60.3

Material Description
○ SIEVE ONLY
□ lean clay
△ sandy lean clay

REMARKS:
○
□
△

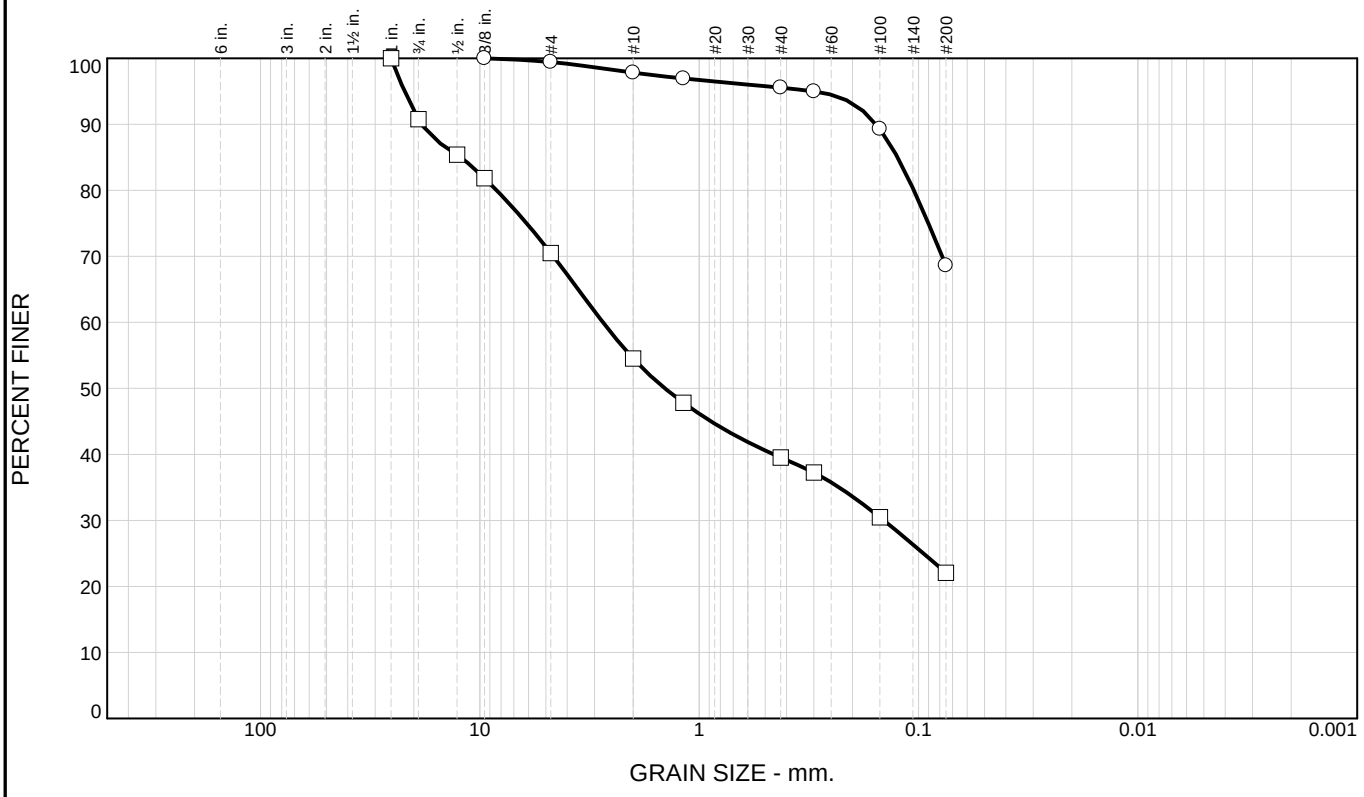
○ Source of Sample: ASW-9 Depth: 2.5 - 4.0' Sample Number: A
□ Source of Sample: ASW-9 Depth: 5.0 - 6.5' Sample Number: B
△ Source of Sample: ASW-9 Depth: 7.5 - 9.0' Sample Number: C

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	0.6	30.8	68.6		CL	A-7-6(18)	16	45
□	0.0	29.5	48.4	22.1					

SIEVE inches size	○	□
1"		100.0
3/4"		90.8
1/2"		85.4
3/8"	100.0	81.8
GRAIN SIZE		
D_{60}		2.7465
D_{30}		0.1439
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	99.4	70.5
#10	97.8	54.5
#16	96.9	47.8
#40	95.6	39.5
#50	95.0	37.3
#100	89.3	30.5
#200	68.6	22.1

Material Description
○ sandy lean clay

□ SIEVE ONLY

REMARKS:
○

□

○ Source of Sample: ASW-9 Depth: 10.0 - 11.5' Sample Number: D

□ Source of Sample: ASW-9 Depth: 15.0 - 16.5' Sample Number: E

NEVADA DEPARTMENT OF TRANSPORTATION

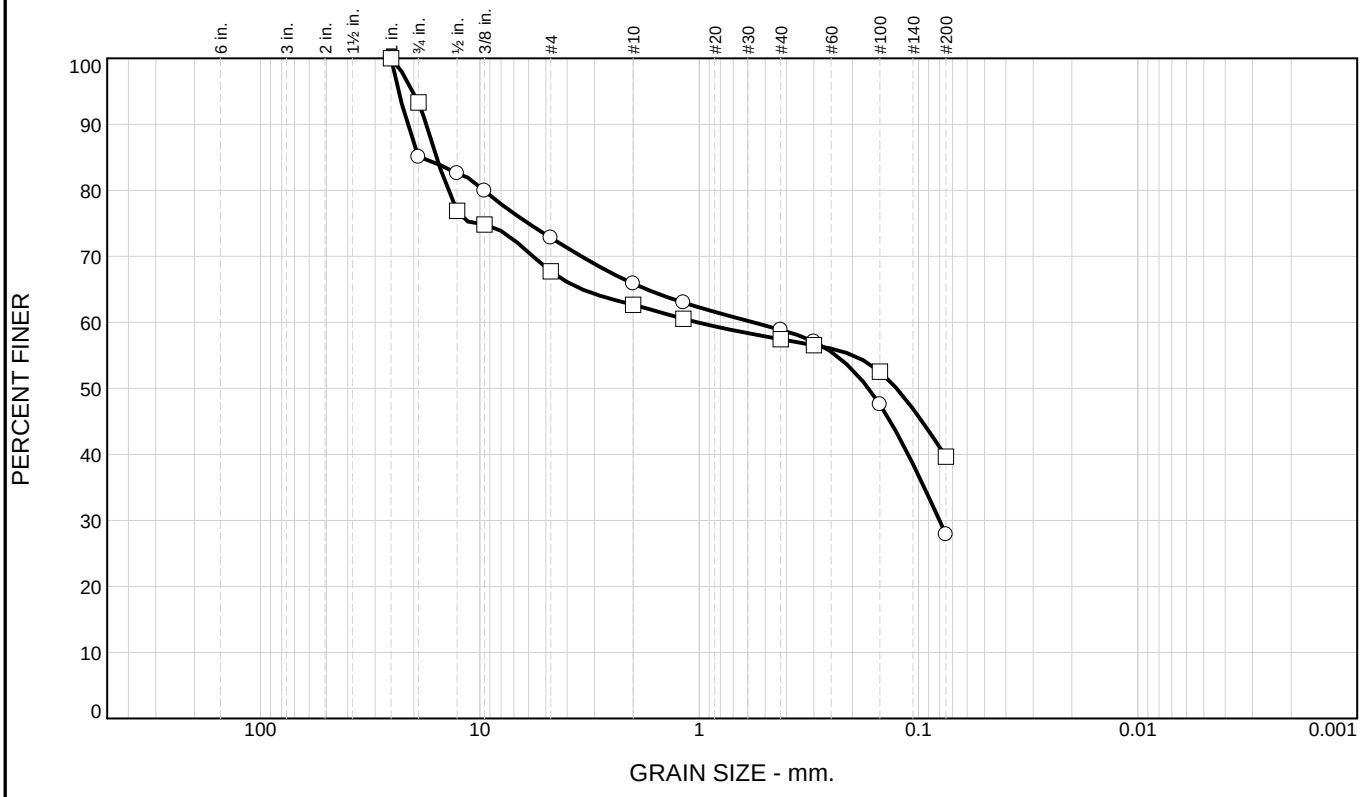
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	27.2	44.9	27.9		SC	A-2-6(1)	18	33
□	0.0	32.3	28.0	39.7		GC	A-7-6(10)	25	69

SIEVE inches size	○	□
1"	100.0	100.0
3/4"	85.1	93.3
1/2"	82.6	76.9
3/8"	79.9	74.8
GRAIN SIZE		
D_{60}	0.5665	1.0190
D_{30}	0.0802	
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	72.8	67.7
#10	65.9	62.7
#16	63.0	60.5
#40	58.9	57.4
#50	57.1	56.5
#100	47.6	52.5
#200	27.9	39.7

Material Description

○ clayey sand with gravel

□ clayey gravel with sand

REMARKS:

○

□

○ Source of Sample: ASW-9 Depth: 20.0 - 21.5' Sample Number: F

□ Source of Sample: ASW-9 Depth: 25.0 - 26.5' Sample Number: G

NEVADA DEPARTMENT OF TRANSPORTATION

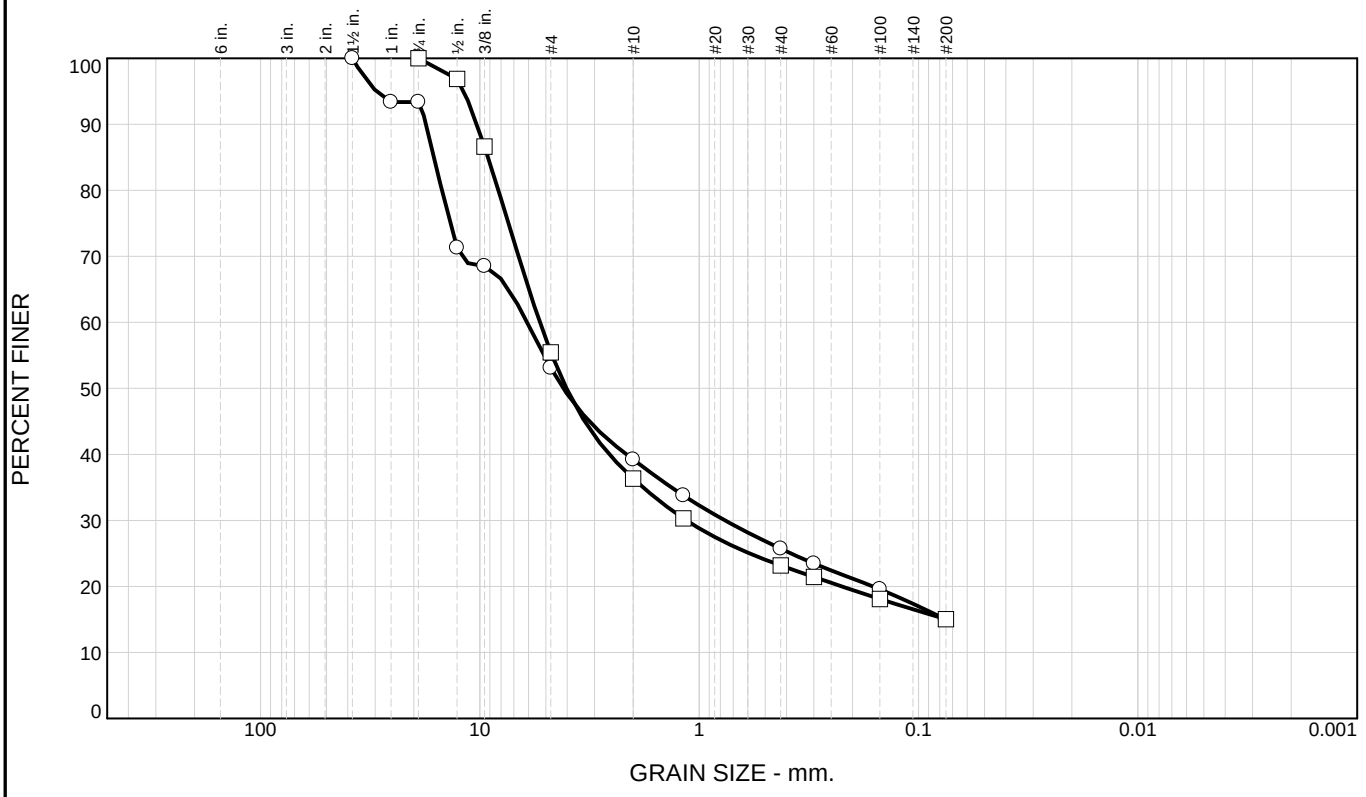
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	46.9	38.1	15.0		GM	A-1-a	16	17
□	0.0	44.5	40.5	15.0		GC-GM	A-2-4(0)	21	28

SIEVE inches size	PERCENT FINER ○	PERCENT FINER □
1.5"	100.0	
1"	93.4	
3/4"	93.4	100.0
1/2"	71.3	96.9
3/8"	68.5	86.6
GRAIN SIZE		
D_{60}	6.0847	5.3305
D_{30}	0.7632	1.1427
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	PERCENT FINER ○	PERCENT FINER □
#4	53.1	55.5
#10	39.2	36.3
#16	33.8	30.3
#40	25.7	23.2
#50	23.5	21.4
#100	19.6	18.1
#200	15.0	15.0

Material Description

○ silty gravel with sand

□ silty clayey gravel with sand

REMARKS:

○

□

○ Source of Sample: ASW-10 Depth: 2.5 - 3.8' Sample Number: A

□ Source of Sample: ASW-10 Depth: 10.0 - 10.7' Sample Number: D

NEVADA DEPARTMENT OF TRANSPORTATION

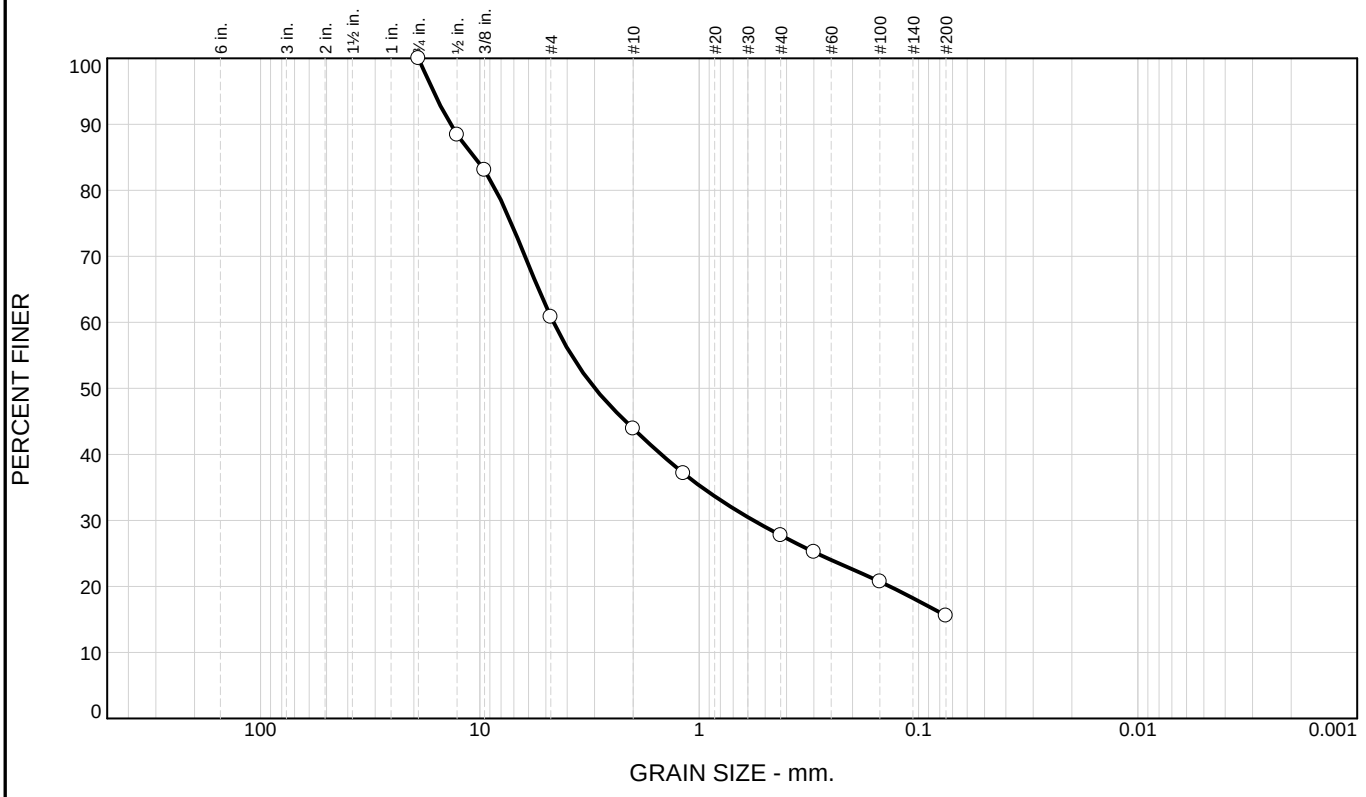
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	39.2	45.2	15.6		SC	A-2-6(0)	20	34

SIEVE inches size	PERCENT FINER ○		
3/4"	100.0		
1/2"	88.4		
3/8"	83.1		
	GRAIN SIZE		
D_{60}	4.6208		
D_{30}	0.5650		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	60.8		
#10	43.9		
#16	37.1		
#40	27.7		
#50	25.2		
#100	20.7		
#200	15.6		

Material Description

○ clayey sand with gravel

REMARKS:

○

○ Source of Sample: ASW-11 Depth: 7.5 - 7.9' Sample Number: C

NEVADA DEPARTMENT OF TRANSPORTATION

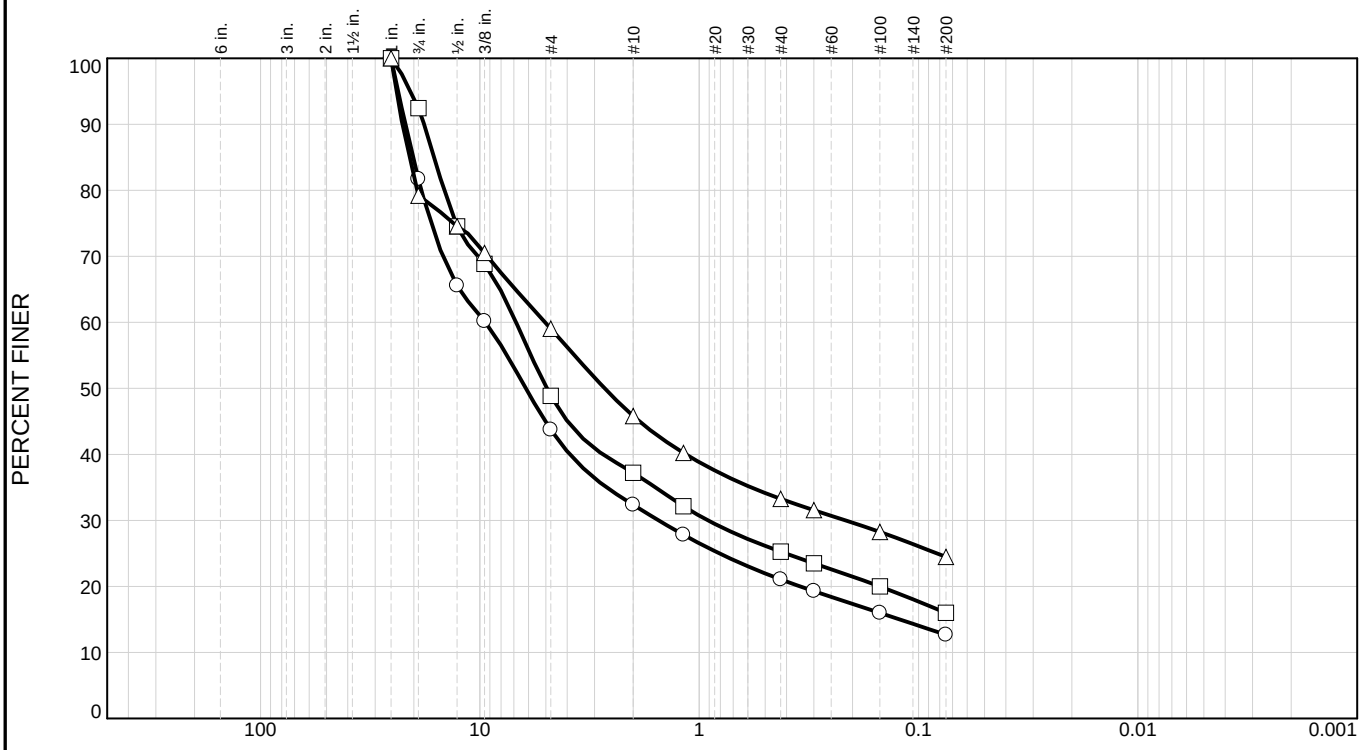
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	56.3	31.0	12.7		GC	A-2-4(0)	18	27
□	0.0	51.1	32.9	16.0		GC	A-2-6(0)	21	32
△	0.0	41.0	34.5	24.5		GC	A-2-6(0)	19	32

SIEVE inches size	PERCENT FINER ○	□	△
1"	100.0	100.0	100.0
3/4"	81.7	92.5	79.2
1/2"	65.6	74.5	74.6
3/8"	60.2	68.9	70.5
GRAIN SIZE			
D_{60}	9.4316	6.8367	5.0428
D_{30}	1.5308	0.9119	0.2149
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	43.7	48.9	59.0
#10	32.4	37.2	45.8
#16	27.8	32.2	40.2
#40	21.1	25.3	33.3
#50	19.3	23.5	31.6
#100	16.0	20.0	28.3
#200	12.7	16.0	24.5

Material Description
○ clayey gravel with sand

□ clayey gravel with sand

△ clayey gravel with sand

REMARKS:
○

□

△

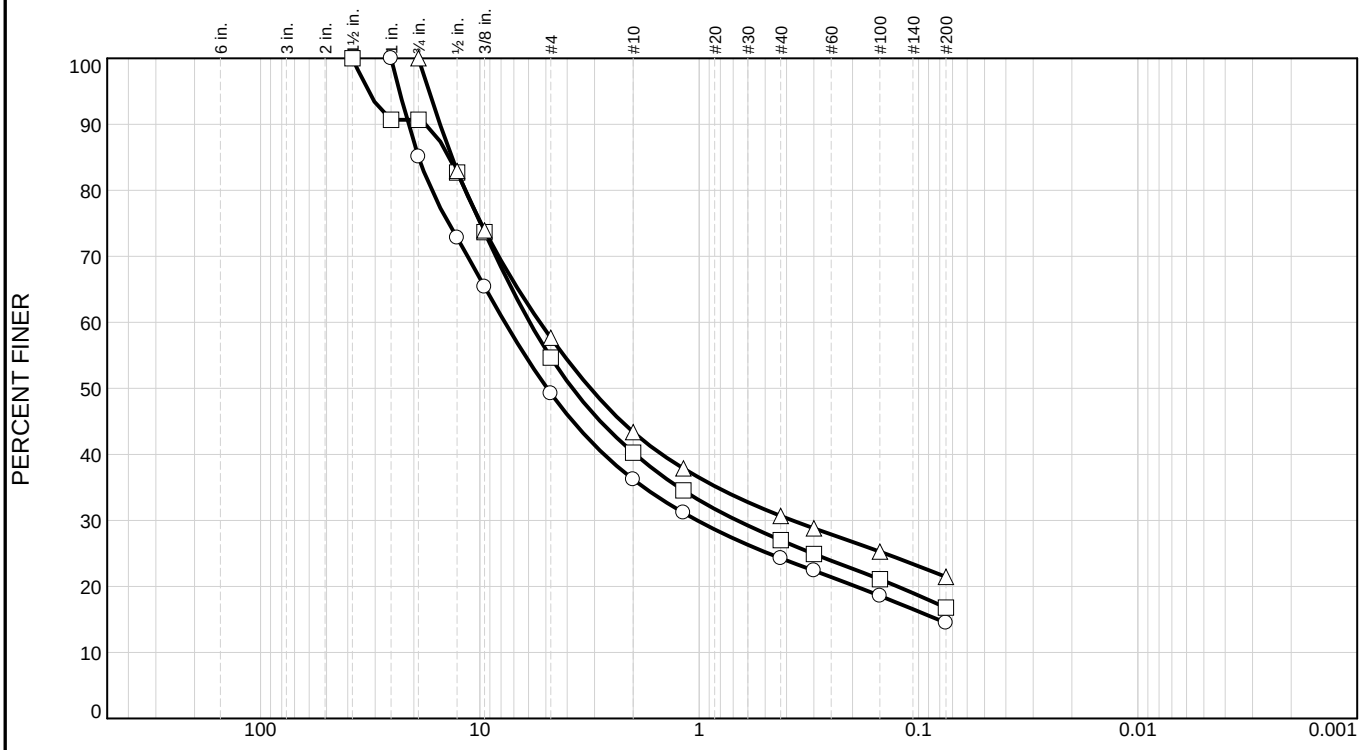
○ Source of Sample: ASW-12 Depth: 2.5 - 4.0' Sample Number: A
□ Source of Sample: ASW-12 Depth: 5.0 - 6.5' Sample Number: B
△ Source of Sample: ASW-12 Depth: 7.5 - 10.0' Sample Number: C

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	50.8	34.7	14.5		GC	A-2-6(0)	21	32
□	0.0	45.3	37.9	16.8		GC	A-2-6(0)	19	32
△	0.0	42.3	36.2	21.5		GC	A-2-6(0)	22	33

SIEVE inches size	PERCENT FINER ○	□	△
1.5"		100.0	
1"	100.0	90.7	
3/4"	85.1	90.7	100.0
1/2"	72.8	82.7	82.9
3/8"	65.4	73.7	73.9
GRAIN SIZE			
D_{60}	7.6924	5.9265	5.3245
D_{30}	1.0203	0.6714	0.3760
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	49.2	54.7	57.7
#10	36.2	40.3	43.4
#16	31.2	34.5	37.9
#40	24.3	27.0	30.7
#50	22.4	24.9	28.8
#100	18.6	21.1	25.3
#200	14.5	16.8	21.5

Material Description
○ clayey gravel with sand
□ clayey gravel with sand
△ clayey gravel with sand

REMARKS:
○
□
△

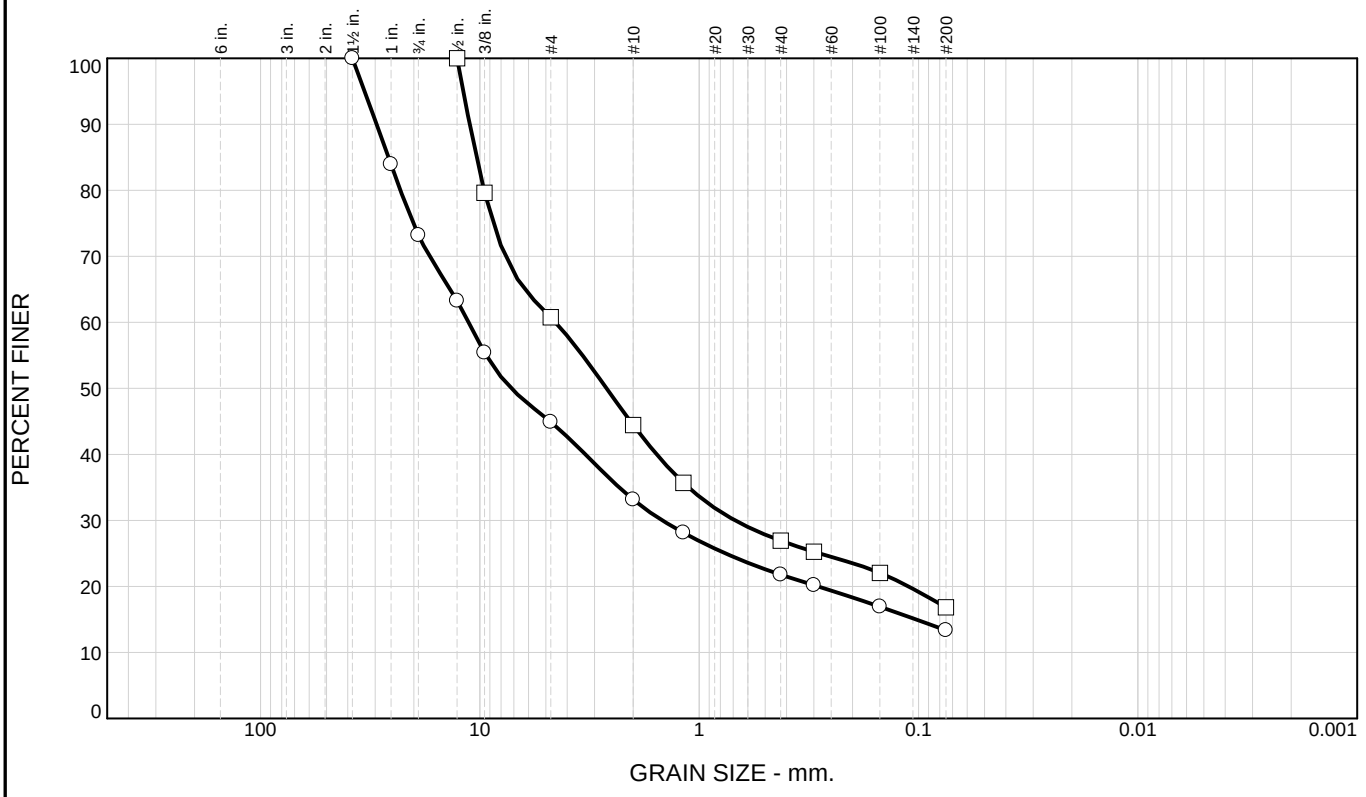
○ Source of Sample: ASW-12 Depth: 10.0 - 11.5' Sample Number: D
□ Source of Sample: ASW-12 Depth: 12.5 - 14.0' Sample Number: E
△ Source of Sample: ASW-12 Depth: 15.0 - 16.5' Sample Number: F

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	55.1	31.5	13.4		GC	A-2-6(0)	20	36
□	0.0	39.2	44.0	16.8		SC-SM	A-2-4(0)	19	26

SIEVE inches size	○	□
1.5"	100.0	
1"	83.9	
3/4"	73.2	
1/2"	63.3	100.0
3/8"	55.4	79.6
GRAIN SIZE		
D_{60}	11.2675	4.5170
D_{30}	1.4738	0.6856
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	44.9	60.8
#10	33.1	44.4
#16	28.1	35.7
#40	21.8	26.9
#50	20.2	25.3
#100	16.9	22.1
#200	13.4	16.8

Material Description

○ clayey gravel with sand

□ silty, clayey sand with gravel

REMARKS:

○

□

○ Source of Sample: ASW-12 Depth: 20.0 - 21.5' Sample Number: G

□ Source of Sample: ASW-12 Depth: 25.0 - 25.4' Sample Number: H

NEVADA DEPARTMENT OF TRANSPORTATION

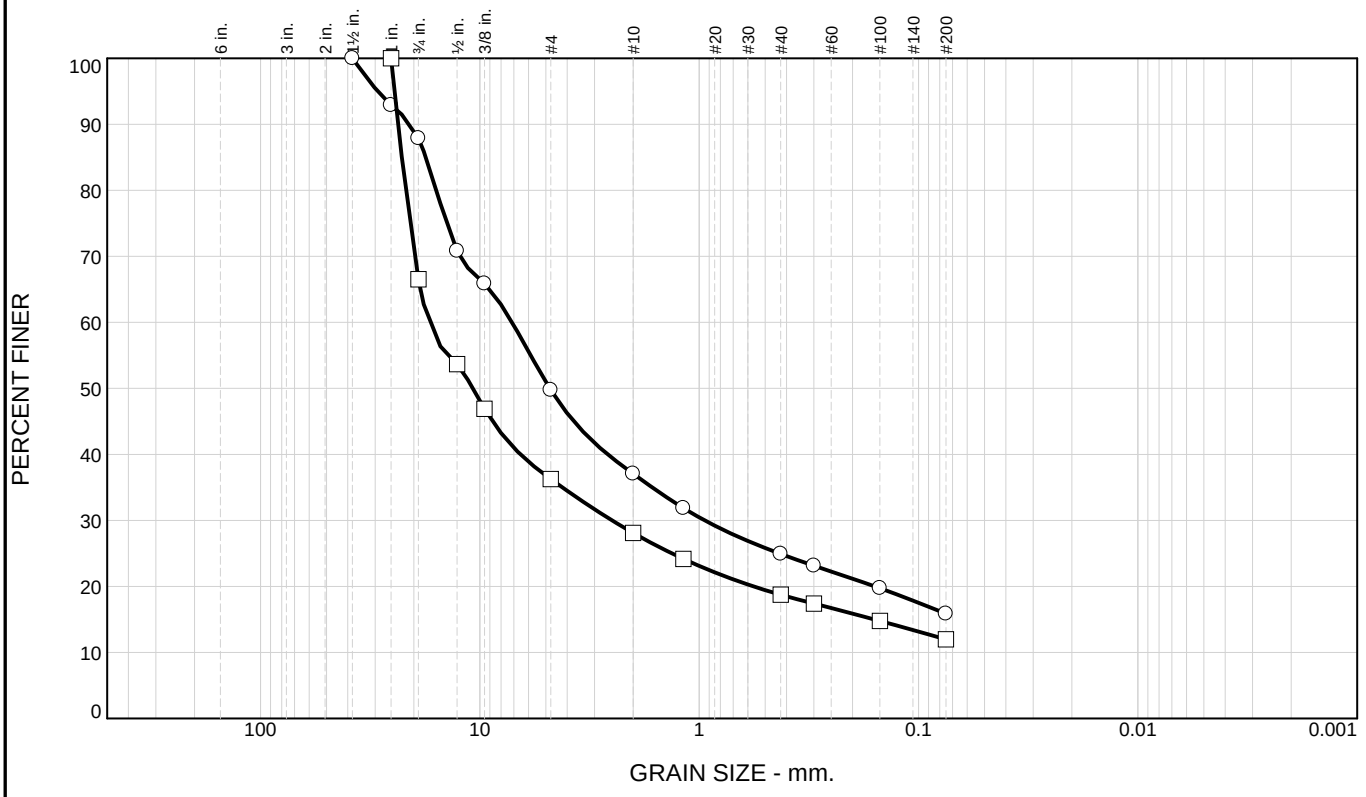
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	50.2	33.9	15.9		GC	A-2-6(0)	22	34
□	0.0	63.7	24.3	12.0		GP-GC	A-2-6(0)	20	31

SIEVE inches size	○	□
1.5"	100.0	
1"	92.9	100.0
3/4"	87.9	66.5
1/2"	70.8	53.7
3/8"	65.9	46.9
GRAIN SIZE		
D_{60}	7.1280	17.0777
D_{30}	0.9437	2.4967
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	○	□
#4	49.8	36.3
#10	37.1	28.1
#16	31.9	24.2
#40	24.9	18.8
#50	23.1	17.4
#100	19.7	14.8
#200	15.9	12.0

Material Description

○ clayey gravel with sand

□ poorly graded gravel with clay and sand

REMARKS:

○

□

○ Source of Sample: ASW-13 Depth: 2.5 - 4.0' Sample Number: A

□ Source of Sample: ASW-13 Depth: 5.0 - 6.3' Sample Number: B

NEVADA DEPARTMENT OF TRANSPORTATION

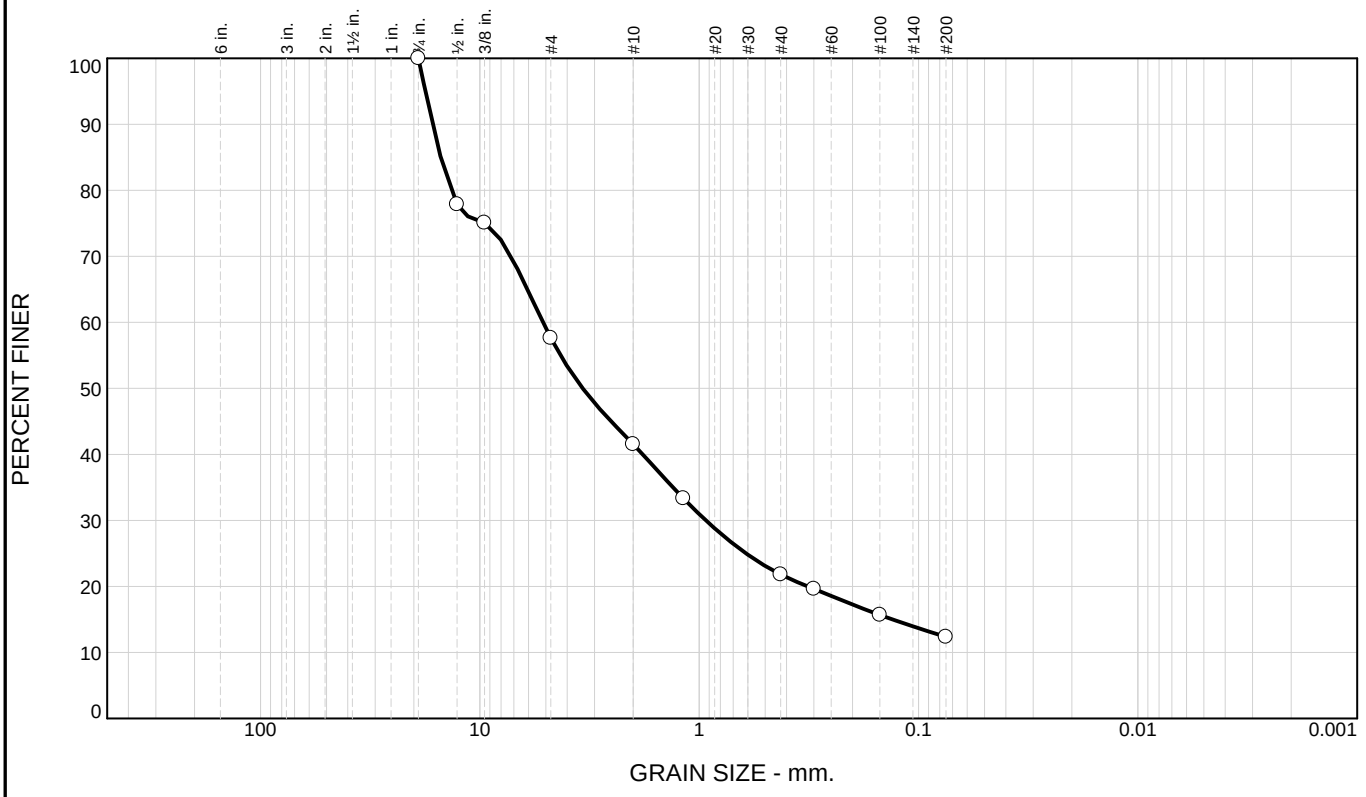
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	42.4	45.2	12.4		SC	A-2-4(0)	18	26

SIEVE inches size	PERCENT FINER ○		
3/4"	100.0		
1/2"	77.9		
3/8"	75.1		
	GRAIN SIZE		
D_{60}	5.1566		
D_{30}	0.9322		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	57.6		
#10	41.5		
#16	33.3		
#40	21.8		
#50	19.6		
#100	15.7		
#200	12.4		

Material Description

○ clayey sand with gravel

REMARKS:

○

○ Source of Sample: ASW-14 Depth: 5.0 - 5.5' Sample Number: B

NEVADA DEPARTMENT OF TRANSPORTATION

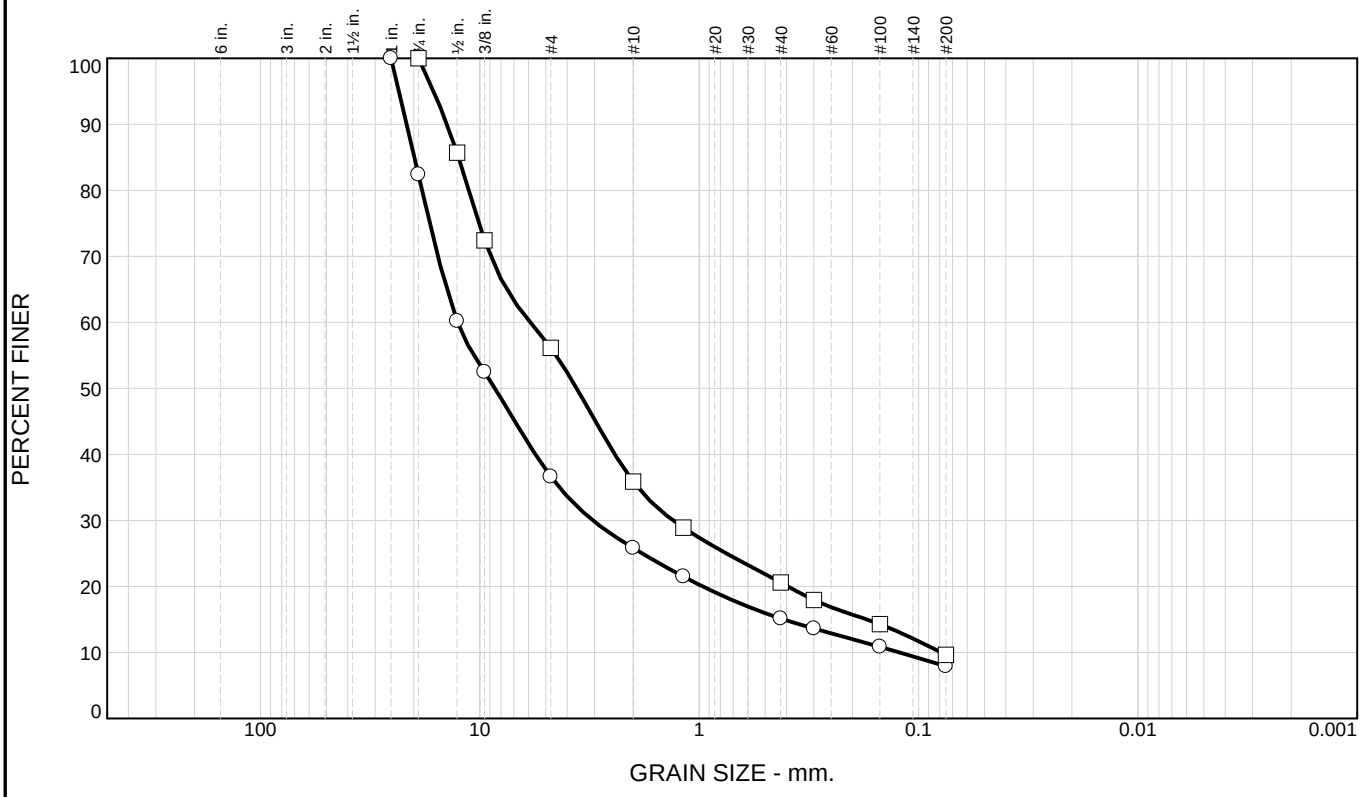
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	63.4	28.7	7.9		GP-GM	A-1-a	NP	16
□	0.0	43.9	46.5	9.6		SP-SC	A-1-a	14	18

SIEVE inches size	○	□
1"	100.0	
3/4"	82.4	100.0
1/2"	60.2	85.7
3/8"	52.5	72.4
GRAIN SIZE		
D_{60}	12.6363	5.8939
D_{30}	3.0576	1.3162
D_{10}	0.1223	0.0788
COEFFICIENTS		
C_c	6.05	3.73
C_u	103.29	74.76

SIEVE number size	○	□
#4	36.6	56.1
#10	25.8	35.9
#16	21.5	28.9
#40	15.1	20.6
#50	13.6	17.9
#100	10.8	14.3
#200	7.9	9.6

Material Description

○ poorly graded gravel with silt and sand

□ poorly graded sand with siltyclay and gravel

REMARKS:

○

□

○ Source of Sample: ASW-15 Depth: 5.0 - 6.5' Sample Number: A

□ Source of Sample: ASW-15 Depth: 20.0 - 20.3' Sample Number: F

NEVADA DEPARTMENT OF TRANSPORTATION

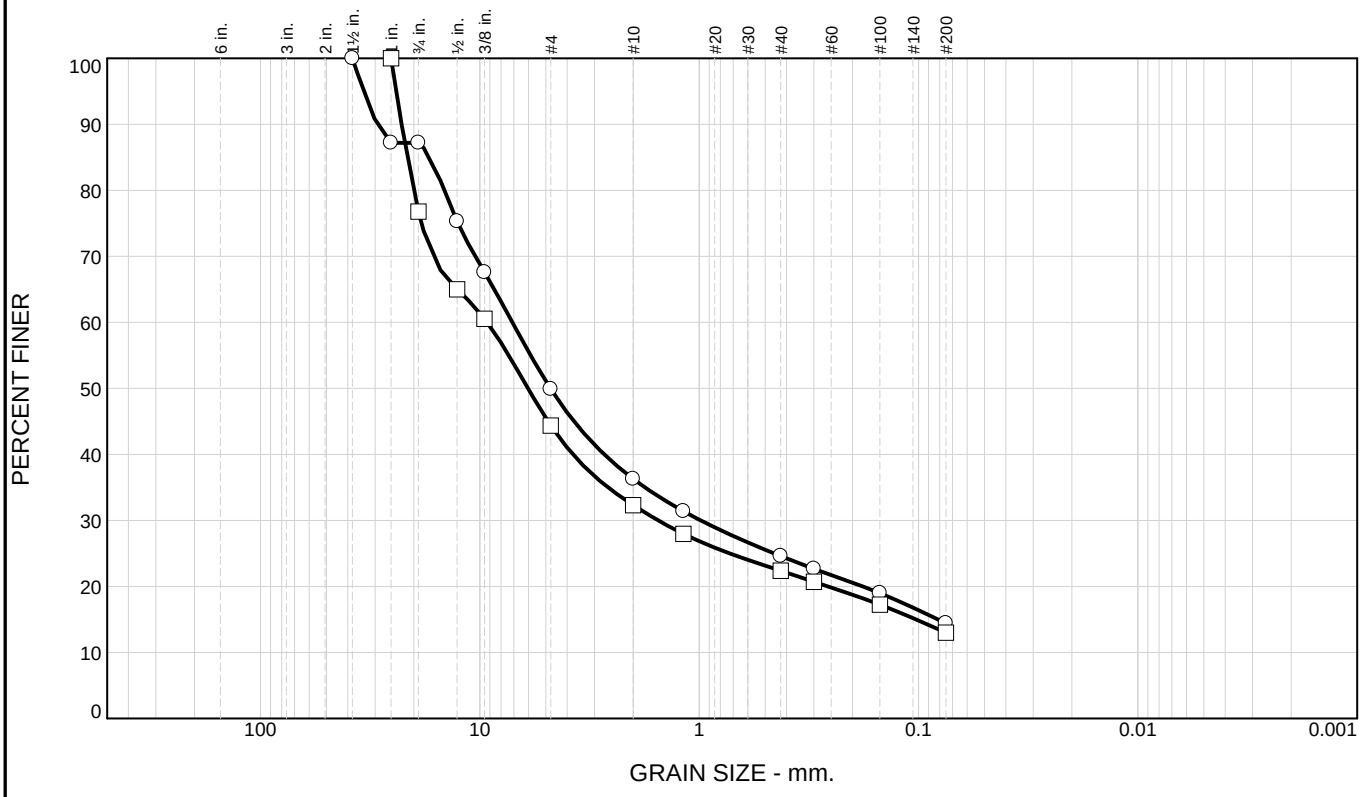
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	50.1	35.5	14.4		GM	A-1-a	16	17
□	0.0	55.6	31.4	13.0		GM	A-1-a	NP	18

SIEVE inches size	○	□
	PERCENT FINER	
1.5"	100.0	
1"	87.2	100.0
3/4"	87.2	76.8
1/2"	75.3	65.0
3/8"	67.6	60.5
	GRAIN SIZE	
D_{60}	7.1097	9.2555
D_{30}	0.9844	1.5396
D_{10}		
	COEFFICIENTS	
C_c		
C_u		

SIEVE number size	○	□
	PERCENT FINER	
#4	49.9	44.4
#10	36.3	32.3
#16	31.4	28.0
#40	24.6	22.4
#50	22.7	20.7
#100	19.0	17.2
#200	14.4	13.0

Material Description

○ silty gravel with sand

□ silty gravel with sand

REMARKS:

○

□

○ Source of Sample: ASW-16 Depth: 2.5 - 4.0' Sample Number: A

□ Source of Sample: ASW-16 Depth: 5.0 - 6.5' Sample Number: B

NEVADA DEPARTMENT OF TRANSPORTATION

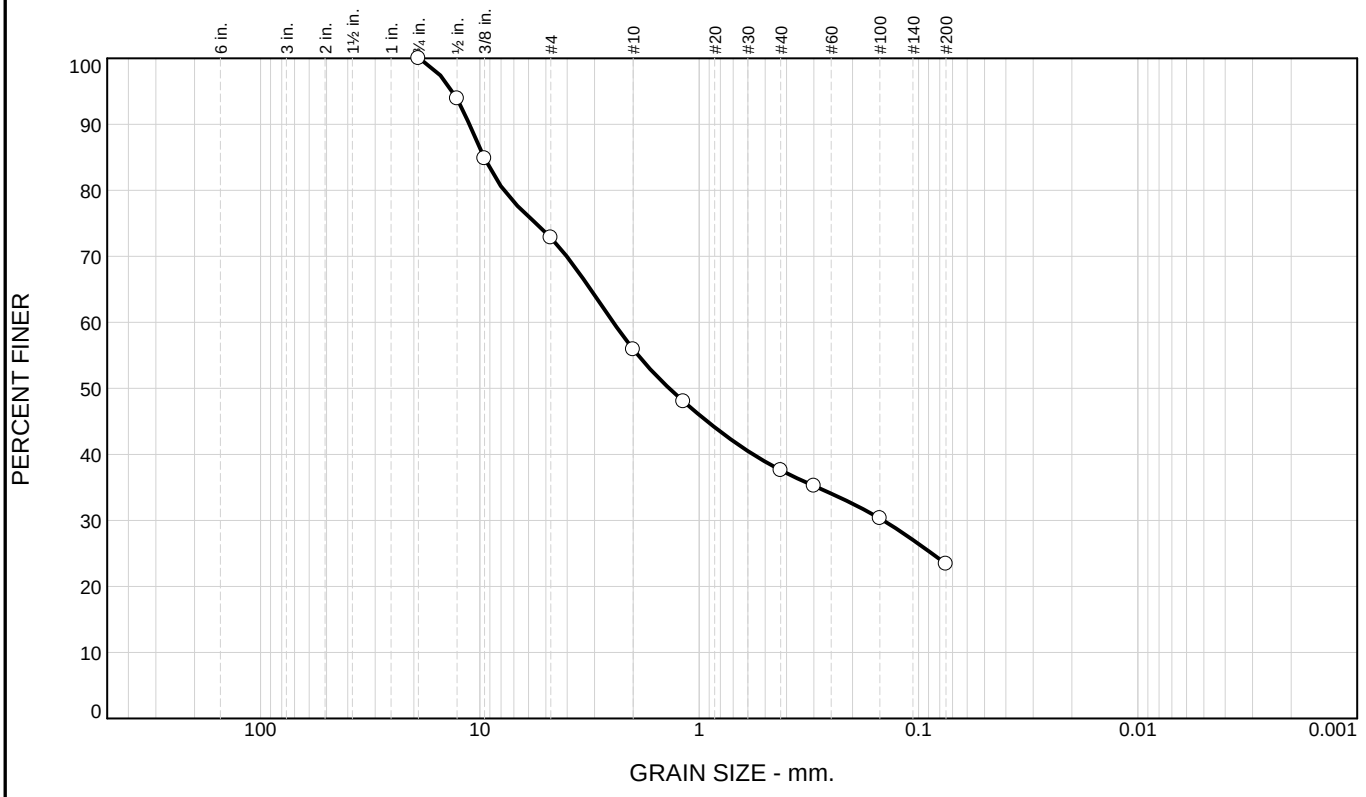
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	27.2	49.4	23.4		SC-SM	A-2-4(0)	16	23

SIEVE inches size	PERCENT FINER ○		
3/4"	100.0		
1/2"	93.9		
3/8"	84.8		
	GRAIN SIZE		
D_{60}	2.4653		
D_{30}	0.1446		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	72.8		
#10	55.9		
#16	48.0		
#40	37.6		
#50	35.2		
#100	30.3		
#200	23.4		

Material Description

○ silty, clayey sand with gravel

REMARKS:

○

○ Source of Sample: ASW-17 Depth: 2.5 - 4.0' Sample Number: A

NEVADA DEPARTMENT OF TRANSPORTATION

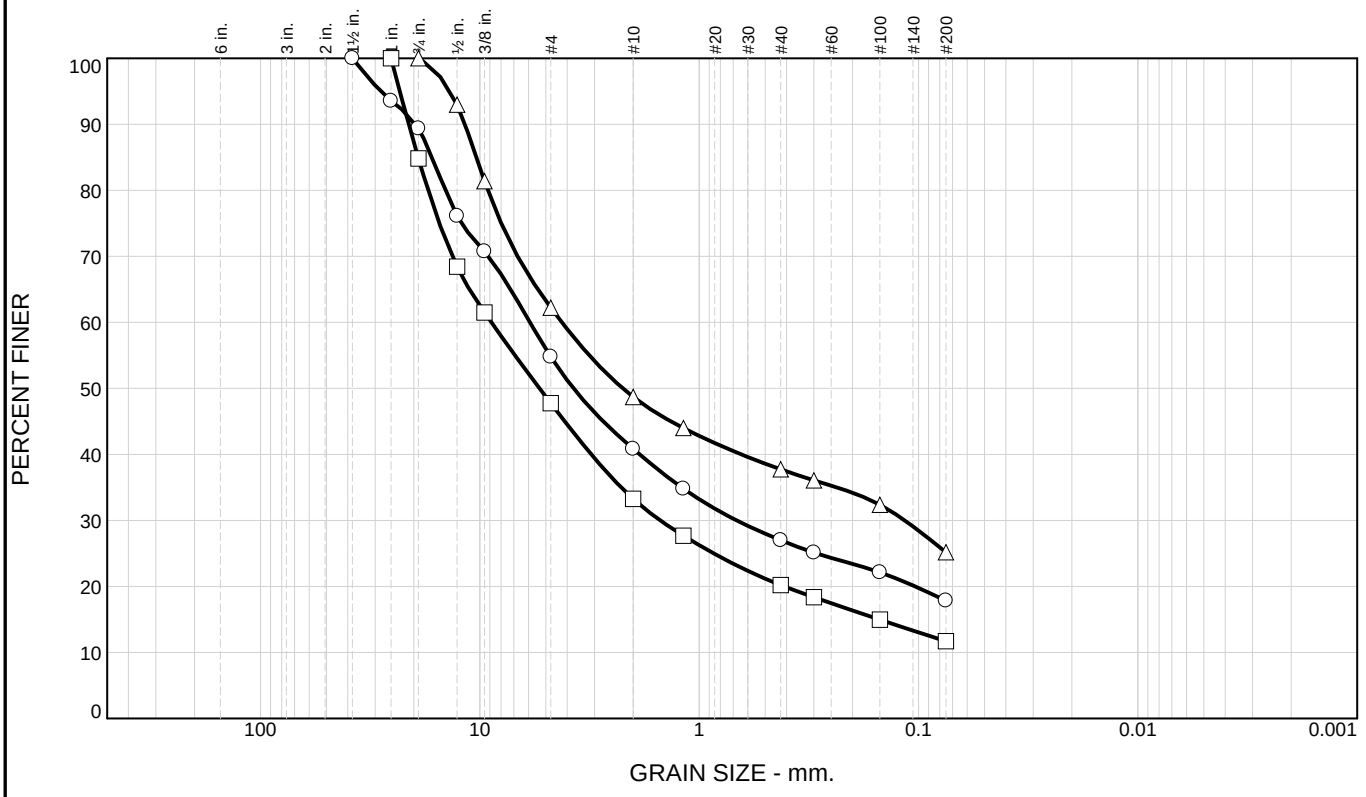
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	45.2	37.0	17.8		GC-GM	A-1-b	16	20
□	0.0	52.2	36.1	11.7		GP-GC	A-2-4(0)	19	27
△	0.0	37.8	37.0	25.2		GC	A-2-4(0)	16	24

SIEVE inches size	PERCENT FINER ○	□	△
1.5"	100.0		
1"	93.6	100.0	
3/4"	89.4	84.8	100.0
1/2"	76.1	68.4	93.0
3/8"	70.7	61.5	81.4
GRAIN SIZE			
D_{60}	5.9098	8.8617	4.2287
D_{30}	0.6745	1.5054	0.1154
D_{10}			
COEFFICIENTS			
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	54.8	47.8	62.2
#10	40.8	33.3	48.7
#16	34.8	27.7	44.0
#40	27.0	20.2	37.7
#50	25.1	18.4	36.1
#100	22.1	15.0	32.4
#200	17.8	11.7	25.2

Material Description

○ silty clayey gravel with sand

□ poorly graded gravel with clay and sand

△ clayey gravel with sand

REMARKS:

○

□

△

○ Source of Sample: ASW-18 Depth: 2.5 - 2.9' Sample Number: A

□ Source of Sample: ASW-18 Depth: 5.0 - 6.5' Sample Number: B

△ Source of Sample: ASW-18 Depth: 12.5 - 13.3' Sample Number: E

NEVADA DEPARTMENT OF TRANSPORTATION

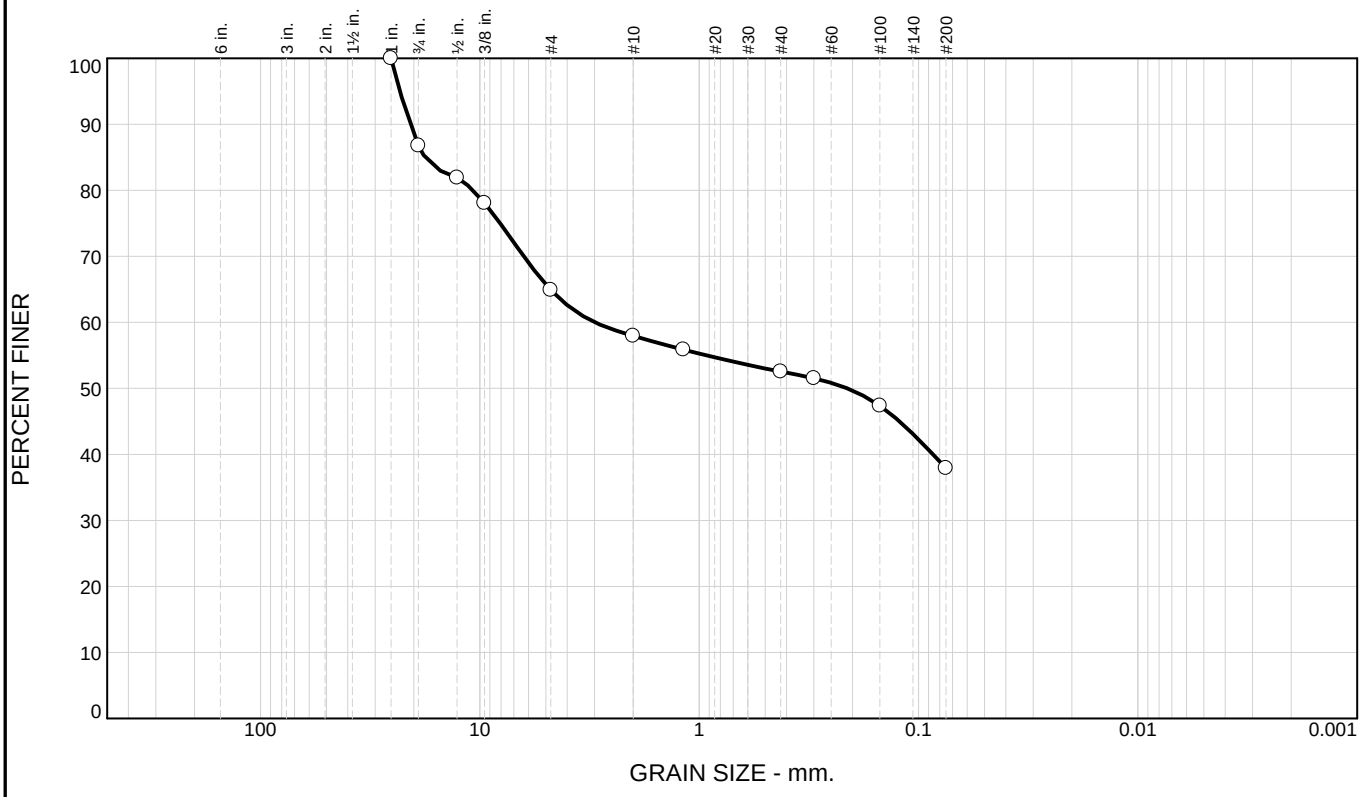
Client: D. Boomhower

Project: US 95 Soundwalls

Project No.: EA 73627, FL-5-11

Figure

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○	0.0	35.1	27.0	37.9		GM	A-4(0)	18	19

SIEVE inches size	PERCENT FINER ○		
1"	100.0		
3/4"	86.8		
1/2"	81.9		
3/8"	78.1		
	GRAIN SIZE		
D_{60}	2.9870		
D_{30}			
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	64.9		
#10	58.0		
#16	55.9		
#40	52.5		
#50	51.5		
#100	47.4		
#200	37.9		

Material Description
○ silty gravel with sand

REMARKS:
○

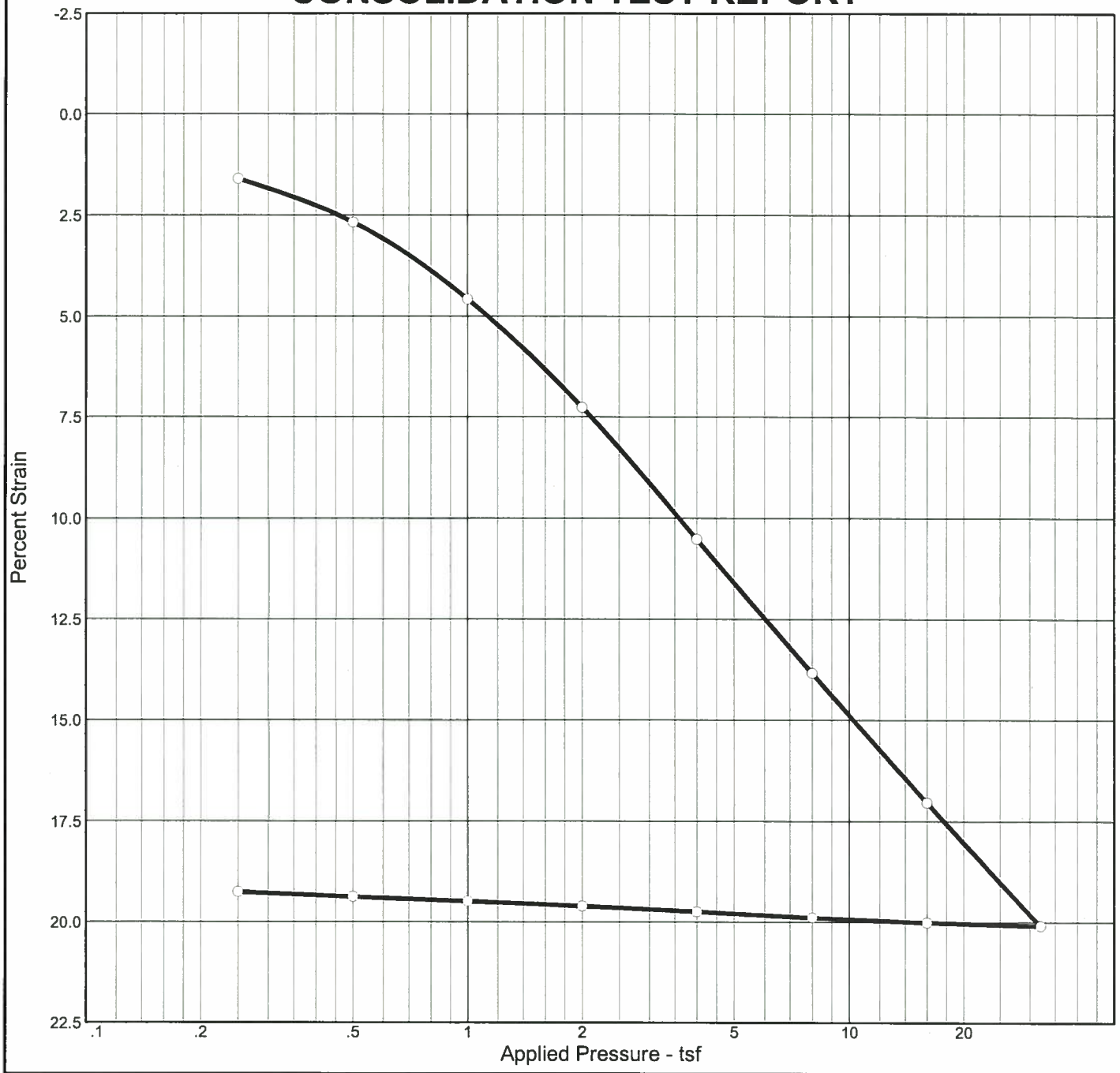
○ Source of Sample: ASW-19 Depth: 2.5 - 4.0' Sample Number: A

NEVADA DEPARTMENT OF TRANSPORTATION

Client: D. Boomhower
Project: US 95 Soundwalls
Project No.: EA 73627, FL-5-11

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
56.2 %	19.0 %	88.1	37	20	2.692	0.28	0.66	0.19	0.01	0.909

MATERIAL DESCRIPTION	USCS	AASHTO
lean clay	CL	A-6(18)

Project No. EA 73627, **Client:** D. Boomhower

Project: US 95 Soundwalls

Source: ASW-8 **Sample No.:** B2 a **Elev./Depth:** 5.3 - 5.8'

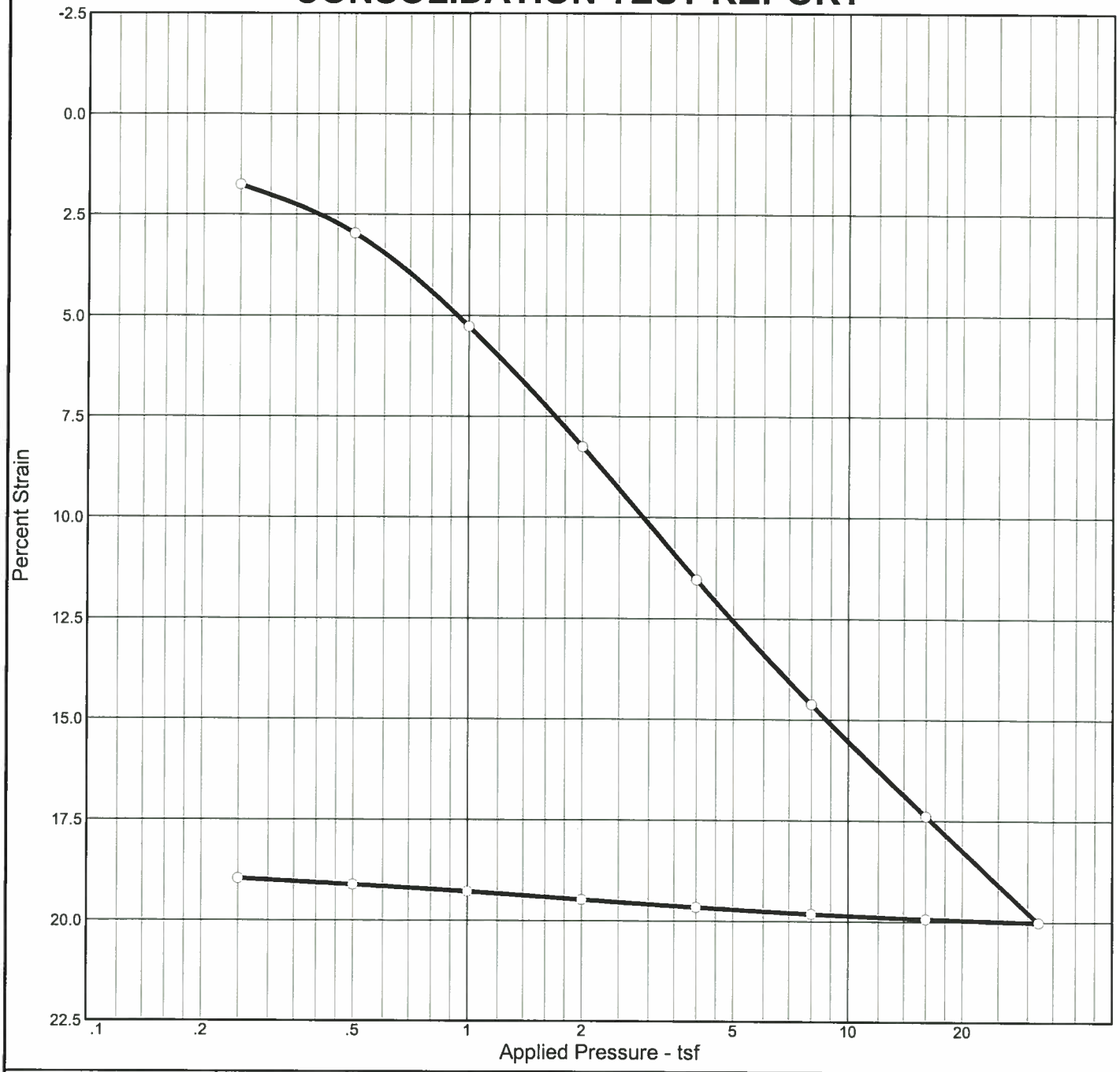
CONSOLIDATION TEST REPORT

NEVADA DEPARTMENT OF TRANSPORTATION

Remarks:

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
56.1 %	18.1 %	89.9	37	20	2.692	0.28	0.31	0.16	0.01	0.870

MATERIAL DESCRIPTION	USCS	AASHTO
lean clay	CL	A-6(18)

Project No. EA 73627, **Client:** D. Boomhower

Project: US 95 Soundwalls

Source: ASW-8 **Sample No.:** B2 b **Elev./Depth:** 5.3 - 5.8'

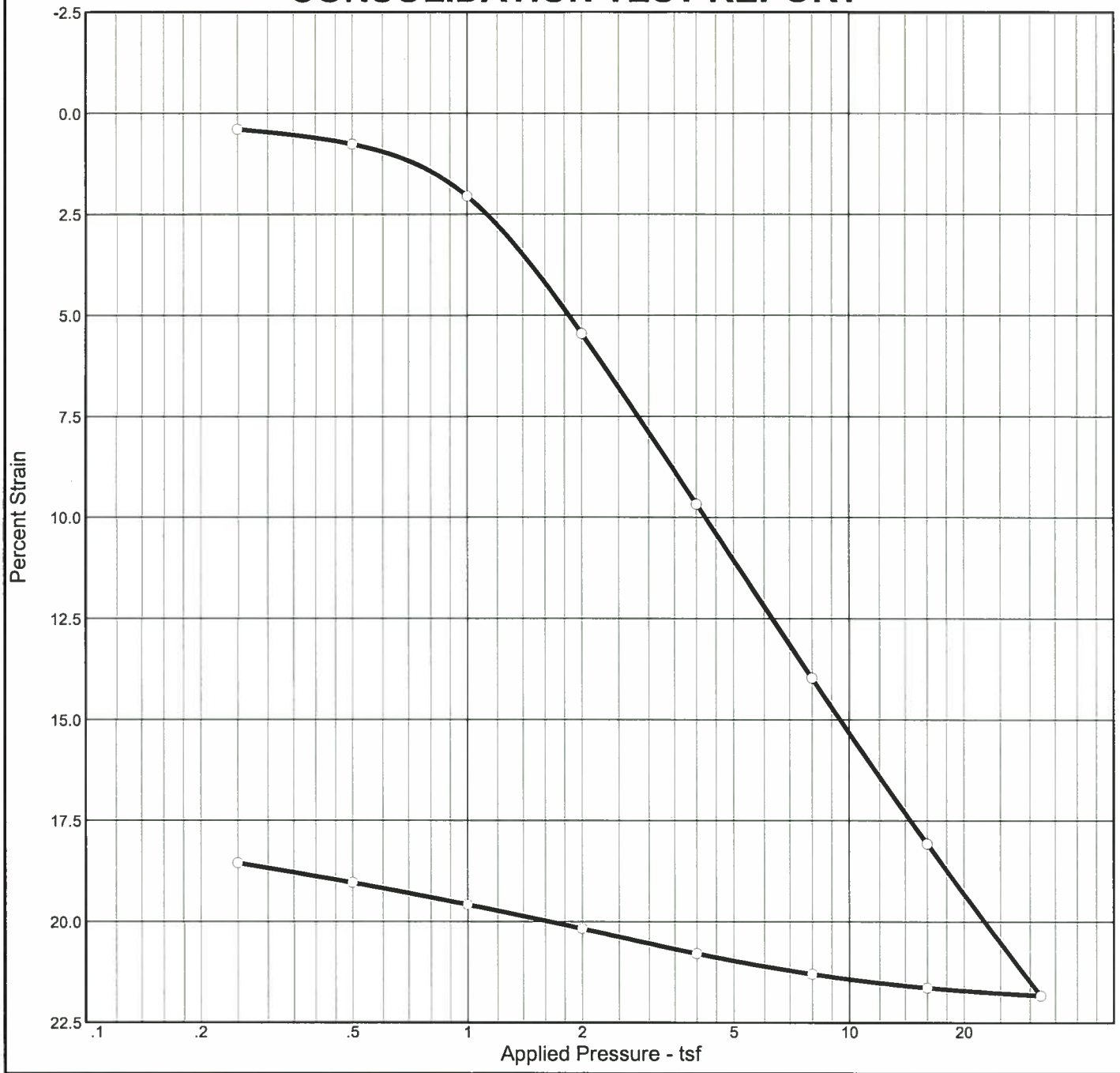
CONSOLIDATION TEST REPORT

NEVADA DEPARTMENT OF TRANSPORTATION

Remarks:

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
53.8 %	23.0 %	78.6	41	23	2.727	0.40	0.75	0.27	0.03	1.166

MATERIAL DESCRIPTION	USCS	AASHTO
lean clay with sand	CL	A-7-6(19

Project No. EA 73627, **Client:** D. Boomhower

Project: US 95 Soundwalls

Source: ASW-8 **Sample No.:** C1 a **Elev./Depth:** 7.8 - 8.3'

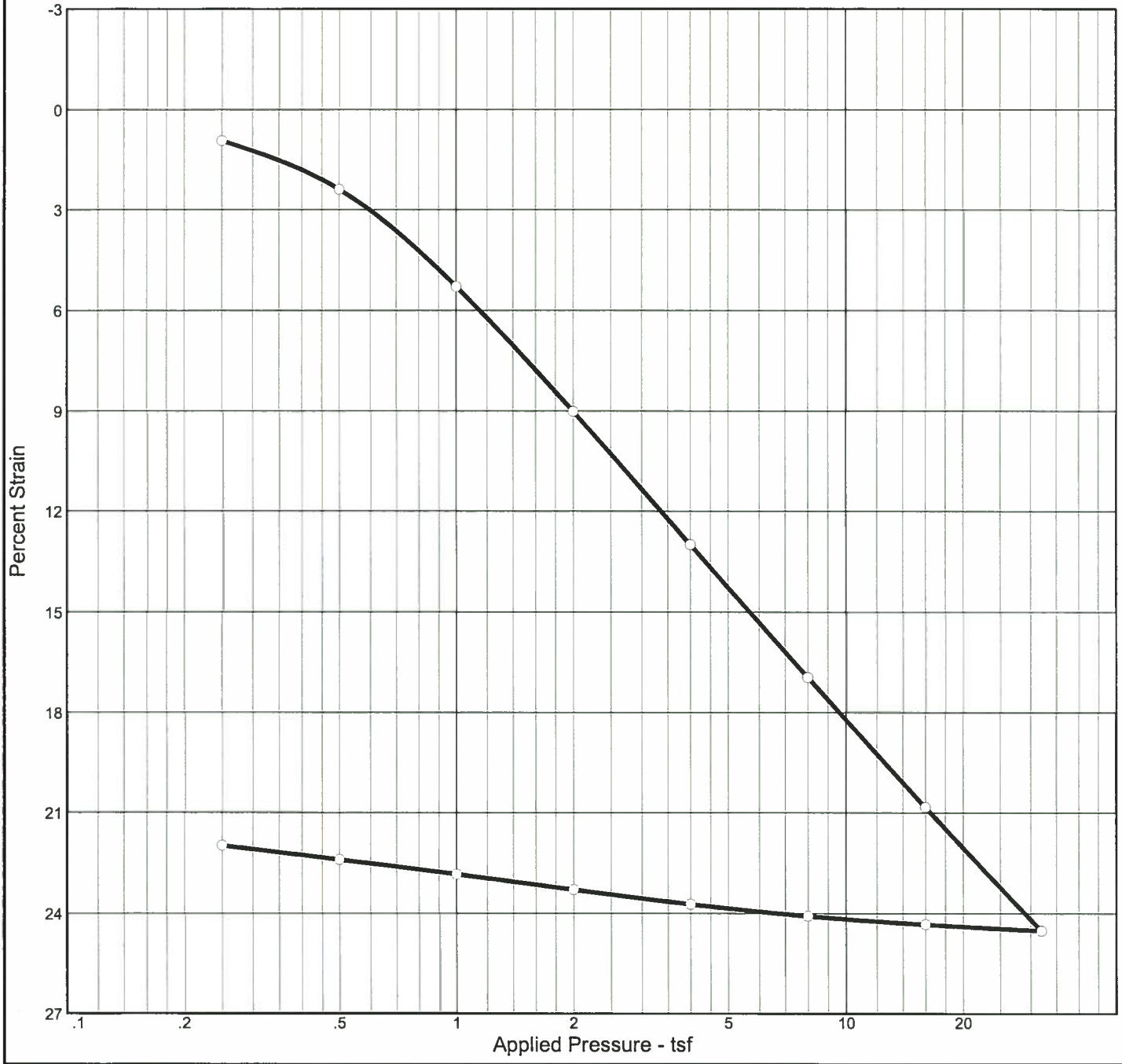
CONSOLIDATION TEST REPORT

NEVADA DEPARTMENT OF TRANSPORTATION

Remarks:

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
49.0 %	19.8 %	81.0	41	23	2.727	0.40	0.49	0.26	0.03	1.101

MATERIAL DESCRIPTION	USCS	AASHTO
lean clay with sand	CL	A-7-6(19

Project No. EA 73627, **Client:** D. Boomhower

Project: US 95 Soundwalls

Source: ASW-8 **Sample No.:** C1 b **Elev./Depth:** 7.8 - 8.3'

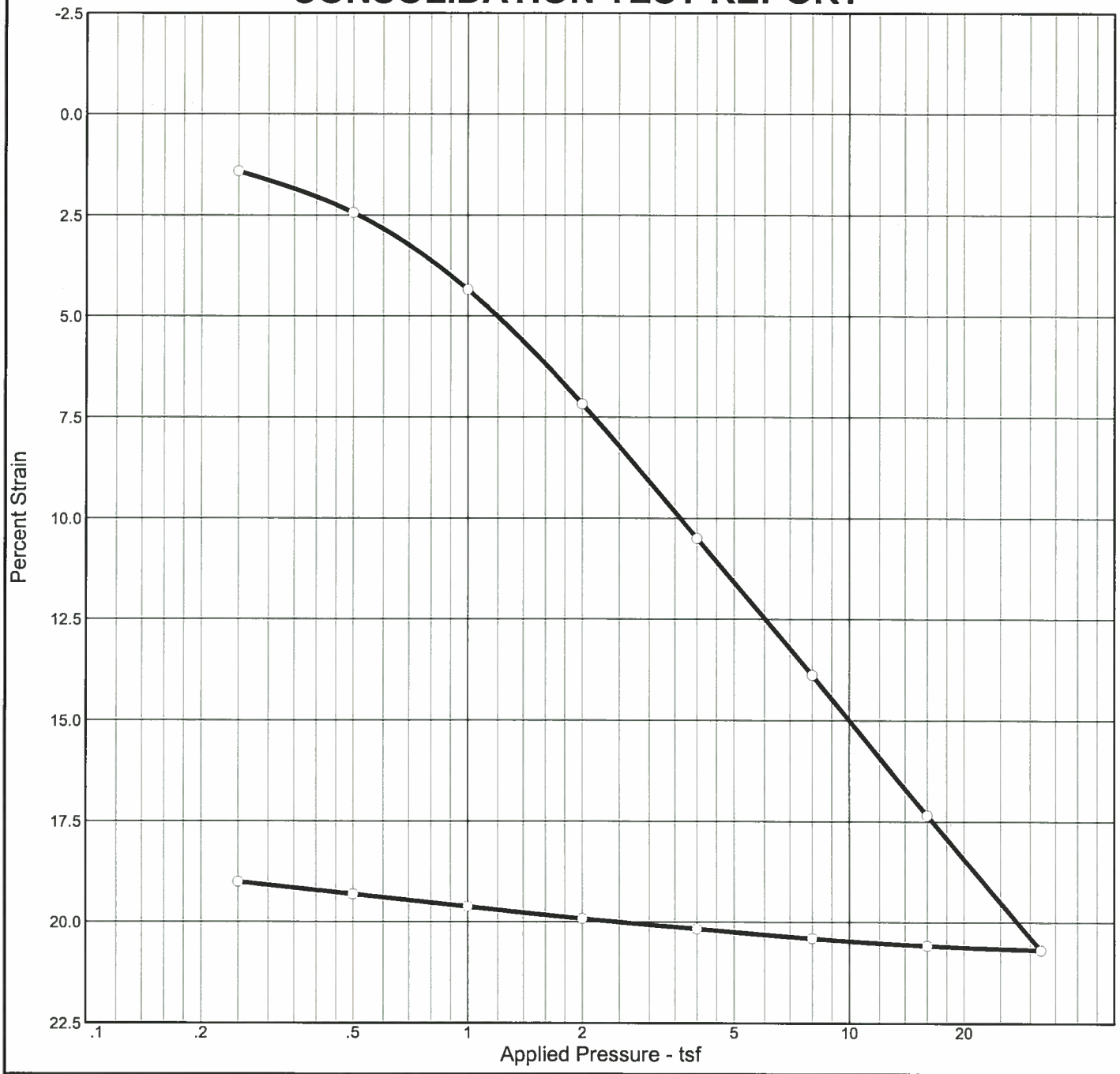
CONSOLIDATION TEST REPORT

NEVADA DEPARTMENT OF TRANSPORTATION

Remarks:

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
54.5 %	17.3 %	90.8	40	23	2.700	0.43	0.81	0.21	0.01	0.857

MATERIAL DESCRIPTION	USCS	AASHTO
sandy lean clay	CL	A-6(14)

Project No. EA 73627, **Client:** D. Boomhower

Project: US 95 Soundwalls

Source: ASW-8 **Sample No.:** C2 a **Elev./Depth:** 8.3 - 8.8'

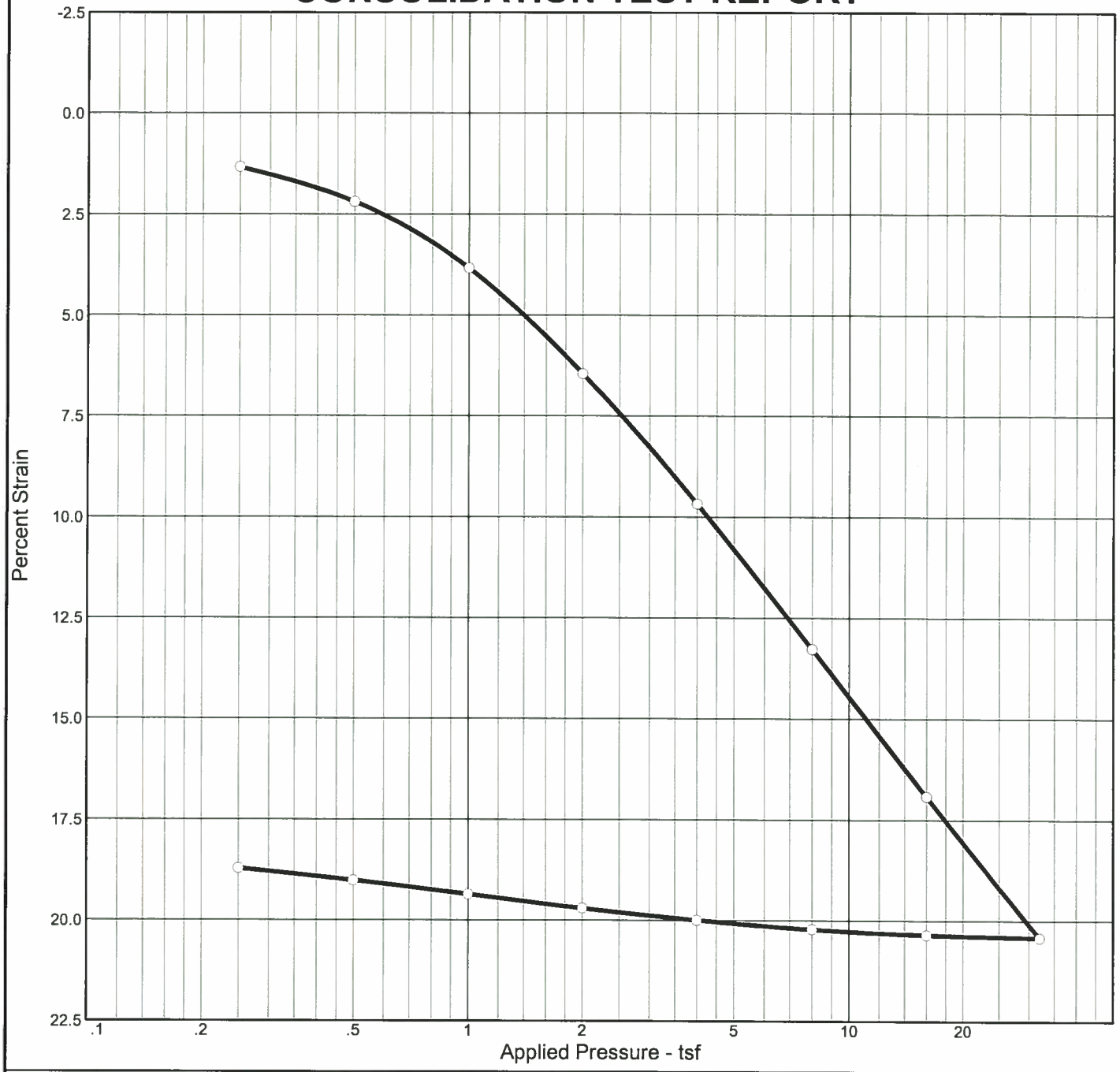
Remarks:

CONSOLIDATION TEST REPORT

NEVADA DEPARTMENT OF TRANSPORTATION

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
55.0 %	16.9 %	92.1	40	23	2.700	0.43	1.31	0.21	0.01	0.830

MATERIAL DESCRIPTION	USCS	AASHTO
sandy lean clay	CL	A-6(14)

Project No. EA 73627, **Client:** D. Boomhower

Project: US 95 Soundwalls

Source: ASW-8 **Sample No.:** C2 b **Elev./Depth:** 8.3 - 8.8'

CONSOLIDATION TEST REPORT

NEVADA DEPARTMENT OF TRANSPORTATION

Remarks:

Figure

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 1 **Elevation (ft)** 2362.68 **Station** "XP" 142 + 23, 113' Rt. **Date** 6/20/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	2.5 - 4.0	SPT	59	GC			45.2	37	20	17						
B	5.0 - 5.1	SPT	R													No Sample Recovered
C	7.5 - 9.0	SPT	10	CL			56.4	36	15	21						
D	10.0 - 10.1	SPT	R													No Sample Recovered
E	12.5 - 14.1	SPT	7	SC			39.5	30	14	16						
F1	15.2 - 15.7	CMS	55	GC	9.7	104.8	39.7	30	16	14						
F2	15.7 - 16.2	CMS			7.6	108.7	27.0									
F3	16.2 - 16.5	CMS_{Shoe}		GC-GM			40.2	26	20	6						
G	20.0 - 21.5	SPT	27	SC			40.9	36	16	20						
H	25.0 - 26.5	SPT	34	SC			46.0	68	28	40						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 2 **Elevation (ft)** 2366.79 **Station** "XP" 147 + 27, 126' Rt. **Date** 6/21/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 4.1	SPT	5	CL			88.8	32	22	10						
B	5.0 - 6.5	SPT	18	CL			53.3	31	19	12						
C	7.5 - 7.6	SPT	R													No Sample Recovered
D	10.0 - 11.5	SPT	33	GC			27.2	23	16	7						
E	12.5 - 14.0	SPT	30				38.4									
F	15.0 - 16.5	SPT	45	GM			39.1	27	14	13						
G	20.0 - 21.5	SPT	38				41.7									
H	25.0 - 26.5	SPT	27	GC			38.8	90	36	54						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
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W = Moisture Content
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O = Organic Content
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RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 3 **Elevation (ft)** 2367.73 **Station** "XP" 152 + 17, 120' Rt. **Date** 6/21/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 4.0	SPT	8	CL			67.9	29	20	9						
B	5.0 - 5.1	SPT	R													No Sample Recovered
C	7.5 - 9.1	SPT	12	CL			54.9	32	15	17						
D	10.0 - 11.5	SPT	21	CL			51.4	28	14	14						
E	12.5 - 14.0	SPT	32	CL			51.5	24	17	7						
F	15.0 - 16.5	SPT	49				40.0									
G	20.0 - 21.5	SPT	44	SC			41.7	31	18	13						
H	25.0 - 26.5	SPT	19	CH			55.0	51	25	26						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

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UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 4 **Elevation (ft)** 2383.43 **Station** "XP" 167 + 31, 126' Rt. **Date** 6/21/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 4.0	SPT	11	CL			82.2	38	24	14						
B	5.0 - 6.4	SPT	18	CL			72.2	33	16	17						
C	7.5 - 9.0	SPT	14	CL			73.1	32	19	13						
D	10.0 - 11.5	SPT	23				54.0									
E	12.5 - 14.0	SPT	53	SC			30.0	32	19	13						
F	15.0 - 16.5	SPT	47				35.3									
G	20.0 - 21.5	SPT	37	CL			54.0	35	17	18						
H	25.0 - 26.5	SPT	26	CH			50.6	56	24	32						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 5 **Elevation (ft)** 2485.05 **Station** "XP" 232 + 56, 127' Rt. **Date** 6/22/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 4.0	SPT	16	SM			28.0	18	NP	NP						
B	5.0 - 6.5	SPT	29	SM			29.8	18	16	2						
C	7.5 - 9.0	SPT	88				11.7									
D	10.0 - 10.3	SPT	R													No Sample Recovered
E	12.5 - 12.6	SPT	R													No Sample Recovered
F	15.0 - 15.2	SPT	R													No Sample Recovered
G	20.0 - 20.8	SPT	R	CH			87.5	88	31	57						
H	25.0 - 26.5	SPT	50	CH			81.7	57	16	41						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
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O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 6 **Elevation (ft)** 2493.05 **Station** "XP" 237 + 45, 118' Rt. **Date** 6/22/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	2.5 - 4.0	SPT	18	GM			30.9	20	19	1						
B1	5.2 - 5.4	CMS	R				14.6									
B2	5.4 - 5.9	CMS			1.5	126.6	13.4									
C	7.5 - 7.6	SPT	R													No Sample Recovered
D	10.0 - 10.2	SPT	R													No Sample Recovered
E	12.5 - 12.6	SPT	R													No Sample Recovered
F	15.0 - 15.1	SPT	R													No Sample Recovered
G	20.0 - 21.2	SPT	R	CH			55.9	50	26	24						
H	25.0 - 26.5	SPT	72	CH			74.7	69	26	43						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
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OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
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D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 7 **Elevation (ft)** 2563.96 **Station** "XP" 273 + 53, 124' Rt. **Date** 6/22/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 4.0	SPT	53				12.1									
B	5.0 - 6.5	SPT	24	GP-GM			9.4	19	17	2						
C	7.5 - 9.0	SPT	60				8.4									
D	10.0 - 10.7	SPT	R	GC			12.7	31	23	8						
E	15.0 - 15.2	SPT	R													No Sample Recovered
F	20.0 - 21.5	SPT	80	GC			22.8	50	28	22						
G	25.0 - 26.4	SPT	R	GC			27.2	62	34	28						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 8 **Elevation (ft)** 2374.38 **Station** "XP" 157 + 30, 112' Rt. **Date** 6/23/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	2.5 - 4.1	SPT	5	ML			84.9	43	30	13						
B1	5.0 - 5.3	CMS	21	CL			87.8	35	20	15						H
B2	5.3 - 5.8	CMS		CL	20.5	88.2	91.2	37	17	20						OC
B3	5.8 - 6.3	CMS		CL	18.2	91.4	83.9	36	17	19						
B4	6.3 - 6.5	CMS_{Shoe}		CL			70.4	48	16	32						
C1	7.8 - 8.3	CMS	14	CL	20.2	78.2	84.3	41	18	23						OC
C2	8.3 - 8.8	CMS		CL	15.3	87.1	69.2	40	17	23						OC
C3	8.8 - 9.0	CMS_{Shoe}		CL			67.4	39	15	24						
D	10.0 - 11.5	SPT	13	CL			53.0	42	16	26						
E	15.0 - 16.5	SPT	21				26.6									
F	20.0 - 21.5	SPT	31	SC			28.8	36	17	19						
G	25.0 - 26.5	SPT	72	GC			34.6	44	22	22						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 9 **Elevation (ft)** 2378.41 **Station** "XP" 162 + 25, 110' Rt. **Date** 6/23/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	2.5 - 4.0	SPT	6				95.1									
B	5.0 - 6.5	SPT	12	CL			94.8	38	19	19						
C	7.5 - 9.0	SPT	31	CL			60.3	32	15	17						
D	10.0 - 11.5	SPT	36	CL			68.6	45	16	29						
E	15.0 - 16.5	SPT	39				22.1									
F	20.0 - 21.5	SPT	40	SC			27.9	33	18	15						
G	25.0 - 26.5	SPT	15	GC			39.7	69	25	44						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 10 **Elevation (ft)** 2629.16 **Station** "XP" 336 + 98, 121' Rt. **Date** 7/18/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 3.8	SPT	R	GM			15.0	17	16	1						
B	5.0 - 5.4	SPT	R													No Sample Recovered
C	7.5 - 7.8	SPT	R													No Sample Recovered
D	10.0 - 10.7	SPT	R	GC-GM			15.0	28	21	7						
E	12.5 - 12.6	SPT	R													No Sample Recovered
F	15.0 - 15.1	SPT	R													No Sample Recovered
G	20.0 - 20.1	SPT	R													No Sample Recovered
H	25.0 - 25.4	SPT	R													No Sample Recovered

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 11 **Elevation (ft)** 2635.80 **Station** "XP" 341 + 99, 120' Rt. **Date** 7/19/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	3.0 - 3.1	SPT	R													No Sample Recovered
B	5.0 - 5.1	SPT	R													No Sample Recovered
C	7.5 - 7.9	SPT	R	SC			15.6	34	20	14						
D	10.0 - 10.2	SPT	R													No Sample Recovered
E	12.5 - 12.6	SPT	R													No Sample Recovered
F	15.0 - 15.1	SPT	R													No Sample Recovered
G	20.0 - 20.2	SPT	R													No Sample Recovered
H	25.0 - 25.1	SPT	R													No Sample Recovered

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 12 **Elevation (ft)** 2656.44 **Station** "XP" 348 + 51, 164' Lt. **Date** 7/19/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 4.0	SPT	38	GC			12.7	27	18	9						
B	5.0 - 6.5	SPT	30	GC			16.0	32	21	11						
C	7.5 - 10.0	SPT	31	GC			24.5	32	19	13						
D	10.0 - 11.5	SPT	20	GC			14.5	32	21	11						
E	12.5 - 14.0	SPT	46	GC			16.8	32	19	13						
F	15.0 - 16.5	SPT	36	GC			21.5	33	22	11						
G	20.0 - 21.5	SPT	34	GC			13.4	36	20	16						
H	25.0 - 25.4	SPT	R	SC-SM			16.8	26	19	7						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 13 **Elevation (ft)** 2646.20 **Station** "XP" 344 + 06, 168' Lt. **Date** 7/19/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	2.5 - 4.0	SPT	42	GC			15.9	34	22	12						
B	5.0 - 6.3	SPT	R	GP-GC			12.0	31	20	11						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 14 **Elevation (ft)** 2635.24 **Station** "XP" 315 + 49, 156' Lt. **Date** 7/19/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	4.0 - 4.1	SPT	R													No Sample Recovered
B	5.0 - 5.5	SPT	R	SC			12.4	26	18	8						

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
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O = Organic Content
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RQD = Rock Quality Designation
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HCpot = Hydro-Collapse Potential

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SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 15 **Elevation (ft)** 2630.61 **Station** "XP" 310 + 52, 168' Lt. **Date** 7/19/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	5.0 - 6.5	SPT	77	GP-GM			7.9	16	NP	NP						
B	7.5 - 7.6	SPT	R													No Sample Recovered
C	10.0 - 10.1	SPT	R													No Sample Recovered
D	12.5 - 12.6	SPT	R													No Sample Recovered
E	15.0 - 15.3	SPT	R													No Sample Recovered
F	20.0 - 20.3	SPT	R	SP-SC			9.6	18	14	4						
G	25.0 - 25.1	SPT	R													No Sample Recovered

CMS = California Modified Sampler 2.42" ID
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CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
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U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
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O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 16 **Elevation (ft)** 2624.81 **Station** "XP" 305 + 66, 167' Lt. **Date** 7/20/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 4.0	SPT	48	GM			14.4	17	16	1						
B	5.0 - 6.5	SPT	74	GM			13.0	18	NP	NP						
C	7.5 - 7.6	SPT	R													No Sample Recovered
D	10.0 - 10.1	SPT	R													No Sample Recovered
E	12.5 - 12.6	SPT	R													No Sample Recovered
F	15.0 - 15.1	SPT	R													No Sample Recovered
G	20.0 - 20.1	SPT	R													No Sample Recovered
H	25.0 - 25.1	SPT	R													No Sample Recovered

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
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U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
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RV = R - Value
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CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
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D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 17 **Elevation (ft)** 2619.93 **Station** "XP" 300 + 86, 274' Lt. **Date** 7/20/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	2.5 - 4.0	SPT	29	SC-SM			23.4	23	16	7						
B	5.0 - 5.2	SPT	R													No Sample Recovered
C	7.5 - 7.7	SPT	R													No Sample Recovered
D	10.0 - 10.1	SPT	R													No Sample Recovered
E	12.5 - 12.7	SPT	R													No Sample Recovered
F	15.0 - 15.1	SPT	R													No Sample Recovered
G	20.0 - 20.1	SPT	R													No Sample Recovered
H	25.0 - 25.1	SPT	R													No Sample Recovered

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
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K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 18 **Elevation (ft)** 2660.34 **Station** "XP" 353 + 29, 170' Rt. **Date** 7/20/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg.	C psi	Φ deg.	C psi	
												Peak		Residual		
A	2.5 - 2.9	SPT	R	GC-GM			17.8	20	16	4						
B	5.0 - 6.5	SPT	42	GP-GC			11.7	27	19	8						
C	7.5 - 7.6	SPT	R													No Sample Recovered
D	10.0 - 10.1	SPT	R													No Sample Recovered
E	12.5 - 13.3	SPT	R	GC			25.2	24	16	8						
F	15.0 - 15.1	SPT	R													No Sample Recovered
G	20.0 - 20.1	SPT	R													No Sample Recovered
H	25.0 - 25.3	SPT	R													No Sample Recovered

CMS = California Modified Sampler 2.42" ID
SPT = Standard Penetration 1.38" ID
CS = Continuous Sample 3.23" ID
RC = Rock Core
PB = Pitcher Barrel
CSS = Calif. Split Spoon 2.42" ID
CPT = Cone Penetration Test
TP = Test Pit
P = Pushed, not driven
R = Refusal
Sh = Shelby Tube 2.87" ID

U = Unconfined Compressive
UU = Unconsolidated Undrained
CD = Consolidated Drained
CU = Consolidated Undrained
DS = Direct Shear
Φ = Friction
C = Cohesion
N = No. of blows per ft., sampler

N = Field SPT $N = (N_{css})(0.62)$

H = Hydrometer
S = Sieve
G = Specific Gravity
PI = Plasticity Index
LL = Liquid Limit
PL = Plastic Limit
NP = Non-Plastic
OC = Consolidation
Ch = Chemical
RV = R - Value
MD = Moisture Density

CM = Compaction
E = Swell/Pressure on Expansive Soils
SL = Shrinkage Limit
UW= Unit Weight
W = Moisture Content
K = Permeability
O = Organic Content
D = Dispersive
RQD = Rock Quality Designation
X = X-Ray Defraction
HCpot = Hydro-Collapse Potential

*** = Average of subsamples**

SUMMARY OF RESULTS
N.D.O.T. GEOTECHNICAL SECTION

EA/Cont # 73627 **Job Description** US 95 Soundwalls

Boring No. ASW - 19 **Elevation (ft)** 2647.57 **Station** "XP" 346 + 83, 119' Rt. **Date** 7/21/2011

SAMPLE NO.	SAMPLE DEPTH (ft)	SAMP-LER TYPE	N BLOWS per ft.	SOIL GROUP	W%	DRY UW pcf	% PASS #200	LL %	PL %	PI %	STRENGTH TEST					COMMENTS
											TEST TYPE	Φ deg. (Peak)	C psi (Peak)	Φ deg. (Residual)	C psi (Residual)	
A	2.5 - 4.0	SPT	23	GM			37.9	19	18	1						
B	5.0 - 5.1	SPT	R													No Sample Recovered
C	7.5 - 7.6	SPT	R													No Sample Recovered
D	10.0 - 10.1	SPT	R													No Sample Recovered
E	12.5 - 12.6	SPT	R													No Sample Recovered
F	15.0 - 15.1	SPT	R													No Sample Recovered
G	20.0 - 20.1	SPT	R													No Sample Recovered
H	25.0 - 25.1	SPT	R													No Sample Recovered

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